

# Identification of wintering and passage roosts on functionally linked land of the Severn Estuary - Gloucestershire and Worcestershire (Phase 5)

November 2021

Natural England Research Report NECR401

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Eric Palmer and Mike Smart, Link Ecology



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# Foreword

Natural England commission a range of reports from external contractors to provide evidence and advice to assist us in delivering our duties. The views in this report are those of the authors and do not necessarily represent those of Natural England.

Contents

1.0	Natural England preface .....	4
2.0	Executive summary.....	4
3.0	Introduction.....	8
4.0	Methods.....	20
5.0	Bird movements in the Severn and Avon Vales .....	27
6.0	Site descriptions and evaluation .....	152
7.0	Preliminary identification of additional sites of importance.....	297
8.0	Discussion .....	310
9.0	Recommendations.....	316
10.0	Acknowledgements .....	319
11.0	References .....	320
	Appendices .....	324
	Appendix 1 – Maps showing known bird movements .....	324
	Appendix 2 – Maps showing locations of SPA Interest Species records .....	348
	Appendix 3 – Evaluation of site importance to SPA Interest Species – full calculations.....	376

List of Tables and Figures

Table 2.1 – Core areas assessed in this Phase.....	9
Table 2.2 – List of additional sites reviewed.....	10
Table 2.3 SPA qualifying species listed for the Severn Estuary on the Natura 2000 standard data form and/or added as part of the 2001 SPA review .....	12
Table 2.4 SPA Waterfowl Assemblage Species listed for the Severn Estuary by the 2001 SPA Review .....	12
Table 2.5 Species listed in the Severn Estuary SSSI citations .....	13
Table 3.1: Five year Mean Peak counts for the Severn Estuary SPA (2014/15 to 2018/19), used to identify actual or potential Functionally Linked Land .....	18
Figure 4.1 - Numbers of Wigeon at Ashleworth, Coombe Hill and Longdon Marsh North, October 2019 to March 2020 .....	62
Figure 4.2 - Numbers of Pintail at Ashleworth, Coombe Hill and Longdon Marsh North, October 2019 to March 2020 .....	74
Table 4.1 - Within-winter movements of Teal from the SPA (WWT Slimbridge) to inland sites.....	81
Table 4.3 – International and National thresholds for Wintering Waders .....	98
Table 5.1 – Summary of site evaluation for Horsbere Brook Flood Alleviation Area against the 1% SPA population threshold .....	155
Table 5.2– Summary of site evaluation for Alney Island against the 1% SPA population threshold .....	159
Table 5.3 – Summary of site evaluation for Witcombe Reservoir against the 1% SPA population threshold .....	161
Table 5.4 – Summary of site evaluation for Frampton Pools against the 1% SPA population threshold.....	166
Table 5.5 – Summary of site evaluation for Walmore Common against the 1% SPA population threshold.....	172
Table 5.6 – Summary of site evaluation for the River Frome at Wheatenhurst against the 1% SPA population threshold .....	175
Table 5.7 – Summary of site evaluation for Minsterworth and Corn Ham against the 1% SPA population threshold... ..	179
Table 5.8 – Summary of site evaluation for Wilmore Common against the 1% SPA population threshold .....	184
Table 5.9 – Summary of site evaluation for Elmore Marsh against the 1% SPA population threshold.....	187
Table 5.10 – Summary of site evaluation for River Severn – Gloucester to Maisemore against the 1% SPA population threshold .....	191

Table 5.11 – Summary of site evaluation for Coombe Hill against the 1% SPA population threshold .....	199
Table 5.12 – Summary of site evaluation for Ashleworth Ham against the 1% SPA population threshold.....	207
Table 5.13 – Summary of site evaluation for River Severn – Haw Bridge to Tewkesbury against the 1% SPA population threshold .....	212
Table 5.14 – Summary of site evaluation for Chelt and Leigh Meadows against the 1% SPA population threshold ....	217
Table 5.15a – Summary of site evaluation for Pershore Wetland Meadows against the 1% SPA population threshold .....	221
Table 5.15b – Summary of site evaluation for Lower Moor against the 1% SPA population threshold .....	222
Table 5.15c – Summary of site evaluation for Throckmorton against the 1% SPA population threshold .....	223
Table 5.16 – Summary of site evaluation for Bow Farm, Bow Farm (Ripple Lakes) against the 1% SPA population threshold .....	228
Table 5.17 – Summary of site evaluation for Oakley Pool against the 1% SPA population threshold.....	231
Table 5.18 – Summary of site evaluation for John Bennett Nature Reserve against the 1% SPA population threshold .....	236
Table 5.19 – Summary of site evaluation for Gwen Finch Nature Reserve against the 1% SPA population threshold	237
Table 5.20 – Summary of site evaluation for Great Pool Westwood Park against the 1% SPA population threshold ..	241
Table 5.21 – Summary of site evaluation for Upton Warren LNR against the 1% SPA population threshold .....	246
Table 5.22 – Summary of site evaluation for Kinsham (Kemerton Lake) against the 1% SPA population threshold ....	250
Table 5.23 – Summary of site evaluation for Grimley New Workings against the 1% SPA population threshold .....	254
Table 5.24 – Summary of site evaluation for Pirton Pool against the 1% SPA population threshold .....	256
Table 5.25 – Summary of site evaluation for Beckford Nature Reserve against the 1% SPA population threshold .....	259
Table 5.26 – Summary of site evaluation for Clifton Pits against the 1% SPA population threshold.....	264
Table 5.27 – Summary of site evaluation for Bredon’s Hardwick Gravel Pits against the 1% SPA population threshold .....	272
Table 5.28 – Summary of site evaluation for Avon Meadows – Twyning and Bredon’s Hardwick against the 1% SPA population threshold .....	273
Table 5.29 – Summary of site evaluation for Mitton against the 1% SPA population threshold .....	274
Table 5.30 – Summary of site evaluation for Longdon Marsh North against the 1% SPA population threshold .....	278
Table 5.31 – Summary of site evaluation for Hill Court Farm Reserve against the 1% SPA population threshold .....	282
Table 5.32 – Summary of site evaluation for River Severn Northwick to Diglis Lock against the 1% SPA population threshold .....	284
Table 5.33 – Summary of site evaluation for the Severn Ham at Tewkesbury against the 1% SPA population threshold .....	288
Table 5.34 – Summary of site evaluation for Upham Meadow against the 1% SPA population threshold.....	293
Table 5.35 – Summary of site evaluation for Upton Ham against the 1% SPA population threshold.....	296

## 1.0 Natural England preface

- 1.1. Phase 5 is a desk review of best available data on birds using wetlands sites throughout Gloucestershire and Worcestershire from the last 10 years. This note is to raise attention and to caution over the available data and how it should be interpreted. Data on bird distribution are rarely intended to monitor local movement between sites. The BTO Wetland Birds Survey count (WeBS) are undertaken on set days each month and do not always have the subtleties to detect local movements between sites. The primary aim of WeBS is to provide a quantifiable estimate of each bird species in the UK at a given moment. The report is clear that ringing data are extremely limited and are restricted to certain species or locations. Drawing conclusions from these ringing recoveries still needs further work.
- 1.2. The report confirms that the understanding of linkages between the SPA and other sites in the Severn Vale is still incomplete and much of the evidence of movement, other than for a relatively limited number of ringing recoveries, was based on incidental observations of apparent displacements between sites. These observations were from interviews with relevant bird recorders and from the limited field season the authors had available to them to fill in the gaps in the WeBS counts. As a result the Phase 5 report provides a baseline and represents the best available data prior to more focused work such as tracking of key species using the SPA and any movement to proven or possible functionally linked land.
- 1.3. For this reason, despite the immense effort to analyse the available data and the subsequent publication of this Phase 5 report, a precautionary approach to site evaluation is still required for many of the sites investigated. Many of the wetlands within the Severn Vale do not meet the qualifying criteria to be a SSSI for their bird interest alone but nevertheless Natural England recognise that they still provide a vital function allowing bird species of the Severn Estuary to complete their life cycle and to achieve favourable status. There is a need for further evidence to 1) confirm linkage or none to the SPA, and 2) to provide confirmation of the scale of any linkage.
- 1.4. Where the report shows that functionally linked land is proven or is possible, then mitigation may be required to protect the SPA. The ramifications of loss of functionally linked land differ from territory within the SPA as its function may, depending on the circumstances, be recreated elsewhere. In such circumstances replacement land could be regarded as an acceptable mitigation, unlike for SPA land. As a result for sites that have been flagged up as proven or possible FLL in Phase 5, it is advisable to undertake a Habitat Regulations Assessment including, if required, an Appropriate Assessment, in order to determine any necessary mitigation measures to be considered.

## 2.0 Executive summary

- 2.1. This work represents the fifth phase of a wider assessment to identify sites of importance to the bird populations within, and now outside of, the Severn Estuary Special Protection Area (SPA). It provides information on waterbird concentrations in winter, and where sufficient information was available, spring and autumn passage, in Gloucestershire and Worcestershire. Sites which have been found to provide breeding habitat for species that are known or could reasonably be expected to have spent the winter or passage periods on the SPA, are also highlighted.
- 2.2. The focus of the study was on the species named in the SPA and/or Site of Special Scientific Interest

(SSSI) citations, along with a select few additional species for which the Severn Estuary is considered to be becoming more important and/or for which regular movements of known individuals have been recorded, thereby indicating connectivity between sites and the SPA.

- 2.3. The main study area was the Severn and Avon Vales (hereafter collectively described as “the Vales”), with a focus on Wetland Bird Survey (WeBS) sites, both counted and uncounted, between Frampton Pools (Gloucestershire) at the downstream end and Grimley New Workings (Worcestershire) at the upstream end. The most northerly site included was Upton Warren, on the floodplain of the River Salwarpe, a tributary of the Severn. The WeBS site furthest upstream (east) on the River Avon was Pershore Wetland Meadows, although additional sites a few kilometres further upstream of Pershore that were considered to be of importance were identified in the course of this work.
- 2.4. The work had four principal objectives. These were, within the above study area, to:
  - Capture the knowledge of local WeBS counters (and subsequently other knowledgeable persons including wildfowlers and farmers) on bird numbers and movements within and between sites;
  - Map the locations of significant concentrations of birds listed on the SPA and/or SSSI citations as well as four other selected species (referred to in this report as Interest Species);
  - Describe the bird assemblage at each site and the circumstances in which large accumulations of birds have been recorded (where applicable), principally in response to surface water depths and notable flood events;
  - Record the characteristics of each site (e.g. habitat or feature) in terms of their appeal to the Interest Species. This covered both current conditions and, where information was available and relevant, recent historical conditions.
- 2.5. For those sites currently covered by WeBS volunteers, the local knowledge of the majority of counters was captured via a face-to-face, telephone or email interview to collect information on roosting and feeding site locations, assemblages and their characteristics, including whether or not bird numbers increased or decreased in response to weather conditions or any other stimuli, such as disturbance, as well as any indications of specific movements of individuals or flocks that had been noted between sites. The interviews were followed by a site visit to ground truth the information provided and collect any additional information.
- 2.6. For those WeBS sites within the Severn and Avon Vales that are not currently covered by WeBS volunteers, an assessment of their likely importance was made on the basis of a review of Desk Study information as outlined above, as well as site visits in the winter of 2019/20.
- 2.7. The number of survey visits to individual sites in winter 2019/20 varied between sites according to the results of interviews, the Desk Study review and, very importantly, the personal knowledge and understanding of bird movements gained by at least 40 years’ worth of observations by one of the co-authors of this report (Mike Smart).
- 2.8. This study also included a review of known movements of any wetland bird species (SPA Interest or not) between sites, and between sites and the SPA. Much of this review was based on an exhaustive examination of ringing recoveries for Gloucestershire and Worcestershire, mainly of wildfowl ringed principally at the Wildfowl and Wetlands Trust (WWT) Reserve at Slimbridge but

also at other sites both within the SPA and upstream of it in the Severn Vale, notably at Bredon's Hardwick by the Wychavon Ringing Group. Other locations around the UK where birds were ringed and then subsequently found within the area of study were also included.

- 2.9. Of the sites originally identified for study, 11 are proven to be Functionally Linked to the Severn Estuary SPA, as shown by regular or intermittent movements of individual birds and/or identifiable flocks. The importance of these linkages for supporting the life stages of the species concerned is either unknown or diminishing. A number of other additional sites were identified as having linkage with the SPA. Functional Linkage (whereby the site is essential for the SPA species to complete its life cycle) is considered likely for some of these sites.
- 2.10. Additional linkage between the SPA and Vale sites, and between Vale sites themselves is inferred by observations of bird numbers and of individuals of scarcer species (none of them SPA species) but such linkage is as yet unproven.
- 2.11. A surprising lack of Functional Linkage was found for what appeared to be sub-populations of some key SPA species, including Wigeon and Teal. For these species, although birds regularly using the upper reaches of the SPA were thought to commute to non-SPA sites nearby for feeding and roosting purposes, other groups of birds further up the catchment appeared to remain within clusters of key sites outside of the SPA. For Pintail, the origins of influxes of birds to certain sites remained a mystery and it has been speculated that these birds may be from a number of different locations in the west of England and Wales, not just the SPA.
- 2.12. An assessment of the importance of the sites considered under this Phase 5 was devised using criteria intended to provide a meaningful comparison with measures of importance assigned to high tide roosts identified during Phases 1 to 4. Whether a WeBS survey site or another location, sites included in the assessment needed to have had count data with the following characteristics:
  - Numbers (monthly maxima) of at least one Interest Species met or exceeded the equivalent of 1% of the SPA population (as indicated by the most recent 5 year rolling Mean Peak estimates provided in the latest *Wetland Birds in the UK Report*) at least once in the last 10 years. This criterion was further sub-divided into "low", "moderate" and "high" value on the basis of the percentage of counts when the monthly maxima reached or exceeded the 1% threshold in the three WeBS counting seasons;and/or
  - The sites regularly provided breeding habitat for SPA Interest Species within the last 10 years.
- 2.13. Reasons for inclusion of records within the last 10 years, as opposed to the last 5 years, as was the case for Phases 1-4, are given in the Report. Where data and anecdotal information existed, bird numbers recorded in excess of 10 years ago were also considered but in a number of cases the importance of a site had declined to a point where it could no longer be considered "important" currently. In this case, the historical importance of a site and the potential for restoration of its importance was considered.
- 2.14. On the basis of the assessment criteria chosen, the study identified a total of 21 sites within the Vales which are considered likely to have a "High" importance to at least one species for which the SPA and/or SSSI were designated. For each of these sites, count data suggest that they hold as many, or more than the equivalent of 1% of the SPA population of one or more of these species for

50% or more of months within one or more of the three WeBS counting seasons. It should be noted, however, that a number of limitations to this assessment were identified, as set out in the Discussion section of this report. Further explanation of the assessment process and outcomes is given in the report.

- 2.15. It should be emphasised that the above assessment does not prove that birds occupying areas within this part of the study originated from the SPA, unless there is empirical data on movements of individuals to indicate that this has occurred or at least was likely. Currently, there is relatively little information of this nature (although what is available was reviewed as part of this work) other than ringing return data for a small number of species ringed at a small number of sites (as described above), so the testimony of regular observers was considered to be a key part of the assessment.
- 2.16. A review of records in a wider area within the two counties was also carried out in order to identify additional areas that could be of importance to SPA species. There are a minimum of a further 52 sites elsewhere in the two Counties that regularly or intermittently hold important numbers of birds which could have functional linkages with the SPA, not including the Cotswold Water Park which would furnish a further hundred sites.
- 2.17. More research on the linkage between the SPA and the sites upstream of it, as well as further afield, needs to be done, preferably with tracking of individual birds in sufficient numbers as to provide more compelling evidence of the existence and importance of linkages. It is clear, however, that even if some sites or clusters of sites within this study are only infrequently linked to the SPA, or indeed not linked to it at all, their importance for the conservation of wintering waterbirds within the Midlands/ South West England is very great and worthy of protection and enhancement.
- 2.18. As has been identified by many research projects (e.g. Elmberg *et. al.* 2014, Howard *et. al.* 2018), the influence of climate change on the species assemblages of wintering and breeding areas, as well as migratory flyways, is becoming increasingly apparent. In the case of the SPA and areas around it, there are likely to be fewer of the wintering species originating from North East Europe, such as Bewick's Swan, White-fronted Goose and Dunlin, and an increasing occurrence of species with a more southerly distribution, such as Shoveler, Black-tailed Godwit, Ruff and perhaps Pintail. Any further research on the location and importance of Functionally Linked Land should, therefore, ensure that it takes account of these changes and places appropriate emphasis on the species assemblages likely to occur in the future.

## 3.0 Introduction

### Background

- 3.1. The Severn Estuary is a European Marine Site (EMS), designated as a Special Area of Conservation (SAC), Special Protection Area (SPA) and a Wetland of International Importance designated under the Ramsar Convention, underpinned by the Severn Estuary Site of Special Scientific Interest (SSSI), and includes the following SSSIs: Bridgwater Bay; Flat Holm; Severn Estuary; Steep Holm; Sully Island; Upper Severn Estuary; and Penarth Coast (Stroud *et al.* 2001). The Severn Estuary SPA is designated for seven qualifying species of waterfowl and the waterfowl assemblage, within which several species are named.
- 3.2. Across the floodplain of the Severn & Avon Vale only two SSSIs have been designated for wintering waterbirds – Walmore Common SSSI/SPA/Ramsar for Bewick's Swans and Ashleworth Ham SSSI for Wigeon. However, it is widely acknowledged that the Vale is an important landscape underpinning the bird features of the Severn Estuary SPA and Ramsar. This landscape, when extensively flooded by the River Severn and River Avon becomes a magnet and vital resource for waterbirds such as Bewick's Swan, Wigeon, Teal, Pintail, Curlew and Redshank etc. However, many of the individual wetlands are not big enough or consistent enough in their interest and importance to attract wildfowl in sufficient numbers to qualify as SSSIs in their own rights.
- 3.3. This report presents the findings of the fifth Phase of a wider assessment to identify sites of importance to the population of birds found, at least for part of their life cycle, on the Severn Estuary SPA. This report provides information on the known importance, or likely importance, of a series of sites to waterbirds found within areas that are not part of the SPA but which have either been proven to be linked to it, or for which there is some evidence of connectivity. The study area was centred within the Severn and Avon Vales but the importance of other locations within Gloucestershire and Worcestershire was also examined briefly. Sites that have no apparent functional links with the SPA, but which have significant nature conservation importance, are also identified and described. It should be noted that, although mentioned, no detailed reference is made in this report to the importance of the Thames valley as a wintering area or migration route for the species considered. Whilst the importance of sites such as the Cotswold Water Park is highlighted in a later section, this is a subject deserving attention in its own right, and we understand that this may be the subject of a separate study commissioned by Natural England.
- 3.4. The previous four Phases of the project looked specifically at high tide roosts within, or immediately adjacent to the estuary. Phase 1 covered Brean Down to Clevedon (Latham, 2015), Phase 2 covered Clevedon to Oldbury, Phase 3 covered Bridgwater Bay (Woodward *et al.* 2016) and Phase 4 covered Beachley to Longney (Palmer *et al.* 2017). Phase 5 looked at the function and importance of a series of sites inland of the estuary and adjacent to it, or upstream of the SPA. The area of principal interest was the Severn and Avon Vales from sites within the Forest of Dean District upstream as far as Grimley and Upton Warren on the Severn and Pershore on the Avon.
- 3.5. This phase covered in detail the core areas listed in Table 2.1 below, many of which are WeBS counting sites:

**Table 2.1 – Core areas assessed in this Phase**

<b>Site no.</b>	<b>Site name</b>	<b>Counting status</b>	<b>Designation (if any)</b>
15014	Horsbere Brook Flood Alleviation Area	WeBS – counted	-
15037	Alney Island	WeBS – counted (2020)	-
15101	Witcombe Reservoir	WeBS - counted	-
15201	Frampton Pools	WeBS - counted	SSSI
15301	Walmore Common	WeBS - counted	SSSI, SPA, Ramsar site
15302	River Frome - Wheatenhurst	WeBS - uncounted	-
15303	Minsterworth & Corn Ham	WeBS - uncounted	-
15304	Wilmore, near Rodley (Rodley and Wilmer Common)	WeBS - counted	-
15305	Mitton (Tewkesbury)	WeBS - uncounted	-
15311	Elmore Marsh	WeBS - counted	-
15319	River Severn - Gloucester to Maisemore	WeBS - counted	-
15321	Coombe Hill Meadows	WeBS - counted	SSSI
15322	Ashleworth Ham	WeBS - counted	SSSI
15323	River Severn - Haw Bridge to Tewkesbury	WeBS - uncounted	-
15324	Chelt & Leigh Meadows (and Cobney Meadows)	WeBS - counted	-
40001	Pershore Wetland Meadows	WeBS - counted	-
40003	Bow Farm (Ripple Lakes)	WeBS - counted	-
40004	Oakley pool	WeBS - counted	SSSI
40007	John Bennett nature reserve	WeBS - counted	-
40051	Great Pool Westwood Park	WeBS - counted	SSSI
40056	Upton Warren LNR	WeBS - counted	SSSI
40057	Kinsham Pool <sup>1</sup>	WeBS - counted	-
40058	Gwen Finch nature reserve	WeBS - counted	-
40059	Grimley New Workings	WeBS - counted	-
40062	Kemerton Lake	WeBS - uncounted	-
40090	Pirton Pool	WeBS - counted	-
40201	Beckford Nature Reserve	WeBS - counted	-
40203	Clifton Pits	WeBS - counted	-
40260	Bredon's Hardwick Gravel Pits	WeBS - counted	-
40304	Longdon Marsh (north of Marsh Lane)	WeBS - counted	-
40305	Hill Court Farm Reserve (Longdon & Eldersfield Marshes)	WeBS - counted	-
40353	Avon Meadows - Twyning and Bredon's Hardwick	WeBS - uncounted	-
40363	River Severn Northwick to Diglis Lock	WeBS - counted	SSSI
x	Severn Ham, Tewkesbury	-	SSSI
x	Upham Meadow & summer Leasow	-	SSSI
x	Upton Ham	-	SSSI

<sup>1</sup> See the later site account for 40057 Kinsham Pool and 40062 Kemerton Lake for a note on potential confusion between these two sites.

- 3.6. The following additional sites within the Severn and Avon Vales were also investigated, following a review of the data available:

Table 2.2 – List of additional sites reviewed

Asham Meadows	Grimley Wild Goose
Chaceley flood	Kempsey Lower Ham
Craycombe	Linton Farm Reservoir
Croome River	Lower Lode area
Eckington Marshes	Lower Moor
Elmore Back	Rectory Farm Meadows SSSI
Fleet Lane Meadows	River Leadon
Grimley Brick Pits SSSI	Ryall Pits
Grimley Church Farm Pools	Shuthonger
Grimley Holt Sling Pool	The Moors, Slimbridge
Grimley Island Pool	Throckmorton Landfill and Lagoons
Grimley Wagon Wheel Lane Pools	Wood Norton River Meadows

- 3.7. Maps showing the WeBS Sectors and additional areas of importance are included in Appendix 1. All lie entirely within the counties of either Gloucestershire or Worcestershire.
- 3.8. The work had four principal objectives. These were to, within the above study area:
- Capture the knowledge of local WeBS counters (and subsequently other knowledgeable persons including wildfowling and farmers) regarding bird numbers and movements between the SPA and land adjacent to it/ upstream within the two river valleys, as well as bird movements and numbers concerned between these sites;
  - Assess and map the known and potential connectivity between the SPA and the sites under review;
  - Describe the bird assemblage at each site (assessment criteria for importance were devised to assist in the characterisation of the sites);
  - Record the characteristics of each site (e.g. habitat or feature).
- 3.9. The findings of this project will help to inform:
- Modelling and mapping of the Severn & Avon Vales' Functionally Linked Land (FLL). The Natural England Remote Sensing unit will use the shapefiles provided to model likely foraging/supporting areas around the estuary. Fields will be prioritised according to their apparent, or possible importance to the SPA populations.
  - To provide evidence to enable Natural England to critically review the designations of wetlands across the Severn & Avon Vale as well as strengthen the designation of the Severn Estuary SPA, SAC and Ramsar Site.
  - To provide evidence and support to underpin the Local Plans of the Borough and District Councils within which the Vales lie, in order to assist with Recreational Mitigation Strategies to

meet their Habitats Regulations Assessment (HRA) requirements of local planning allocations for housing development. In addition, this will inform proposals for a Severn Vale Regional Park<sup>2</sup>.

- To help local partnership projects to target landholdings as part of the Severn Guardians Facilitation Fund<sup>3</sup>, Waterscapes project<sup>4</sup>, Curlew project<sup>5</sup> and Severn Catchment Based Approach<sup>6</sup> (CaBA) to nature conservation. Natural England is aiming to develop appropriate farm clusters around the core FLLs and to secure a long term legacy of farm clusters that are eligible for the future ELMS (Environment Land Management Scheme) and to help deliver the Government's 25 Year Environment Plan.
- To support and inform HRAs of partners with S28G responsibilities - Environment Agency, Lower Severn Drainage Board and Canal and River Trust. Particularly to support routine flood maintenance programmes maintaining assets on the estuary and upstream along the River Severn / River Avon. This work will also assist NE when undertaking HRAs for wildlife licences that may be impacting FLL.

### **Species of interest**

- 3.10. 28 species of interest were selected for study within the remit of this work. These were the SPA Qualifying Species, the SPA Assemblage Species, those listed in the SSSI citation for the estuary, three additional wader species (Black-tailed Godwit, Golden Plover and Ruff) and Whooper Swan, all species that are part of the Non-listed waterfowl assemblage. Collectively, these are referred to throughout report as SPA Interest Species.
- 3.11. Additional brief commentary on a suite of other species is also provided where appropriate, particularly with regard to the importance of the study area for migratory wetland birds and for breeding waders.

### **SPA Qualifying Species**

- 3.12. In the most recent update of the Natura 2000 Standard data form for the Severn Estuary, submitted to the European Commission on 22/12/2015 (JNCC 2016), seven species are specifically named as qualifying features (see Table 2.3 below). The Severn Estuary qualifies as an SPA as it supports important populations of these species, which are referred to in Article 4 of Directive 2009/147/EC and are listed in Annex II of Directive 92/43/EEC. Ringed Plover is also included here because the 2009 advice issued under Regulation 33(2)(a) of the Conservation (Natural Habitats, &c.) Regulations 1994, as amended, lists this species as a qualifying species added during the 2001 SPA review. These species are referred to in this report as "SPA Qualifying Species".

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<sup>2</sup> <https://glos2050.com/ideas/regional-parks/>

<sup>3</sup> <https://www.farmerclusters.com/profiles/south-west/csff070015-severn-vale-guardians/>

<sup>4</sup> <https://www.wwt.org.uk/our-work/wetland-conservation-unit/programmes/waterscapes/>

<sup>5</sup> <https://www.wwt.org.uk/our-work/projects/eurasian-curlew-recovery/>

<sup>6</sup> <https://catchmentbasedapproach.org/get-involved/severn-vale/>

**Table 2.3 SPA qualifying species listed for the Severn Estuary on the Natura 2000 standard data form<sup>7</sup> and/or added as part of the 2001 SPA review**

English name	Scientific name	Type
Gadwall	<i>Anas strepera</i>	Non-breeding population <sup>a</sup>
European White-fronted Goose	<i>Anser albifrons albifrons</i>	Non-breeding population <sup>a</sup>
Dunlin	<i>Calidris alpina alpina</i> <sup>8</sup>	Non-breeding population <sup>a</sup>
Bewick's Swan	<i>Cygnus columbianus</i>	Non-breeding population <sup>a</sup>
Shelduck	<i>Tadorna tadorna</i>	Non-breeding population <sup>a</sup>
Redshank	<i>Tringa totanus</i>	Non-breeding population <sup>a</sup>
Ringed Plover	<i>Charadrius hiaticula</i>	On passage

<sup>a</sup> Specified as "wintering" on the Natura 2000 data form, but the term "non-breeding" is now preferred, e.g. on the Site Conservation Objectives (Natural England, 2016a).

### **SPA Species Assemblage**

- 3.13. In addition, the Severn Estuary is also notified as a SPA as a result of the "waterfowl assemblage", as it regularly supports more than 20,000 individuals. On the most recent Natura 2000 standard data form<sup>9</sup>, the waterfowl assemblage population size was stated as 84,317, but the latest Wetland Birds in the UK report ((Frost *et. al.* 2020) cites the figure of 86,836.
- 3.14. The most recent form does not include a list of species which make up the waterfowl assemblage for the Severn Estuary. However, the 2001 SPA Review (Stroud *et al.* 2001) listed 12 additional species (see Table 2.4 below), which are referred to in this report as "SPA Waterfowl Assemblage Species".

**Table 2.4 SPA Waterfowl Assemblage Species listed for the Severn Estuary by the 2001 SPA Review<sup>10</sup>**

English Name	Scientific name
Wigeon	<i>Anas penelope</i>
Teal	<i>Anas crecca</i>
Mallard	<i>Anas platyrhynchos</i>
Pintail	<i>Anas acuta</i>
Shoveler	<i>Anas clypeata</i>
Pochard	<i>Aythya ferina</i>
Tufted Duck	<i>Aythya fuligula</i>
Grey Plover	<i>Pluvialis squatarola</i>
Lapwing	<i>Vanellus vanellus</i>
Whimbrel	<i>Numenius phaeopus</i>
Curlew	<i>Numenius arquata</i>
Spotted Redshank	<i>Tringa erythropus</i>

<sup>7</sup> <http://jncc.defra.gov.uk/pdf/SPA/UK9015022.pdf>

<sup>8</sup> Two other Dunlin sub-species occur in the Severn Estuary SPA whilst on passage. See the account for this species in Section 4 below.

<sup>9</sup> <http://jncc.defra.gov.uk/pdf/SPA/UK9015022.pdf>

<sup>10</sup> Stroud *et al.* (2001)

**SSSI Species**

- 3.15. The SSSI citations for the Severn Estuary and the Upper Severn Estuary<sup>11</sup> specifically list a number of species of interest (Table 2.5).

**Table 2.5 Species listed in the Severn Estuary SSSI citations**

English Name	Scientific name	Severn Estuary SSSI	Upper Severn Estuary SSSI
Bewick's Swan	<i>Cygnus columbianus</i>		✓
European White-fronted Goose	<i>Anser albifrons albifrons</i>		✓
Lesser White-fronted Goose	<i>Anser erythropus</i>		✓
Pink-footed Goose	<i>Anser brachyrhynchus</i>		✓
Shelduck	<i>Tadorna tadorna</i>	✓	
Gadwall	<i>Anas strepera</i>		✓
Shoveler	<i>Anas clypeata</i>		✓
Pochard	<i>Aythya ferina</i>		✓
Wigeon	<i>Anas penelope</i>	✓	✓
Teal	<i>Anas crecca</i>		✓
Mallard	<i>Anas platyrhynchos</i>		✓
Pintail	<i>Anas acuta</i>		✓
Tufted Duck	<i>Aythya fuligula</i>		✓
Grey Plover	<i>Pluvialis squatarola</i>	✓	
Ringed Plover	<i>Charadrius hiaticula</i>	✓	
Whimbrel	<i>Numenius phaeopus</i>	✓	
Curlew	<i>Numenius arquata</i>	✓	✓
Turnstone	<i>Arenaria interpres</i>	✓	
Knot	<i>Calidris canutus</i>	✓	
Dunlin	<i>Calidris alpina alpina</i>	✓	✓
Redshank	<i>Tringa totanus</i>	✓	✓
Snipe	<i>Gallinago gallinago</i>	✓	✓

**Non-listed waterfowl assemblage species**

- 3.16. The waterfowl assemblage includes any native waterfowl species that are present at a site (non-native waterfowl are normally excluded, and gulls are also excluded from the WeBS waterfowl assemblage calculations as counting of gulls is optional in WeBS). Other species which are not specifically listed as part of the waterfowl assemblage in the SPA citations have also been recorded as part of the Functionally Linked Land site assemblage in this report, where they occur in association with SPA and/ or SSSI species. A full list of these species using each site is included in the tables relating to the site.
- 3.17. Black-tailed Godwit (*Limosa limosa*), Golden Plover (*Pluvialis apricaria*), Ruff (*Philomachus pugnax*) and Whooper Swan (*Cygnus cygnus*) were selected from the non-listed waterfowl assemblage species list for particular consideration because they are either species that have increased in number locally in recent years (the waders) or are regularly occurring and conspicuous enough to be a good indicator of connectivity within the landscape (Whooper Swan) – Increases in

Black-tailed Godwit and Golden Plover have been remarked on particularly for the Wildfowl and Wetlands Trust (WWT) Slimbridge reserve (Smart, 2012 and Kirk and Phillips, 2013). They were chosen to provide an illustration of the importance of the estuary for non-listed species. Referred throughout the report as Interest Species. Others could have been chosen (e.g. Avocet, *Recurvirostra avosetta*) and whilst these are considered briefly, it was not within the brief of the work to undertake an exhaustive examination of the significance of sites for all species in the wetland bird assemblage.

## Definition of terms

### ***Definition of Functionally Linked Land***

- 3.18. The following definition, which has been edited for the sake of brevity, is taken from the Natural England Commissioned Report NECR207 (Chapman and Tyldesley, 2016), pp.8-10:
- 3.19. The term “functional linkage” refers to the role or “function” that land or sea beyond the boundary of a European site might fulfil in terms of supporting the populations for which the site was designated or classified. Such an area of land or sea is therefore “linked” to the site in question because it provides a (potentially important) role in maintaining or restoring a protected population at favourable conservation status.
- 3.20. Whilst the boundary of a European site will usually be drawn to include key supporting habitat for a qualifying species, this cannot always be the case where the population for which a site is designated or classified is particularly mobile. Individuals of the population will not necessarily remain in the site all the time. Sometimes, the mobility of qualifying species is considerable and may extend so far from the key habitat that forms the SAC or SPA that it would be entirely impractical to attempt to designate or classify all of the land or sea that may conceivably be used by the species.
- 3.21. This approach to the definition of boundaries for SACs, where a qualifying species is mobile, is reflected in Article 4(1) of the Habitats Directive.... Likewise, the Birds Directive refers not only to the protection of species within special protection areas, with reference to the network of SPAs, Article 4(4) provides:
- “...Outside these protection areas, Member States<sup>12</sup> shall also strive to avoid pollution or deterioration of habitats”.*
- 3.22. In practice, therefore...supporting habitat in areas beyond the boundary of a SAC or SPA which are connected with or “functionally linked” to the life and reproduction of a population for which a site has been designated or classified should be taken into account in a Habitats Regulations Assessment (HRA). However, that assessment will need to determine how critical the area may be to the population of the qualifying species and whether the area is necessary to maintain or restore the favourable conservation status of the species. Effects which would not be acceptable within the boundary of a European site may or may not be acceptable if they occur on functionally linked land or sea.

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<sup>12</sup> At the time of writing it has been assumed that in the post-Brexit era, the protection of Natura 2000 sites will be maintained by the UK and that therefore this statement will, in a modified form, still apply to this country.



### **Use of Functionally Linked Land by SPA species**

- 3.23. Birds for which the Severn Estuary SPA was designated may use land that is functionally linked to it for a number of different reasons during their life cycles. The SPA was designated for its importance to wintering and passage species, and therefore the importance of FLL is primarily for the same purposes. During winter and spring or autumn passage, the main function of any land or water occupied by SPA species will be for roosting, feeding or both. For each site considered, a distinction is made in this report where information is available to indicate whether birds use the sites predominantly for one or the other of these functions. Where no distinction is made, it should be assumed that both roosting and feeding do, or could, occur.
- 3.24. There is also evidence of functional linkage between the SPA and breeding sites within the study area, principally for (Eurasian) Curlew (*Numenius arquata*). Some individuals of this species are known to winter on the estuary and to breed in lowland meadow habitats in the Severn and Avon Vales. Clearly, therefore, these areas outside of the SPA contribute to the maintenance or restoration of a protected population at favourable conservation status that is referred to above.

### **Importance of Functionally Linked Land to SPA species**

- 3.25. The presence of species of interest at a site is not necessarily an indication of its importance unless assessment criteria are applied. In the previous four Phases of this work, which concentrated on high tide roosts within, or immediately adjacent to the SPA itself, the following criteria were used:
- Roost sites identified were classified as Primary Roosts if they regularly (i.e. presence is 50% or more) held more than 1% of the SPA population of one or more of the species listed in the tables below. This assessment followed that set out in Woodward et. al. (2016), although in Phase 4, equal weighting was given to SPA and SSSI species, as well as the two additional species of interest (Black-tailed Godwit and Golden Plover) that were not included in either list.
  - Possible Primary Roosts were identified when the count exceeded the threshold for a Primary Roost on at least one occasion, but the species was not regularly present (i.e. presence is < 50%).
  - Passage roost sites were identified as Primary or Possible Primary Roosts (passage) based on the estimates and % presence values for the passage period only.
  - Non-Primary Roosts - all locations where roosting birds were found but where numbers were below the 1% SPA population threshold.
  - Historic Primary and Possible Primary Roosts. These were sites identified by the counters or by desk study information to have met the criteria described above in the past but which were no longer used, or no longer occupied by significant numbers of roosting birds, or are no longer used at all.
- 3.26. Relatively stable conditions were assumed for sites within and immediately adjacent to the SPA, whereas for Functionally Linked Land it may be the case that conditions are only favourable to wetland birds during certain conditions. Within the Severn and Avon floodplains, water level is likely to be the key driver behind whether or not land is used by wetland birds from the SPA or indeed elsewhere. Other factors clearly do come into play in addition to this, including land management practices and levels of disturbance. All of these factors are considered in this review and the criteria for identification of areas of importance (proven by known movements of identifiable individuals or

flocks, or unproven but implied by numbers present and/or anecdotal observations) have been changed to account for the changeable conditions that are likely within floodplain sites. The criteria chosen for this study were:

- Numbers (monthly maxima) of at least one Interest Species met or exceeded the equivalent of 1% of the SPA population for that species (as indicated by the most recent 5 year rolling Mean Peak estimates provided in the latest Wetland Birds in the UK Report) at least once in the last 10 years; and/or
- The sites provided breeding habitat for SPA Interest Species within the last 10 years.

- 3.27. Assuming importance on the basis of a minimum of one record meeting or exceeding the 1% criterion, as opposed to the threshold given under Phases 1-4, is a reflection of the intermittent nature of FLL use and attempts to account for what may be a small data set and/or the possibility that counts were predominantly carried out during time periods when site conditions were sub-optimal. This could be the case particularly for regularly counted WeBS sites where Core Count dates are specified by the organisers (mainly tide-related) rather than being done in response to conditions likely to result in larger than usual numbers of birds. This does not mean that all sites meeting this revised criterion have equal importance. Numbers of months in which the 1% criterion was met or exceeded are given to better define importance, as is an assessment of whether the counts were representative of more regular occupancy than was recorded. A method for objective assessment of the value of the main sites to Interest Species has also been made by a detailed examination of rates of occurrence at the 1% criterion. This is set out in the Methods Section of this report.
- 3.28. Inclusion in the assessment criteria of records within the last 10 years, as opposed to the last 5 years, as was the case for Phases 1-4, was to take account of the likely intermittent value of sites as described above.
- 3.29. Where data and anecdotal information existed, bird movements recorded in excess of 10 years ago were also considered but in a number of cases the importance of a site had declined to a point where it could no longer be considered “important” currently. In this case, the historical importance of a site and the potential for restoration of its importance was considered.
- 3.30. For the present study, the SPA population is based on the five year Mean Peak counts for the Severn Estuary SPA, covering 2014/15 to 2018/19 (Frost et al. 2019). Figures for the next five year period became available during the writeup of this work but were not used due to a lack of time to adjust the calculations used. The population figures used are shown in Table 3.1 below. It should be noted that the 1% value for some species is less than 1, e.g. for Pink-footed Goose, Lesser White-fronted Goose and Whooper Swan. Where this is the case, a minimum of a single bird is taken to represent the most appropriate value for assessment.
- 3.31. Additional consideration has been given to the other species named in the SSSI citations (Turnstone, Knot and Snipe) and four other species that are not named on either the SPA or the SSSI citations. Three of these species are considered to have increased in number on the estuary in recent years. These are Black-tailed Godwit, Ruff and Golden Plover. Whooper Swan is also included because the number of birds concerned is low and therefore individuals can be readily identified and movements between sites observed.

**Table 3.1: Five year Mean Peak counts for the Severn Estuary SPA (2014/15 to 2018/19), used to identify actual or potential Functionally Linked Land**

Species	SPA Qualifying	SPA Assemblage	SSSI	Non-list	5yr Mean Peak	1% SPA
Pink-footed Goose			1		1	1
European White-fronted Goose	1		1		149	1
Lesser White-fronted Goose			1		0	1
Bewick's Swan	1		1		149	1
Whooper Swan				1	3	1
Shelduck	1		1		5,462	55
Shoveler		1	1		486	5
Gadwall	1		1		191	2
Wigeon		1	1		7,881	79
Mallard		1	1		2,379	24
Pintail		1	1		786	8
Teal		1	1		5,028	50
Pochard		1	1		254	3
Tufted Duck		1	1		871	9
Lapwing		1			11,383	114
Golden Plover				1	3325	33
Grey Plover		1	1		334	3
Ringed Plover	1		1		1,034	10
Whimbrel		1	1		245	2
Curlew		1	1		3,398	34
Black-tailed Godwit				1	863	9
Turnstone			1		580	6
Knot			1		2133	21
Ruff				1	34	1
Dunlin	1		1		30,204	302
Snipe			1		503	5
Redshank	1		1		5,791	58
Spotted Redshank	1				7	1

3.32. Collectively, the 28 species listed above are referred to in this report as Interest Species.

### Definition of other terms

3.33. The Guidance on WeBS data release<sup>13</sup> states that “*The year is divided into three functional counting seasons: autumn (July to October inclusive to describe autumn passage); winter (November to March inclusive to describe the wintering population) and spring (April to June inclusive to describe spring passage)*”. Wherever winter, autumn and spring are referred to in this report, these are the

<sup>13</sup> <https://www.bto.org/volunteer-surveys/webs/data/submit-data-request>

periods referred to.

- 3.34. It should be noted that although autumn and spring periods are generally described as “passage” periods, some birds may not be on migration during these months. For instance, many waders such as Curlew may begin to arrive on the estuary, as well as elsewhere, and establish non-breeding populations that remain through the winter from as early as the first week of June, with birds beginning to depart for breeding grounds as early as February. Birds breeding in Scandinavia depart as late as the third week in April<sup>14</sup>. Clearly, demarcation of the seasons as described by WeBS is not always strictly applicable to actual bird movements.
- 3.35. The convention adopted by the Environment Agency for description of riverbank sides is used in this report. Hence, where reference is made to the “left bank” this means the bank on the left side when looking downstream from any point on the river. The “right bank” is on the right-hand side when looking downstream.

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<sup>14</sup> John Sanders, personal communication

## 4.0 Methods

### Overall approach to obtaining relevant information

- 4.1. Empirical data and qualitative observations were combined with a literature review to present an overview of the evidence suggesting (i) connectivity between areas outside the SPA and the designated site, as well as between sites within the study area (the Severn and Avon Vales) (ii) the actual or potential importance of these sites to the integrity of the SPA, as well as their importance in their own right, and (iii) the locations of any other sites that could be Functionally Linked to the SPA and for which desk study records suggest such sites could have significant importance in fulfilling that function. Importance of sites was assessed in terms of the numbers of individuals of each SPA species present, as set out in Section 3 above. The reasons why numbers of these birds did or did not vary within winter periods were examined as far as could be achieved with the evidence available.
- 4.2. Desk study data available was as follows:
- Literature obtained via web searches and from contacts with researchers in the field;
  - Data from the Wetland Birds Survey (WeBS) database for sites under consideration;
  - Ringing and recovery data held by the British Trust for Ornithology (BTO), supplied to Link Ecology via Natural England;
  - Data on wetland bird counts supplied by the County Bird Recorders for Gloucestershire and Worcestershire;
  - Additional counts and databases supplied by experienced local ornithologists and site managers.
- 4.3. Additional quantitative data used and qualitative observations considered were:
- Interviews with WeBS counters for the sites under consideration;
  - Consultation with experienced local ornithologists, including the WeBS co-ordinators for Gloucestershire and Worcestershire;
  - Consultation with highly experienced wildfowlers, as well as some farmers who have noted bird behaviour and movement on their land;
  - Visits by the authors to the WeBS sites (counted and uncounted) as well as a further three sites which were not listed as WeBS counting sites, in winter 2019/ 20.

### Desk Study

- 4.4. The literature review entailed examination of scientific papers relating to the ecology, movements and diet of the SPA Interest species named in Section 2 above. The review entailed a search for relevant papers was primarily done using the <https://www.academia.edu/> web site and by discussion with relevant experts, principally staff at the Wildfowl and Wetlands Trust, but also active researchers from both academic and non-academic backgrounds.
- 4.5. Data on bird species and numbers for the Severn and Avon Vales, as well as sites elsewhere in

Gloucestershire and Worcestershire were obtained, where available, for the period between winter 2010/2011 and winter 2019/2020. This time period was chosen to reflect, as accurately as possible, conditions within the study area in recent years. In previous Phases of this work, the preceding five years' worth of data were used in order to make comparisons with the 5-year mean peak data for the Severn Estuary presented in the latest *Wetland Birds in the UK* report. In this Phase, it was recognised that a larger data set would be appropriate because the value of the sites under consideration might have been missed, or at least could have been less well characterised if information from a longer time period was not examined.

- 4.6. Reference is made in this report to older records, but some of the sites under consideration were considered to have changed over the years preceding 2010, to the extent that their appeal to the Interest Species would have increased or decreased to the extent that a current "baseline" condition for the sites could not be established using these records. Historic significance was, however, considered to be an important context to highlight.
- 4.7. Data were obtained from three principal sources. Firstly, WeBS Core Count and Supplementary Count data was requested from the British Trust for Ornithology (BTO), for the period 2011-20<sup>15</sup>. Secondly, all recorded ringing recoveries (all years available) of wetland bird species within Gloucestershire and Worcestershire were obtained from the BTO.
- 4.8. Thirdly, a data request for records of wetland bird species recorded within Gloucestershire and Worcestershire over the last 10 years was made to the County Bird Recorders, Richard Baatsen and Steven Payne. A full data set was supplied for Gloucestershire and for Worcestershire data for 2012 to 2018 were available. An additional data set for Pershore Wetland Meadows was obtained from the recorder for that site, Mr. Richard Stott.
- 4.9. Local ornithologists were approached individually for any additional data of relevance that was not otherwise obtainable. This related mainly to the most recent counts and casual observations made outside of the WeBS counting periods.
- 4.10. Additional data and observations for sites dating back, at least in some cases, decades before 2010, were examined to determine patterns of use that may not otherwise have been discernible or confirmable in a shorter time period. The main source of this data was an extended data set provided by Richard Baatsen and detailed notes taken by Mike Smart.

## Field work

- 4.11. In order to gain an insight into bird numbers, seasonality of use, any observations of movements into and out of sites, use of sites by birds present (roosting, feeding, breeding etc.), interviews were held with WeBS counters wherever possible. Counters were interviewed (face to face, via telephone or via e-mail) for 18 of the 25 counted sites and one uncounted site (Pershore Wetland Meadows) for which extensive records had been kept but not submitted to WeBS. Three counters were not contacted because data indicated strongly that their sites were clearly of very limited relevance;

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<sup>15</sup> Data were provided by WeBS, a Partnership jointly funded by the British Trust for Ornithology, Royal Society for the Protection of Birds and Joint Nature Conservation Committee, in association with The Wildfowl & Wetlands Trust, with fieldwork conducted by volunteers. Although WeBS data are presented within this report, in some cases the figures may not have been fully checked and validated. Therefore, for any detailed analyses of WeBS data, enquiries should be directed to the WeBS team at the British Trust for Ornithology, The Nunnery, Thetford, IP24 2PU (webs@bto.org).

counters for a further three sites did not respond to a request for information and a final site (Alney Island) was only added to the WeBS list during winter 2019/20 and so had no regular counter to interview.

- 4.12. Visits by the authors to 33 of the 34 WeBS counting sites (counted and uncounted), as well as a further three sites which were not listed as WeBS counting sites, were carried out on at least one occasion, to undertake a site assessment and a sample count, in winter 2019/20. For sites that were known or suspected to be host to large numbers of birds during certain conditions, multiple visits were made to confirm their importance.
- 4.13. A full list of the sites considered under this work is given in Section 2 of this report (above).

### ***Limitations to field work***

- 4.14. The winter of 2019/20 was characterised by heavy rain and flooding. In many respects, therefore, this was an exceptional season and may not be considered to be a good example of “normal” site conditions. However, it did provide conditions in which predicted bird movements would be expected to occur and therefore was considered to be a perfect opportunity to test this prediction. Ideally, counts at all sites would have been concurrent and more frequent than could be achieved by a two-person survey team. By necessity, and in response to the extensive experience of one of the team members (Mike Smart), it was decided that a smaller sub-set of the sites likely to be host to the majority of birds wintering in the Vales would be surveyed more intensively than the peripheral sites with less apparent value. This approach could have introduced a significant bias to the field work element of the project, but we remained in contact with local observers throughout the winter and were able to respond to any indications that bird numbers were increasing or decreasing by either obtaining counts from those observers or carrying out our own counts when such counts were considered to be representative of the increases in number predicted to occur in response to the weather.
- 4.15. The Coronavirus pandemic of 2019/20 resulted in lockdown restrictions on movement that curtailed some of the fieldwork we had intended to do, but also prevented us from obtaining some of the data that we had hoped to make use of. Face-to-face interviews with key ornithologists, both professional and voluntary, were no longer possible. Some of the contacts we made were, therefore, more limited than would have ideally been the case.

## **Analysis and data/ evidence presentation**

### ***Overview***

- 4.16. The results of the desk study, interviews conducted and field surveys are presented in two sections of the report. These cover a review of known bird movements between the SPA and the Vales (section 4) and a description and evaluation of the sites under consideration (section 5), as described below.
- 4.17. In describing bird movements in a section of its own and then describing the sites, some of the information obtained during this study is sometimes, by necessity, repeated in both sections. Cross-reference between the two sections is made where necessary.

### ***Bird movements in the Severn and Avon Vales***

- 4.18. This section of the report provides species accounts that include a brief literature review of the ecology of the Interest Species and a review of current knowledge of bird movements, principally within the Severn and Avon Vales but also across the two Counties under consideration and between these areas and the SPA itself. The accounts include a summary of historic observations, WeBS count data, ringing recoveries, County records and the results of surveys in 2019/20.

### ***Mapping of known and implied connectivity between sites in the Severn and Avon Vales and the SPA and between non-SPA sites***

- 4.19. Known connectivity between the SPA and the sites under consideration, as well as for a limited number of additional sites, was plotted for the Interest Species. Results of this exercise are shown in Appendix 1. It should be noted that evidence for movements outside of the UK are not shown, but for some species there are large numbers of such records. It should also be noted that lines shown on the maps are not indicative of actual flight lines, they are simply an illustration of connectivity between sites shown as a straight line between locations where observations were made.

- 4.20. For all species, the following data were used:

- Movements within winters and between winters and between sites were determined by examination of ring recoveries, where available. The majority of birds traced in this way were ringed at WWT Slimbridge, Ashleworth GWT Reserve or at Bredon's Hardwick.
- Recorded observations of identifiable individuals that were un-ringed but for which movements could be documented. This applied most readily to Bewick's and Whooper Swans. A number of non-Interest Species that typically occur in low numbers and for which observations across a number of sites can readily be attributable to the same birds also fall into this category but their movements are only described in the text of the species and site accounts. Examples of this include a male Smew observed in the area just upstream of Tewkesbury and a first-winter Long-tailed Duck seen at Bow Farm (Ripple Lakes) and Clifton Pits. Both birds were tracked by different observers in winter 2019/20.

- 4.21. An assessment of the importance of the observations made is provided, in either the relevant species accounts or the site accounts, not on the maps. However, movement types indicative of actual or possible Functional Linkage (i.e. site(s) probably provide a ...*(potentially important) role in maintaining or restoring a protected population at favourable conservation status...* as per the definition of Functionally Linked Land given in Section 2 of this report.) with the SPA, and with each other, are categorised as one of the following:

- Proven movement regular – this applies where movements of identifiable individuals or flocks were recorded moving between sites on a regular basis, suggesting that there is an important Functional Link between those sites. For some species, notably White-fronted Goose and Bewick's Swan, regular movements outside of the SPA and the sites closest to it are now, to a large extent, historic, for reasons given in the species accounts. This is shown on the maps where relevant.
- Proven movement irregular – this applies where movements of identifiable individuals or flocks were recorded moving between sites on an irregular basis. Any Functional Link may be less

important than one shown by proven movements that are regular (the first category, described above), but many of the sites described in this report are intermittently used under certain precise conditions and irregularity of use can therefore be a misleading descriptor of importance if the sites concerned provide the best, or only foraging or roosting resource available under those conditions. This category should therefore not be interpreted as being of reduced importance.

- Proven movement, regularity unknown – this applies to observations of birds identifiable as individuals or flocks where the regularity of movement between sites cannot be determined from the information available. It most readily applies to the majority of ring recoveries from shooting, where the movement of a bird can only be confirmed as having happened a minimum of once.
- Implied movements – regular and irregular – these categories are based on records from one or more observers where movements cannot be assigned with certainty to individuals or flocks of birds but where there is considered to be a likelihood that observations are of movements indicative of Functional Linkage. An example of this is observations of Shelduck at inland sites. This species has a clear preference for estuarine habitats in winter and the occurrence of birds away from the SPA but near to it suggests (but by no means proves) that there is exchange of birds between the two areas.

4.22. The terms “regular” and “irregular” are either quantitative – based on observations of either (i) ringed (or otherwise individually marked, including GPS tagged) individuals identified in the field or (ii) numbers of ring recoveries from shot birds or qualitative - based on observations over months or years by one or more bird watchers.

4.23. Where movements of certain species can only be described as “Implied” (i.e. there is no other more compelling evidence of movements) maps are not provided. This applies to most of the migratory waders covered in the report, few or none of which have ever been identified from rings or GPS tracking.

4.24. Movements on the maps are further qualified and illustrated with symbology to indicate the seasons within which observations were made, as follows:

- Within winter – this is the most reliable category to describe a Functional Linkage because it shows that the bird(s) concerned used more than one site within the same winter and therefore may have been to some extent dependent on favourable conditions at both to ensure their survival.
- Between winters – this category provides less compelling evidence of Functional Linkage because, as explained in the accounts for certain species at least, between-winter fidelity of individuals to sites or even regions within the UK or Europe as a whole can be variable. It is therefore possible that certain individuals or groups may spend the winter, or part of it, within and/or adjacent to the SPA in one year but be found at an entirely different location in another year.
- On passage – There are many records of implied movements of birds on passage and a few of identifiable individuals. These are illustrated where applicable. By definition, birds on passage may only be found at a site for a limited period because they are moving through an area between wintering and breeding areas, so the amount of time spent at any one site is unlikely to be prolonged. However, as a staging location for feeding or roosting, any of the sites identified as being used could provide an important Function as per the definition used in this context.

- Winter to breeding grounds – this describes movements between wintering areas on the SPA or, in a limited number of cases, elsewhere in the Vales or further afield, and breeding sites within the Vales. The only confirmed movements of this nature are restricted to those of Curlew. Other implied movements are shown where applicable.
  - Within breeding season – there are a number of known movements between Vales sites during the breeding season, mainly for Curlew. Some birds have been noted to establish territories at one location and use another for feeding, roosting or bathing.
- 4.25. For clarity, sites to which, or from which movements took place between the SPA and the Vales are labelled on the maps. Longer-distance movements are not labelled but locations outside of the study area can be found in the text of the species accounts.

### **Site description and evaluation**

#### Descriptions

- 4.26. The site accounts give detailed descriptions of the sites under consideration and provide an overview of their known importance, and under what circumstances this importance is most obvious. Notes on site history provide context for the sites over a longer time period, including a review of other studies relevant to this one. Repeated reference is made to the findings of a number of these studies, principally the broad review of sites along the Severn and Avon river catchments carried out by Ecoscope (1999), which considered opportunities for conservation and restoration of meadow and floodplain habitats.

#### Site evaluation

- 4.27. An assessment of the main sites listed in this report is provided, based on data available via WeBS, the County Databases and the fieldwork conducted in winter 2019/20. The following calculations were performed:
- Within the period January 2010 to April 2020, the number of months within which counts of each species were provided, including counts of “zero” was determined. Absence of a count in any particular month was not assumed to indicate the absence of birds and a measure of the accuracy of the data selected was derived and expressed as a percentage coverage for each species. For instance, the range of months within which one site had count data was July 2011 to March 2020, a total of 105 months. Data (counts of “zero” or “1 or more birds”) of separate species were recorded for between 1 and 88 months, providing accuracy of between 1% and 84% respectively. Most counts of zero were recorded during WeBS counts whereas it was not possible to determine in retrospect whether or not observers making counts at other times had also recorded zero birds or if they had seen birds during casual visits but not counted them. This is recognised as a limitation to the approach to assessment that cannot be avoided unless only WeBS data is used. If the analysis of the data were to be restricted in this way, the likely intermittent value of sites described could have been missed. Rather than reject data, therefore, a reliability score for coverage of low (1-24%), moderate (25-49%) and high (50% or above) was assigned to each species at each site. If a species had never been recorded within the assessment period then scoring was noted as “not applicable” (N/A) because the species was assumed to be absent from the site.
  - Numbers of months when monthly maximum counts reached or exceeded the equivalent of 1% of the SPA populations of each species were counted and assigned to one of the three WeBS counting seasons (see Section 3 of this report, under *Definition of other terms*). The 1% criterion was used to provide a measure of comparison with the assessment criteria used in Phases 1-4

of the work on Identification of Wintering Waterfowl High Tide Roosts on The Severn Estuary (Latham, 2015; Woodward *et. al.* 2016 and Palmer 2017). Maxima were chosen as the appropriate numbers of birds to use in the calculations because they ensured that counts done outside of WeBS core count and supplementary surveys would be taken into account. Maxima were also considered to provide the best indication of the full potential of each site to support each species. For reasons given elsewhere in this report, this was considered particularly important for ensuring that the value of sites, many of which are subject to sudden change resulting in either favourable or unfavourable conditions being available, was fully accounted for. Using monthly maxima also ensured that double-counting on the same, or consecutive days was avoided.

- The value of the site was assigned a category of **High** (birds present 50% or more of counting months, in numbers at or above the 1% criterion), **Moderate** (birds present between 26 and 49% of counting months, in numbers at or above the 1% criterion - abbreviated to “mod” in tables presented), **Low** (birds present 1-25% of counting months, in numbers at or above the 1% criterion), **<1%** (birds present but never at or above the 1% criterion) or **none** (birds never recorded at that site) in autumn, winter and spring respectively. For parity with assessments for Phases 1-4 the High category needed to be within this value range, but the ranges chosen for Moderate and Low were arbitrary.

- 4.28. Tables presenting full analysis using this method are given in Appendix 3, with an objective categorisation of the accuracy of the assessments, based on numbers of records available, provided in the final column of each table. Summary tables are provided in the Site Accounts.
- 4.29. This assessment provides a means of determining the value of the non-SPA sites to Interest Species, irrespective of their connectivity (known or unknown) to the SPA. For purposes of further assessment in relation to Plans and Projects (Habitats Regulations Assessment, or HRA), in the absence of information to the contrary, and in line with the Precautionary Principle as set out in Article 6 of the Habitats Directive (EU 2000), the value of the sites to the SPA could be assumed on this basis. Limitations to this approach are discussed in the final section of the Report.

### ***Mapping of significant bird numbers***

- 4.30. The data available were interrogated for counts (monthly maxima), across the 10 years of the desk study review and the winter field work for 2019/20, of Interest Species that met or exceeded the equivalent of 1% of the SPA population, as indicated by the most recent 5 year rolling Mean Peak estimates provided in the latest Wetland Birds in the UK Report. Whilst this by no means indicated connectivity between individual sites and the SPA, this analysis did provide an indication of where important functional linkages could be, even if data to prove connectivity was sparse or lacking entirely. This was considered particularly important for species for which there was little or no ringing data and/or for which close study of movement (e.g. use of geo-locators and radio-tracking) has not been done.

### ***Preliminary identification of non-Vale additional sites of importance***

- 4.31. The mapping exercise described above was also used to make a preliminary assessment of the importance to Interest Species of areas within Gloucestershire and Worcestershire that are outside of the areas considered in detail in the Severn and Avon Vales. This identified where Interest Species have been found in numbers meeting or exceeding the 1% SPA population criterion, although further analysis and interpretation was not entered into.

## 5.0 Bird movements in the Severn and Avon Vales

### Overview

#### *Historic*

- 5.1. For some years now, ornithologists have noted that water bird numbers increase in the Severn and Avon Vales in time of winter flooding. Large numbers of swans, geese, ducks and waders flock to these natural floodplains when they are covered by shallow sheets of water. Two of the most obvious species historically involved are Bewick's Swan and White-fronted Goose (whose main wintering area in southwest England is at WWT Slimbridge, which would be the obvious origin of these visitors). Many other species, however, are also involved and in larger numbers, particularly surface-feeding ducks like Wigeon, Teal, Pintail or Shoveler, and waders like Lapwing and Golden Plover, or (in smaller numbers) Dunlin, Black-tailed Godwit or Ruff; it is natural to think that their place of origin would also be the Severn Estuary. However, the results of the present study suggest that this intuitive conclusion requires heavy qualification.
- 5.2. At other times of the year too, these riverside meadows are still populated by birds likely to have come from the estuary: in spring, the wet fields traditionally provided nesting sites for waders – notably Lapwing, Curlew, Redshank and Snipe; they are still present, though their numbers have dropped significantly in recent decades. Similarly, other species of waders, gulls and terns, many of which will have wintered far to the south, often in Africa, use the Severn Estuary as a stopover site on their migration to northern breeding grounds, some as far off as the Arctic tundra regions; these birds then continue northwards from the Severn Estuary, using inland pools and waters along the Severn and Avon as further stopover and rest sites on spring migration, and again in smaller numbers (because the pools dry out) on their way back in late summer and autumn. They regularly include Black-tailed Godwits and Whimbrel on their way to Ireland, western Scotland or Iceland; others use the Severn-Trent-Humber cross-country route - not just Dunlin and Ringed Plover or Greenshank (*Tringa nebularia*) and Wood Sandpiper (*T. glareola*), but also small numbers of species which usually prefer coastal environments such as Grey Plover, Sanderling (*Calidris alba*), Bar-tailed Godwit (*Limosa lapponica*) and Turnstone. Notable passage of gulls and terns also occurs, including movements of Little Gull (*Hydrocoloeus minutus*), Arctic Tern (*Sterna paradisaea*) and Black Tern (*Chlidonias niger*).

#### **2019/20**

- 5.3. The winter of 2019 to 2020 was unusually wet, with extensive flooding throughout much of the period across the Severn and Avon Vales. The field work element of this project was therefore conducted under conditions that are unusual, but increasingly frequent, probably in connection with climate change. Whilst not (yet) providing “typical” winter conditions for comparison with a longer time frame, this period did at least allow the project to test some of the assumptions about where wetland birds accumulate in times of flooding, when in some of the previous years under consideration, the conditions were less extreme and therefore bird movements may have been harder to note.

## Evidence for movements of SPA species

- 5.4. The following accounts detail the findings of the study as they relate to each of the Interest Species listed at the beginning of this report. Each account begins with a brief overview of the general ecology of the species, followed by current status in the UK as a whole and on the Severn Estuary SPA in particular. Knowledge and assumptions on the status of populations using areas upstream of the Severn Estuary in Gloucestershire and Worcestershire are then presented, followed by the findings of this study. Conclusions and recommendations resulting from this work are given in the final sections of each account.
- 5.5. Extended accounts for Wigeon, Pintail and Teal are given in this section because (i) these species are (frequently or periodically) the most numerous species within the study area and therefore are arguably the most important species in terms of overall conservation value of the sites under consideration within the Vales, and (ii) there is extensive knowledge of these species and/ or there are significant unanswered questions regarding their movements.
- 5.6. An extended account for Curlew is given because of all the wader species, individuals have been tracked with success between wintering areas within and around the SPA, as well as between wintering areas and breeding sites in the Vales.
- 5.7. Composite accounts are given for diving and dabbling ducks, as well as migrant, breeding and wintering waders.

### ***Pink-footed Goose***

#### General ecology, phenology and movements of the species

- 5.8. The Pink-footed Goose is closely related to the Bean Goose (*Anser fabalis*), which breeds right across northern Eurasia. Pink-footed Geese replace Bean Geese further west, with two populations, one very small nesting in Spitzbergen and wintering mainly in Denmark and The Netherlands, the larger population breeding in Iceland and Greenland and wintering almost exclusively in Scotland and England.

#### Overview of status in UK as a whole

- 5.9. The British winter strongholds of the Pink-footed Goose are in eastern Scotland, northern England and East Anglia. Wintering numbers increased from 90,000 at the time of the 1981-84 UK winter Atlas to 360,000 at the time of the 2007-11 Atlas; this increase was considered to be due primarily to improved foraging opportunities on agricultural land (Balmer *et al* 2013). By October 2015 numbers had increased further to 510,000 (Frost *et al* 2019) and it is now the most numerous wintering goose in Great Britain.
- 5.10. To qualify as internationally important, a site must regularly hold 5,400 Pink-footed Geese. To qualify as nationally important in GB, a site must regularly hold 5,100 Pink-footed Geese.

#### Overview of status on the Severn Estuary SPA

- 5.11. Pink-footed Goose is not included as a qualifying species in the SPA designation, nor is it listed in the species assemblage, but it is mentioned in the 1987 citation for the Upper Severn Estuary SSSI, though not in the notification of the SPA over the Severn Estuary as a whole, dated 2 February 1989. The reason is no doubt that the 1987 SSSI citation is referring back to the situation in the

earlier part of the 20th century, when this species occurred regularly in relatively small numbers in Gloucestershire. Mellersh (1902) refers to “up to 2,000 – 3,000 Bean Geese” at Slimbridge at the end of September; it is now thought that these must have been Bean Geese, which at the time had not been separated from Pink-footed Geese. Swaine (1982) cites apparently reliable records of 500 to 1,200 Pink-footed Geese in the Frampton-Slimbridge area in the 1930s, followed by a steady decline to no more than 50 to 130 birds between the late 1940s and the early 1960s, in line with the “*general retreat northwards*” of birds wintering in Britain (Kirk and Phillips 2013). In the 1960s these small groups of Pink-footed Geese appeared on the estuary in September (before the arrival from the northeast of the main body of wintering Whitefronts) and moved on fairly rapidly; they seem likely to have been birds on route from Icelandic breeding grounds to wintering areas further the south - south west England and/or Brittany are likely areas; now long abandoned.

- 5.12. In recent years, Pink-footed Geese have continued to occur at Slimbridge practically every winter, but generally in groups of less than ten and only staying for a few days. Very occasional larger flocks of up to 90 occurred in the late 1990s but appeared to be only passing birds. Eight from October to December 2019 were also seen further up the Severn at Arlingham and Broadoak. Some records (often at unusual times of the year) may refer to escapes from wildfowl collections (one at Slimbridge, then at Frampton Court Lake in April 2011; one at Slimbridge then Lower Rea opposite Minsterworth in April 2015).

#### Overview of status on inland wetlands in the Severn and Avon Vales

- 5.13. Observations of Pink-footed Geese in the Severn Vales have always been unusual with usually only one or two individual birds seen. They may be lost stragglers from the usual wintering grounds, joining the large wintering flocks of naturalised Greylags and Canadas: at Coombe Hill singletons were seen on 10 November 2009 and 15 January 2011; one was at Throckmorton Lagoons from January 2014, joined by a second bird from March until mid-April, with observations of one or two Pink-footed Geese at Lower Moor, Pirton, Clifton and Upton Warren in this period; along the Severn between Kempsey and Callow End three were present in January 2016; one to two were at Bredon’s Hardwick from February to March 2016. Or (more likely perhaps) they may have been escapes from collections: one at Barrow Ponds in March 2010, then at Coombe Hill in April 2010.
- 5.14. There is no indication at all of regular movement by this species from the SPA to the Severn and Avon Vales, as used to occur with White-fronted Geese.

#### Counter interviews

- 5.15. The counters who had in the past recorded occasional Pink-footed Geese in the Severn Vales regarded the species simply as an unusual straggler in the area.

#### Ringing recoveries

- 5.16. None of relevance, and all from the 1950s: one bird ringed in Iceland and two ringed in Scotland have been recovered in the Slimbridge area. No recoveries of Pink-footed Goose relating to Worcestershire.

#### Summary findings of fieldwork carried out in 2019/20

- 5.17. No Pink-footed Geese were encountered by the project team in winter 2019/20, nor did any of the counters report this species in the period.

### Synthesis of findings for Pink-footed Goose

- 5.18. Historically (up to about the 1960s) Pink-footed Geese from Iceland regularly occurred in the SPA in autumn, probably on their way from Iceland to a now abandoned wintering area further to the south east.
- 5.19. Nowadays Pink-footed Geese are only occasional visitors to the Severn Estuary, most of them probably lost birds or stragglers from the major wintering grounds in Scotland, northern England or East Anglia.
- 5.20. Pink-footed Geese occasionally occur inland in the Severn and Avon Vales, usually in ones or twos, often associating with the naturalised flocks of Greylag and Canada Geese. Some of them may well be escapes from wildfowl collections rather than genuinely wild birds.
- 5.21. There is no evidence of exchanges between the SPA and the Severn and Avon Vales.

### Conclusions

- 5.22. Pink-footed Geese have experienced spectacular increases in their wintering numbers in Britain over the last ten years, but these increased numbers are found in areas of GB distant from the SPA and Severn and Avon Vales.
- 5.23. There do not ever appear to have been any exchanges of Pink-footed Geese between the SPA and the Severn Vales.
- 5.24. Unless there is a further very large increase in numbers and a considerable southward and westward extension of range, it seems unlikely that Pink-footed Geese will become a significant visitor to the SPA and the Vales.

### **European White-fronted Goose**

#### General ecology, phenology and movements of the species

- 5.25. The White-fronted Goose nests in Arctic tundra right around the North Pole. Two of its five subspecies occur in Britain, the European Whitefront *Anser albifrons albifrons* (which nests in Russia and winters in continental western Europe and southern England) and the Greenland Whitefront *Anser albifrons flavirostris* (which nests in Greenland, wintering mainly in Ireland and western Scotland). Like other geese these are birds that feed by grazing on winter grassland. European Whitefronts arrive in English wintering areas from September onwards with the maximum numbers in January and February, most having departed by March and moving overland across north-west Europe on their way back to the Arctic. Greenland Whitefronts have to make a long sea-crossing to return to their breeding grounds, so may leave a little later on spring passage. Numbers of the European Whitefront at over a million individuals are much larger than those of Greenland Whitefront at less than 20,000.

#### Overview of status in UK as a whole

- 5.26. The GB wintering population of European Whitefronts is estimated at 14,000 individuals, and it is red-listed in UK because of decreasing wintering numbers, though the European population is of Least Concern.
- 5.27. To qualify as internationally important, a site must regularly hold 12,000 European Whitefronts or

190 Greenland Whitefronts. To qualify as nationally important in GB a site must regularly hold 21 European Whitefronts or 120 Greenland Whitefronts. The All-Ireland threshold for Greenland Whitefront is 100.

- 5.28. WWT Slimbridge was traditionally the site that held by far the largest number of wintering European White-fronted Geese in England (and therefore in GB); nowadays, however, sites in eastern England, notably in the Thames estuary, hold larger numbers in winter.
- 5.29. Greenland White-fronted Goose has a much smaller population and is of much greater conservation concern, although the SPA designation does not take account of this.

#### Overview of status on the Severn Estuary SPA

- 5.30. European White-fronted Goose is a qualifying (sub-)species for the SPA, with a five-year mean of 149 individuals and a 1% figure of one. The New Grounds at Slimbridge, over the centuries a well-kept site as appropriate for the former hunting preserve of the Berkeley Estates, was always a famous goose marsh. From the 1940s until the early 1990s, winter maxima at Slimbridge were regularly between three and five thousand (with an absolute maximum in the 1970s of 7,500), but since 1995 there has been a steady and regular drop in numbers, until in the last few years the peak has barely reached 200. The cause of the decrease, as for Bewick's Swan, is apparently due to climate change: the Whitefronts coming from the Arctic are short-stopping on the European continent, and not coming as far as to the west as they used to. As noted in *The Birds of Gloucestershire* (2013), "it is possible that the White-fronted Goose may one day abandon Slimbridge".
- 5.31. In most years a very small number (rarely more than five) Greenland Whitefronts overshoot Ireland, reach the Severn SPA and may well spend the winter among the much larger numbers of their Russian cousins at Slimbridge.

#### Overview of status on inland wetlands in the Severn and Avon Vales

- 5.32. In the years before 1995, when European White-fronted Geese were still numbered in their thousands at Slimbridge, small flocks (ten or less) were often observed grazing around floodwaters in the Severn Vales, at sites such as Coombe Hill and Ashleworth and these birds undoubtedly came from the SPA; but there have been no further observations of this kind in the last ten years. Ones and twos have occasionally been seen at Worcestershire sites such as Clifton, Bow Farm (Ripple Lakes) or Bredon's Hardwick, sometimes into April and May; the counters consider that these birds were genuinely wild birds, but there may be a possibility that they were feral birds. A flock of 23 was seen at Bredon's Hardwick and Bow Farm (Ripple Lakes) on 1 February 2017. These may have been migrants departing from Slimbridge.
- 5.33. Rather surprisingly, there have also been occasional records of Greenland Whitefronts in the Vales. Following severe gales in the Irish Sea ten birds appeared briefly at Coombe Hill on 15 January 2006. In December 2018 a Greenland Whitefront that had been marked with a satellite tag in Iceland overshoot its Irish destination, going on as far as the Dutch and French coasts, but then flew back across southern England, joining flocks of Canada and Greylag Geese in the Severn and Avon Vales for a month; thanks to its satellite tag, its movements (and those of the semi-natural geese it accompanied) could be traced. Map 1 in Appendix 1 shows movements revealed by this GPS tagged bird in addition to those of European White-fronted Geese.

- 5.34. It should be noted that, as numbers of Whitefronts in the Severn Vales have decreased in the last twenty years, so numbers of Greylag and Canada Geese have increased, to such an extent that there are now regularly mixed flocks of well over a thousand geese. These flocks of semi-natural geese tend to attract any wild geese in the neighbourhood, like the satellite-tagged Greenland Whitefront, or in winter 2019/20 a Tundra Bean Goose (*Anser serrirostris*) that occurred at Ashleworth.

#### Favoured sites in the Severn Vales:

- 5.35. The sites in the Severn and Avon Vales favoured by White-fronted Geese were the usual floodplain sites: the Coombe Hill / Ashleworth / Chelt Meadows complex.
- 5.36. Recent records have also come from Bow Farm (Ripple Lakes) and Bredon's Hardwick.

#### Counter interviews

- 5.37. The counters agreed that, whereas European Whitefronts used to occur around winter floodwaters in the Vales, they no longer do so with any regularity.

#### Ringling recoveries

- 5.38. Large numbers of European Whitefronts were ringed in the early years of the WWT (mainly the 1950s) at Slimbridge, where the technique of rocket-netting (the precursor of present-day cannon-netting) was developed specifically for marking Whitefronts. The recoveries show birds marked in Slimbridge in The Netherlands (49), Germany (43) and most numerous in Russia (62), with two as far east as Kazakhstan. None of these recoveries relate to birds recovered in the Severn and Avon Vales, where goose shooting was certainly practised.

#### Summary findings of fieldwork carried out in 2019/20

- 5.39. During fieldwork by the project team in 2019/20, no White-fronted Geese were recorded.

#### Synthesis of findings for European White-fronted Goose

- 5.40. After being for centuries the prime wintering site in England for European White-fronted Geese, the New Grounds at Slimbridge has forfeited this title to other goose marshes further east in the Thames estuary. Far from holding wintering flocks of thousands of these geese, the Slimbridge maximum in winter in recent years has been only around the 200 mark. The reason for this change is not that numbers of this goose are in decline, but rather because climate change has made sites in eastern England and in continental Europe available to wintering geese, which no longer need to come as far west to avoid cold continental winters. As a result, the former frequent winter records of Whitefronts at floodplain sites in the Severn and Avon Vales, which must have come from Slimbridge, have practically stopped.
- 5.41. A number of inland sites (Coombe Hill, Ashleworth, Bow Farm (Ripple Lakes), Bredon's Hardwick) still have the necessary habitat quality to attract White-fronted and other wild geese, but at present hold large numbers of semi-natural geese such as Greylag and Canada Geese which have increased enormously in the last twenty years.

#### Conclusions

- 5.42. The conclusions for White-fronted Goose will be similar to those for Bewick's Swan:

- 5.43. Numbers of White-fronted Geese wintering at Slimbridge have decreased sharply in the last 25 years from several thousand to a few hundred, almost certainly because of climate change: the total population of the species has by no means decreased, but the birds are staying back to winter in eastern England or continental Europe where conditions are milder than they used to be.
- 5.44. White-fronted Geese used to move from the SPA to graze around floodplain sites in the Severn and Avon Vales, but no longer do so, because of the reduced numbers reaching Slimbridge in the first place.
- 5.45. It seems unlikely that the geese will return unless climate change leads to harsher winters further east.

### **Lesser White-fronted Goose**

#### General ecology, phenology and movements of the species

- 5.46. The Lesser White-fronted Goose is one of the rarest geese in the world and is considered as globally vulnerable. Small numbers breed in Sweden and Norway and migrate to the southeast, wintering in central Asia (formerly Iran, probably now in Kazakhstan, where wintering flocks have dwindled in recent years). Attempts have been made to reintroduce birds to Finnish Lapland and to raise birds in captivity in Scandinavian zoos in nests of Barnacle Geese, so some semi-wild birds may appear in Europe in winter. This species grazes like other geese but does not seem to have adapted from its preferred natural grasses to agricultural grasses as other geese have done.

#### Overview of status in UK as a whole

- 5.47. The species is so infrequent in the UK, that no threshold figure is given for national or international importance. It is considered as a vagrant in UK, currently with no more than two records per annum in most years.

#### Overview of status on the Severn Estuary SPA

- 5.48. The species is mentioned in the SSSI listing for the Severn Estuary SPA, largely because, in the early years of the WWT, when White-fronted Geese were much more numerous, a Lesser Whitefront would regularly be found among the wintering Whitefront flocks, presumably a bird that had joined migrant flocks of European Whitefronts flying through Scandinavia, instead of flying south east to central Asia. Indeed on Peter Scott's very first visit to Slimbridge in 1945, he observed a Lesser White-fronted Goose, only the second ever record of this species in UK, which was one of the reasons for his choice of Slimbridge as the site for the WWT.
- 5.49. Since then, Lesser Whitefronts, generally singletons, have been recorded on a number of occasions among the wintering Whitefronts at Slimbridge. Kirk and Philips (2013) note: "*Between 1945 and 1980 it was an almost annual visitor to Slimbridge, with about 65 birds recorded in total. Sightings since then have reflected the large-scale decline, with records in six winters in the 1980s and three in the 1990, with just one bird this century in February 2003.*"

#### Overview of status on inland wetlands in the Severn and Avon Vales

- 5.50. There are no records of Lesser Whitefront in the Severn and Avon Vales.

### Counter interviews

- 5.51. None of the counters interviewed had ever recorded a Lesser Whitefront in the Vales.

### Ringling recoveries

- 5.52. The BTO Online Ringing Report gives no indication of any Lesser Whitefronts ringed in Britain or Ireland, nor of any recoveries.

### Summary findings of fieldwork carried out in 2019/20

- 5.53. As would be expected from the extreme rarity of this species, none were found during fieldwork in this winter period.

### Synthesis of findings for Lesser White-fronted Goose

- 5.54. The Lesser White-fronted Goose is an extremely rare goose, now only recorded as an accidental vagrant in UK.
- 5.55. The great majority of UK records come from Gloucestershire, and indeed from the SPA at Slimbridge, but these observations date from a time when numbers of European White-fronted Geese visiting the area were much larger, and the likelihood of the odd Lesser Whitefront joining them on their migration was greater.
- 5.56. Nowadays, with the decrease in numbers of European Whitefronts wintering at Slimbridge, the likelihood of Lesser Whitefronts occurring in the SPA is correspondingly smaller.
- 5.57. There are no known records of Lesser Whitefronts in the Severn and Avon Vales.

### Conclusions

- 5.58. It seems very unlikely that there will be many future records of Lesser Whitefronts in the SPA or the Severn Vales, or that these sites can play any significant role in the conservation of this extremely vulnerable species.

## ***Bewick's Swan***

### General ecology, phenology and movements of Bewick's Swan

- 5.59. Tundra Swans breed around the Arctic circle with Bewick's Swan *Cygnus columbianus bewickii* the European subspecies (some wintering in western Europe, others in eastern Asia) and Whistling Swan *Cygnus columbianus columbianus* its American counterpart. The Bewick's Swans that nest in European Russia migrate through the Baltic and the northwest European plain to winter mainly in The Netherlands and the UK. Numbers of this population have decreased sharply in recent years to some 14,000 individuals, partly because of loss of habitat on the wintering grounds, partly because of as yet poorly understood effects on the Arctic breeding grounds. They are grazing birds, feeding on shallowly flooded marshy grassland, and gathering in the evenings to roost on water bodies.

### Overview of status in the UK as a whole

- 5.60. To qualify as internationally important in the UK, a site must regularly hold 220 Bewick's Swans (based on the mean population count in the last 5 years). To qualify as nationally important, a site must regularly hold 44 birds.

- 5.61. Bewick's Swans winter mainly in the south of the UK, crossing the country from east to west in autumn: in recent winters they have ventured less far to the west (no longer appearing in Ireland as they did in the 1980s and 1990s) with numbers in the west of England also decreasing under the effect of climate change; with warmer winters more of them are short-stopping in continental Europe. In late winter, before their departure for Arctic breeding grounds, they often gather in large pre-migration assemblies (numbering up to six thousand in the late 20th century, though they are smaller nowadays) at sites like the Ouse Washes.

#### Overview of status on the Severn Estuary SPA

- 5.62. Bewick's Swan is a qualifying (sub-)species for the SPA, with a five-year mean of 149 individuals and a 1% figure of one bird. WWT Slimbridge is well known as a wintering site for this bird, where it has occurred in numbers since the very cold winters of 1961/62 and 1962/63, when they were first attracted into the WWT enclosures; being very site-faithful, they have continued to return in later winters. Numbers in the late 1960s and 1970s went as high as 600 individuals or more, allowing much detailed research on this sub-species, including ringing, recording of individuals (identified by their bill patterns) and collaboration with Russian scientists on the breeding grounds; a Single Species Action Plan has been drawn up under the auspices of the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA). Since then, with climate change, numbers at Slimbridge have decreased to a maximum of 200 in the last five years; in winter 2019/20 the number of different individuals identified at Slimbridge by bill pattern or by rings throughout the winter was only 109, with a maximum at one time of 95. The decrease at Slimbridge is not a reflection of the subspecies' overall decline in numbers, rather of a redistribution of numbers in winter towards the European Continent.
- 5.63. In the early years, the Rushy Pen at Slimbridge acted as a central roosting site. By day the swans feed on grassland around the WWT Reserve and sometimes adjacent farmland, also moving out by day to other feeding areas in the Vales (notably Walmore Common which was designated as a Ramsar site on the basis of its large numbers of grazing Bewick's Swans) but also further upstream to Ashleworth, Coombe Hill and along the Avon. With the gradual decrease in numbers at Slimbridge, birds wintering there find enough grazing in the immediate surroundings, and no longer need to venture as far afield. It seems likely that (unless climate change leads to colder conditions further east) numbers reaching the SPA will continue to decrease; this situation is very similar to that of European White-fronted Geese.

#### Overview of status on inland wetlands in the Severn and Avon Vales

- 5.64. In the last years of the 20th century, Bewick's Swans occurred regularly in considerable numbers at many Severn Vale wetlands, with over 200 on many occasions at Walmore and up to 100 at Ashleworth and Coombe Hill; in time of high flood, they would roost on floodwater without returning at night to Slimbridge. They would range up the Avon as far as Bredon's Hardwick and Fleet Lane, sometimes staying to roost on the pits at Bredon's Hardwick.
- 5.65. While they may still occasionally occur at these sites, the numbers are very small indeed nowadays: at Walmore there have been no records of Bewick's in double figures in the last five years. Records at Coombe Hill and Ashleworth nowadays seem more often to be of birds in the autumn, stopping off on their way to Slimbridge.
- 5.66. Bewick's Swans have been noted in the past using an area near to WWT Slimbridge known as The

Moors. This has not been used with any regularity for some years.

#### Favoured sites in the Severn and Avon Vales

- 5.67. Walmore Common is clearly the most important site away from Slimbridge, though its significance has decreased of late. Reading of colour rings there suggests that it is often the same individuals that return.
- 5.68. Wilmore Common, very close to Walmore (and on a direct flight line from Slimbridge to Walmore) in the past often attracted Bewick's Swans in time of flood, but numbers have decreased in recent years.
- 5.69. Other sites between Slimbridge and Gloucester were used opportunistically when conditions were favourable: in 2011 up to 40 birds flew in regularly by day from Slimbridge to join Whooper and Mute Swans (*Cygnus olor*) feeding on an oil-seed rape crop (now converted to maize) at Lower Dumball near Rodley (this site is covered in the Phase 4 report). In February 2014, during a period of very high flooding, ten Bewick's Swans were recorded for a period of a week near Linton Farm at Over.
- 5.70. Ashleworth and Hasfield Hams up to the early 2000s often recorded groups of Bewick's Swans in double figures, but these records have become few and far between with only very occasional observations of ones and twos in recent years.
- 5.71. At Coombe Hill the situation is similar to that at Ashleworth: flocks in double figures formerly frequent, nowadays even ones and twos are unusual.
- 5.72. At the Leigh and Chelt Meadows, Bewick's Swans were frequently recorded grazing in the early 2000s, often with Whooper Swans, but there have been very few records in recent years.
- 5.73. Along the Avon, the story is the same: twenty years ago flocks of 20 or more Bewick's Swans regularly grazed in meadows along the Avon, sometimes roosting at Bredon's Hardwick, but there are practically no recent records.

#### Counter interviews

- 5.74. The counters interviewed very much agreed that the frequency of Bewick's Swans records had decreased considerably in recent years, and that they had now become a rare sight in the area away from Slimbridge.

#### Ringling recoveries

- 5.75. Large numbers of Bewick's Swans have been caught in the swan pipe on the Rushy Pen at Slimbridge and marked with metal and coloured leg-rings; in the early days some were marked with yellow dye to enable easy field recognition. Visits to Arctic breeding grounds by teams of WWT scientists have led to colour-ringing there as well. These major ringing programmes (as well as observation of individuals whose bill patterns are known and recognisable) mean that there is detailed knowledge of the movements of this species, both along its migratory pathway and around the wintering grounds at Slimbridge.
- 5.76. Observations of colour-ringed birds around Slimbridge and in the Severn and Avon Vales confirm the movements outlined above.

### Summary findings of fieldwork carried out in 2019/20

- 5.77. The project team carried out extensive fieldwork in the very wet 2019/20 winter but, despite these very favourable conditions, failed to observe any Bewick's Swans. The only records in the Vales in the first three months of 2020 were of two Bewick's Swans at Clifton on 1 January and probably the same birds at Bow Farm (Ripple Lakes) later that day; two appeared briefly at Coombe Hill on 27 January, with probably the same individuals later the same day at Saul Warth. Both these observations probably refer to birds moving late in the winter towards Slimbridge.

### Synthesis of findings for Bewick's Swan

- 5.78. For the last fifty years Bewick's Swans have wintered in internationally important numbers at WWT Slimbridge, where major research on the species has vastly improved knowledge of the sub-species' migrations, needs and social habits.
- 5.79. Wintering numbers have decreased over the last ten or twenty years however, under the effect of climate change, which means that the swans no longer need to migrate as far to the west in autumn as they used to.
- 5.80. Walmore Common was designated as a Wetland of International Importance under the Ramsar Convention, largely because of the numbers of Bewick's Swans found there. For at least ten, if not twenty, years now, the number of swans no longer meets the 1% level at Walmore with any regularity (which nevertheless still has many other wetland qualities).
- 5.81. Bewick's Swans definitely used to move in some numbers from the SPA to feed on inland floodplain wetlands in the Vales, but as numbers wintering at Slimbridge have decreased, the number of birds using these satellite sites have dropped to almost zero.
- 5.82. The inland Vale sites retain a potential for wintering Bewick's Swans if numbers at Slimbridge were to increase, but are currently of little significance for this sub-species.
- 5.83. The preferred sites (other than Walmore) for Bewick's Swans were: Wilmore Common, Coombe Hill, Ashleworth and Hasfield Hams, Chelt and Leigh Meadows, Bredon's Hardwick and Fleet Lane.
- 5.84. Known and implied movements of Bewick's Swans are illustrated on Map 2 in Appendix 1.

### Conclusions

- 5.85. Wintering Bewick's Swans definitely used to move from the SPA into the Vales to graze by day, generally returning to Slimbridge to roost but occasionally (in time of extensive floods) staying to roost in the Vales.
- 5.86. In the last ten years however, with the decreasing numbers of Bewick's Swans wintering at Slimbridge, numbers occurring in the Vales have dropped dramatically.
- 5.87. There seems little likelihood that the situation will change, unless climate change is reversed.

### ***Whooper Swan***

#### General ecology, phenology and movements of the species

- 5.88. Whooper Swans nest right around the Arctic circle (the American subspecies has been separated as Trumpeter Swan), with one major breeding population in Iceland and another in northern

Fennoscandia and Russia; a tiny number nest in northern Scotland. The Icelandic breeding population, estimated at 30,000 individuals during the 2010 census (Balmer *et al* 2013) winters exclusively in Britain and Ireland. Birds nesting in Fennoscandia and Russia mainly winter on the European continent. Numbers of the Icelandic wintering population appear to be expanding. Like other swans Whoopers feed by grazing and roost at night in communal flocks on water bodies.

#### Overview of status in UK as a whole

- 5.89. Whooper Swans winter mainly in Scotland, and in northern and eastern England. The 2007-11 Atlas showed some expansion in southeast England. The slight increase in numbers nesting perhaps reflects an increase in the Icelandic breeding population.
- 5.90. To qualify as internationally important a site must regularly hold only 340 Whooper Swans. To qualify as nationally important in GB, a site must regularly hold 160 Whooper Swans.

#### Overview of status on the Severn Estuary SPA

- 5.91. Whooper Swan is not included among the SPA qualifying species, nor in the SPA assemblage, nor in the SSSI designation document. It is however included (together with Golden Plover, Black-tailed Godwit and Ruff) among non-listed species considered to be of importance in the SPA. The five-year mean peak is of three birds.
- 5.92. Whooper Swans are not constant winter visitors to the SPA, but individuals or small flocks (often family parties of adults with cygnets) occasionally appear at WWT Slimbridge alongside Bewick's Swans; they may join the night roost on the Rushy Pen, or at Frampton Pools near the SPA. It seems clear that these occasional Whoopers at Slimbridge and the SPA are birds coming from the small flock wintering in the Severn Vales. If in the autumn the Severn Vales are dry, Whoopers arriving from Iceland may first go to estuarine sites, gradually moving back inland as winter rains occur.

#### Overview of status on inland wetlands in Severn and Avon Vales

- 5.93. Small numbers of Whooper Swans, often family parties, have for many years wintered in the Severn Vales, appearing to prefer one area for a number of years, then sometimes moving to another area.
- 5.94. While Whoopers and Bewick's (and indeed Mute) Swans may feed by day on the same grassland, the two species of migratory swan do not appear to have any close social interactions. Thus, when Whoopers and Bewick's were feeding together by day at Cobney Meadows (before the year 2000), the Whoopers would fly to Ashleworth to roost in the evenings, while the Bewick's would return to Slimbridge. Similarly, in 2011 when Whoopers, Bewick's and Mute Swans were all feeding together on an oil-seed rape crop (now converted to maize) at Lower Dumball near Rodley (covered in Phase 4), the Bewick's returned at dusk to roost at Slimbridge, while the Whoopers flew a few hundred yards to roost on the Severn at Longney Crib (also covered under Phase 4).
- 5.95. The general area chosen for wintering may well depend on availability of open water in the autumn. In autumns when the inland floodplain wetlands have largely dried out, the first October records of Whoopers are often on or around the estuary; as the inland sites become wetter, the Whoopers move back inland.
- 5.96. Favoured sites in the Severn and Avon Vales:

- Until the 1980s Noxon Pond in the Forest of Dean was the regular wintering site, but has been abandoned for many years now, probably because of changes to the habitat there.
- From the 1990s until the mid-2010s, the favoured area was the Ashleworth / Coombe Hill / Leigh Meadows complex.
- In the last ten years the Whoopers seem to have favoured the complex of sites on the right bank of the Severn (downstream of Gloucester, and not far from Noxon) including Walmore and Wilmore Commons, Lower Dumball at Rodley, Minsterworth Ham, Linton Farm and the River Leadon, perhaps because a series of dry autumns made sites around Ashleworth less attractive to birds on arrival (few water bodies for roosting, little grazing on dry meadows).
- Wintering Whoopers from the Vales make occasional appearances at Slimbridge, but seem less attracted than Bewick's Swans to the grain on offer.
- Further north in Worcestershire, Whoopers appear at Upton Warren, Longdon Marsh, Bow Farm (Ripple Lakes), Grimley and Clifton, generally passing through in autumn on their way south to their wintering grounds, but occasionally spending short periods of time at one or more of these sites during the winter.

#### Counter interviews

- 5.97. The counters interviewed agreed that a small number of Whooper Swans regularly winters in the Severn Vales, and only occasionally appears on the SPA itself, usually at Slimbridge.

#### Ringling recoveries

- 5.98. Ringing of Whooper Swans has not been carried out in Slimbridge in the same way as the very active ringing programme on Bewick's Swan, largely because they do not occur in the same numbers. One of the few Whoopers ringed at Slimbridge was recovered in Iceland. Birds ringed at other more northern WWT centres (two from Caerlaverock in Dumfries & Galloway, and four from Martin Mere in Lancashire) have been recovered at Slimbridge. There are several additional observations in Gloucestershire (both in the SPA and in the inland wetland sites) of colour-ringed Whoopers from Caerlaverock and Martin Mere. The number of colour-ring sightings are insufficient to prove that the same individuals return to the Severn Vales every winter, but given the known site fidelity of swans, it seem likely that the same individuals may be returning year after year.
- 5.99. The BTO website does not mention any recoveries of Whooper Swans relating to Worcestershire.

#### Summary findings of fieldwork carried out in 2019/20

- 5.100. Actual field observations in winter 2019/20 illustrated the way that wintering Whooper Swans move between different sites in the SPA and the Vales in a very wet winter. They seemed less attached to a single site than some parties in earlier winters:
- 5.101. In a very wet autumn, the first two adult Whoopers did not go straight to the estuary but made their first stop at Coombe Hill where they were seen from 16 to 19 October.
- 5.102. In late October and early November, what were considered to be the two birds from Coombe Hill moved to the area below Gloucester, being seen by day on floodwater at Minsterworth Ham or Walmore until the end of November.
- 5.103. A single adult, apparently quite different and recognised by yellow staining on the head, was seen

at Frampton Pools on 27 October and at Saul Warth on 28 October.

- 5.104. There was a lull in December when no Whoopers were found.
- 5.105. On 2 January a new group of five adult Whoopers appeared in the SPA at Slimbridge, and this group was then seen regularly until 21 January at an unfamiliar site for this species, a heavily flooded field along the River Leadon, very close to its confluence with the Severn at Over. The group of five reappeared at Slimbridge on 25 January, and were then seen at Coombe Hill on 28 January. The group was not found again in February, either at Over or anywhere else.
- 5.106. A single adult Whooper was found at Ashleworth on 6 February, and at Coombe Hill on 8 February, when it flew off to the north-east; possibly from the group of five observed in January.
- 5.107. No reports were received of Whooper Swans in Worcestershire.

#### Synthesis of findings for Whooper Swan

- 5.108. A small but regular group of Whooper Swans of Icelandic origin (usually less than ten individuals, often family groups with cygnets) winters in the Severn Vales, mainly in Gloucestershire sites, possibly the same individuals returning year after year.
- 5.109. Whooper Swans also occur in Worcestershire, but more often seem to be migrants in autumn on their way to wintering sites further south.
- 5.110. Whoopers only occasionally appear at Slimbridge; even in times of hard weather and icy conditions the Whoopers tend to stay on their preferred inland sites.
- 5.111. They feed by day on wet grassland, and move in the evening to roost on shallow pools such as the GWT reserve at Ashleworth, at Walmore, or the Severn itself at Longney.
- 5.112. There is clearly much movement in the course of a single winter between different sites within the area, the birds taking advantage of favourable floodwater and grazing conditions.
- 5.113. Known and implied movements of Whooper Swans are illustrated on Map 3 in Appendix 1.

#### Conclusions

- 5.114. The origins of the small but regular wintering flock of Whooper Swans in the Severn Vales are quite different from those of the more familiar Bewick's Swans: The Whoopers come south-east from Iceland, the Bewick's come southwest from Russia.
- 5.115. This wintering flock of Whoopers is one of the most southerly in England. Numbers of Whoopers remain small but have not decreased as sharply as have the numbers of Bewick's. They use a variety of small wetlands in the course of the winter, with considerable movement between sites, depending on weather conditions.
- 5.116. If climate change continues, they may in future no longer venture so far south in winter.

#### **Shelduck**

##### General ecology, phenology and movements of the species

- 5.117. Shelducks are neither surface-feeding nor diving ducks. They belong to a world-wide group situated

between ducks and geese, often known as Sheldgeese. They are often at home in saline environments, and are hence a familiar sight on estuaries, where they feed by sifting through mudflats to seek invertebrates (insects, molluscs and crustaceans) in shallow muddy water. Some birds often move inland in the breeding season to nest near to freshwater habitats. They frequently nest in holes such as rabbit burrows or hollows in, or under, trees. They are a highly social species, often gathering in spring in “leks” or noisy courtship parties, when the males display to females.

- 5.118. Shelducks from western Europe undertake a moult migration after the breeding season, when they fly to inaccessible sites to pass the three to four weeks when they are moulting their flight feathers and are hence unable to fly. Thousands of European Shelducks concentrate in July and August in the vast area of sand and mudbanks of the Grosser Knechtsand in the Wadden Sea, on the German/ Dutch boundary.

#### Overview of status in UK as a whole

- 5.119. Shelducks are widely distributed throughout the UK and are classed in BTO BirdFacts<sup>16</sup> as a Migrant/Resident Breeder and winter Visitor. The GB breeding population is estimated at 7,900 pairs and the number in winter (when additional birds arrive from Europe on British coastlines) is given as 51,000 individuals. The European breeding population is estimated at 35,000 to 56,000 pairs.
- 5.120. To qualify as internationally important, a site must regularly hold 2,500 Shelducks. To qualify as nationally important in GB, a site must regularly hold 470 birds.
- 5.121. Shelduck is amber-listed in the UK, but is of Least Concern in Europe and globally. The 2007-2011 BTO Breeding Atlas (Balmer *et al.* 2013) draws attention to the “*continued colonisation of inland breeding sites*” in the UK, consistent with increases in breeding and range size since earlier atlases. However, a slow but steady decline in numbers has occurred since the 1990s, caused in some sites by over-exploitation of cockle fisheries.

#### Overview of status on the Severn Estuary SPA

- 5.122. The Severn estuary is a site of international importance for Shelduck, which is one of the qualifying species for the SPA designation. The SPA wintering population (five year running mean from 2014/15 to 2018/19) is 5,462 individuals with a 1% figure of 55. The maximum monthly counts in the Severn estuary as a whole since 2013/14 were 6,611 in September 2016 and 6,739 in October 2018. Considerable numbers of Shelducks breed in and around the SPA. In addition there has for more than fifty years been a smaller alternative Shelduck moulting site at Bridgwater Bay in the Bristol Channel, apparently used by some British and Irish Shelducks (Wernham *et al.* 2002).
- 5.123. On the estuary in the Saul /Frampton /Slimbridge sector, Shelducks move around with the tide, often gathering in flocks at high tide, when numbers often reach 200 birds, with maximum counts over 300, particularly in May or June when ducklings are included; while most adults undertake a moult migration to the Wadden Sea in July, many birds of the year remain on the estuary through the autumn until the return of the adults.

#### Overview of status on inland wetlands in the Severn and Avon Vales

- 5.124. Shelducks are a familiar species in the Severn and Avon Vales, mainly on winter floodwater, though

<sup>16</sup> <https://www.bto.org/understanding-birds/birdfacts>

small numbers stay to breed, often producing ducklings, which do however seem to fall to predators at an alarming rate. The first birds generally appear inland at the end of the year (in November or December), soon after the return from the Wadden Sea moulting grounds. Numbers increase in the early months of the year, when parties of up to 20 or 30 lekking birds occur on floodwater; numbers decrease when the floods drop, but some pairs remain to nest. Very often, the male holds a territory around a water body, which he defends aggressively from other males, so that when the female takes a rest from incubation duties in her nest hole she can feed safely.

#### 5.125. Favoured sites in the Severn and Avon Vales:

- Minsterworth Ham, Walmore and Wilmore Commons: sites near to the estuary, which attract winter flocks of Shelducks, often in double figures with sometimes as many as 50 birds, as soon as any floodwater appears. There have been occasional breeding attempts at Walmore.
- The Coombe Hill / Ashleworth / Cobney Meadows complex: Shelducks occur at all three sites, often in groups of single figures, but sometimes reaching totals of 50 in winter or early spring floods. Cobney Meadows, very close to the course of the Severn, often has the highest numbers. Shelduck has bred successfully at all three sites in the last five years, with one or two pairs at each site, sometimes more, as males holding territories are often seen even if the young are not raised successfully.
- Longdon: Shelduck is a regular winter visitor to Longdon Marsh north when the area is shallowly flooded, with numbers sometimes reaching 15. One or two are occasionally recorded in summer at Hill Court Farm, where nesting is possible.
- Bow Farm (Ripple Lakes): Shelduck is a regular visitor in winter, numbers generally in single figures but with an unusually high count of 41 on 16 January 2013. One or two pairs are regularly recorded in spring and early summer and may well attempt to breed.
- Clifton: Up to ten appear at Clifton in winter. Pairs with ducklings were seen in 2014, 2017 and 2018, while gravel extraction was still continuing, and plenty of nesting burrows will have been available.
- Grimley: Occasionally recorded in small numbers.
- Westwood Pool: 'Common; passage migrant, summer and winter visitor' (Dutton 2017), but rarely more than five birds; no indication of breeding.
- Upton Warren: Even as far inland as Upton Warren, Shelducks are regular visitors with maxima of up to 20 birds and breeding attempts in most years, often successful.
- Along the Avon: Shelducks are recorded regularly in small numbers (up to ten individuals) at Bredon's Hardwick, Kemerton, Gwen Finch, John Bennett and Lower Moor with several breeding attempts, some successful, notably at Bredon's Hardwick and John Bennett.

#### Counter interviews

- 5.126. The counters interviewed agreed in regarding Shelduck as a regular visitor to the Severn Vales, mainly in the new year, with regular breeding attempts, though with ducklings often being lost.

#### Ringling recoveries

- 5.127. The BTO Online Ringing reports indicates that, to the end of 2018 a total of 13,210 Shelducks had

been ringed in Britain and Ireland; the *Ringing Atlas* adds that these have been almost equally divided between ducklings or juveniles caught in July-August and older birds caught mainly in early spring; many recoveries relate to movements to the moulting ground on the Grosser Knechtsand, some immatures departing as early as mid-June, followed by failed breeding adults, leading to a peak of passage in the first half of July; the return leg of the journey is slower, with recoveries concentrated near the moulting grounds until December. There is as yet little definite information on the origins of Shelducks moulting in Bridgwater Bay, though there is speculation that they may be of Irish origin (Wernham *et al.* 2002). Shelduck is not a quarry species in the UK, so there are few recoveries from hunting bags; the species is shot in some continental countries.

- 5.128. Most Shelducks ringed in Gloucestershire are caught in the swan pipe at Slimbridge. Most recoveries of these birds are retraps at the same location (279 out of 310), but some Slimbridge-ringed birds have moved to other WWT ringing sites (notably Martin Mere in Lancashire), to the Wadden Sea, to The Netherlands, Germany and Norway; there are no local recoveries in the SPA.
- 5.129. Rather few Shelducks are ringed in Worcestershire, though a small number were caught at Bredon's Hardwick in cannon-netting operations directed mainly at Wigeon from 1996 to 2009 (Hodson 2005), and these are very relevant to the purposes of the present project: only one Shelduck was caught between 1996 and 2003, but then four were caught in a single catch in February 2009, and all four were caught again in later years in the Slimbridge swan pipe, two in January 2010, one in May 2011 and one in January 2018, clearly demonstrating a link between the SPA and the Avon Vale.

#### Summary findings of fieldwork carried out in 2019/20

- 5.130. The fieldwork in winter 2019/20 confirmed the statements in the literature and the data bases about Shelducks in the Severn and Avon Vales: only small numbers were found in the late months of 2019, but numbers increased considerably in early 2020. In Worcestershire as many as 49 were at Clifton on 21 March; they were regularly found at Longdon Marsh (on the floodwater in the northern sector) with a maximum of 15 on 7 March. The Gloucestershire sites produced their usual records at Mythe Hook, Forthampton, Ashleworth (maximum five on 6 February; a pair on 21 March), Coombe Hill (four already lekking on 2 January, maximum of 23 on 7 January), Leigh and Cobney Meadows, Elmore Back (eleven with only two females on 20 February); near the Leadon at Over (maximum of 24 on 31 March), Minsterworth Ham (16 in high flood on 3 March, 22 on 8 March), Walmore (14 on 12 January, 16 on 25 February, 32 on 11 March) and Wilmore (maximum of 12 on 18 February). Apart from the unusual flock at Clifton, the largest numbers were at sites downstream of Gloucester and nearer the estuary.

#### Synthesis of findings for Shelduck

- 5.131. The SPA remains a major site for Shelducks: in winter; in spring and early summer when appreciable numbers breed around the estuary; and as a refuge for ducklings born around the estuary when they are full-grown in autumn and the adults are away on moult migration.
- 5.132. Shelducks are regularly reported in the Vales, usually beginning to appear in November or December (no doubt on their return from the moulting area), with numbers increasing from January to March, particularly when there is shallow floodwater.
- 5.133. In the first three months of the year, birds in the Severn Vales often gather in noisy courtship ('lekking') flocks of up to 30 birds.

- 5.134. The largest numbers occur in sites nearest the estuary at sites like Minsterworth Ham, Elmore Back or Walmore, which suggests that they readily fly from the estuary to the nearest inland sites. But considerable numbers also occur upstream of Gloucester in winter.
- 5.135. Shelducks regularly attempt to breed in small (but perhaps increasing) numbers in the Severn and Avon Vales. Males are often seen guarding territories on which incubating females may come to breed, and in the last five years there have been more and more records of ducklings hatched, though predation rates do seem to be high, as the size of broods dwindles rapidly.
- 5.136. There is rather little ringing evidence to prove movements between the Vales and the SPA, though four Shelducks caught at Bredon's Hardwick were all re-trapped in subsequent winters at Slimbridge. But there is no evidence to show whether birds returning from the Wadden Sea fly direct to the Severn Vales, or whether (as seems intuitively more likely) they go first to the SPA, then gradually move upriver as the winter progresses. Nevertheless it seems likely, given the species' known preference for saline habitats, that the Shelducks from the SPA move first to exploit flooded inland sites near the estuary, then spread upriver as the extent of flooding increases through the winter.
- 5.137. Known and implied movements of Shelduck are illustrated on Map 4 in Appendix 1.

#### Conclusions:

- 5.138. Shelducks remain an important component of the avifauna of the SPA. They occur inland in considerable flocks in mid to late winter, first in sites near the estuary, later in sites further upriver, regularly reaching northern Worcestershire.
- 5.139. There have been many attempts at breeding in the Vales in recent years, several of them successful.
- 5.140. It appears highly likely that most of the Shelducks recorded in the Vales originated from the SPA.

#### **Shoveler**

##### General ecology, phenology and movements of the species

- 5.141. Shoveler, like Wigeon, Teal and Pintail, is a surface-feeding duck that breeds across northern Eurasia (although its distribution does not extend as far north into tundra areas as that of these other species) and winters on Atlantic and Mediterranean shores, with considerable numbers wintering south of the Sahara; it is distinguished by its characteristically large and broad bill which it uses to filter its food from the surface of shallow water bodies; it is omnivorous, feeding on planktonic crustaceans, small molluscs, insects and larvae, but also seeds and plant debris (Cramp & Simmons, 1977).
- 5.142. The Shoveler's specialized bill and feeding ecology is thought to influence its migration strategy. It favours wetlands, often ephemeral ones, with abundant zooplankton, where other plankton feeders such as fish cannot survive year-round. Shoveler tend to be more abundant therefore in highly productive waters that dry out in summer (Wernham *et al.* 2002).
- 5.143. The mean mid-January temperature of Shoveler wintering areas across western Europe is around 9°C, compared with 5-7°C for Pintail, Teal and Gadwall and 5°C for Wigeon, with Mallard around

3°C (Tony Fox<sup>17</sup>, pers. comm.); any future increase in winter temperature could therefore lead to Shoveler wintering further to the north because icy conditions that would inhibit their feeding would occur less often.

- 5.144. Shoveler spend their daylight hours at a safe day roost, where they may feed a little, but most feeding will be done at a nocturnal feeding site, that might not be suitable as a daytime roost, but will be as close as possible to the day roost (Tony Fox, pers. comm.).

#### Overview of status in UK as a whole

- 5.145. To qualify as internationally important, a site must regularly hold 650 Shoveler. Six sites in UK currently meet this criterion; Abberton Reservoir in Essex (1678), Somerset Levels (1247), Ouse Washes (1009), Dungeness and Rye Bay (827), Breydon Water (813) and Thames estuary (803) (BTO website).
- 5.146. To qualify as nationally important in GB, a site must regularly hold 190 Shoveler. A further 28 sites reach this level, with the Severn Estuary (486) ranking eighth (BTO website).
- 5.147. It is notable that all the main sites of international or national importance for this species are in southern and south-eastern England, hence in the milder areas of the British Isles.
- 5.148. According to BirdFacts on the BTO website, Shoveler is a migrant breeder (with 1100 nesting pairs in the UK in 2013-2017) a passage migrant and a winter visitor (with 20,000 individuals between 2013 and 2017). Its UK conservation status has been Amber since 1996. The European breeding population is estimated at between 30,000 and 50,000 pairs and its global conservation status is of Least Concern.
- 5.149. The 2007-11 Breeding Atlas (Balmer *et al.* 2013) comments that Shoveler are relatively scarce and local breeders, and maps show the main breeding area to be in the eastern half of England; it notes that in winter they are mainly found in lowland areas, with concentrations along major waterways such as the Severn and Trent; there has been an increase in winter range and numbers since the previous winter Atlas in 1981-84.

#### Overview of status in Severn Estuary SPA

- 5.150. Shoveler is not one of the eight qualifying species for the SPA designation but is one of the eleven species listed in the SPA assemblage of species (2001 review) - together with other surface-feeding ducks including Wigeon, Teal and Pintail. The five-year mean winter total for the Severn Estuary SPA from 2014/15 to 2018/19, as noted above, is 486 individuals, so 1% of the SPA population is 5 birds. The maximum WeBS count totals for the whole of the estuary SPA in recent winters have been as follows: 514 in February 2014; 472 in November 2014; 589 in February 2016; 419 in February 2017; 441 in January 2018; and 509 in January 2019; the largest numbers thus often occur in the second half of the winter.
- 5.151. For Gloucestershire, Kirk and Philips (2013) commented that Shoveler is a rare breeding species with only about a dozen breeding records, mainly in the Frampton/Slimbridge area, and that peak winter counts at Slimbridge are around 200-300.

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<sup>17</sup> Tony Fox is a Professor of Waterbird Ecology, Department of Bioscience, Aarhus University in Denmark. He wrote the Migration Atlas account for Shoveler.

- 5.152. Counts of Shoveler on the SPA: the highest ever count at Slimbridge (where the pools within the WWT grounds hold good numbers of Shoveler) was of 323 in February 2014, until early January 2020 when record counts reached just over 330. Shoveler are altogether less frequent on the west bank of the SPA around Aylburton; only a few counts, and never more than three, probably because there are few shallow pools there.
- 5.153. Considerable numbers of Shoveler were ringed at Slimbridge in the past, but there have been almost no catches in recent years (see below).

#### Overview of status in inland wetlands in Severn and Avon Vales

- 5.154. Phase 4 of this work identified Lydney Harbour Pools as a possible Primary Roost for Shoveler. This lies outside of the area within which the present study was carried out but is notable as being very close to the SPA and therefore likely to be functionally linked to it, as well as the non-SPA parts of WWT Slimbridge.
- 5.155. For Gloucestershire, Kirk and Philips (2013) note that winter flocks of Shoveler in the Severn Vale may reach three figures, well in excess of the 1% SPA population of just 5 birds. For Worcestershire, the West Midland Bird Club archives refer to Shoveler as a “*fairly common passage migrant and winter visitor, rare and decreasing breeding species*”; these archives register the first breeding record in Worcestershire since 1947, at Upton Warren in 2014, when breeding was successful; Shoveler were successful there again in 2015 and 2016, with unsuccessful breeding attempts in 2015 and 2016 at John Bennett (more recent data not yet available).
- 5.156. At Frampton Pools there was a count of 101 in January 2009, with a few counts of 50 to 80, but most counts there are below 50. Between Frampton Pools and Gloucester, there are no winter records of Shoveler on the estuary foreshore at Upper or Lower Dumball, but up to 27 have occurred nearby at Wilmore in times of flood. Walmore Common regularly receives good numbers in winter floods, with occasional counts in three figures (maximum of 150 in December 2009 and 100 in January 2013, but more often around 50). At Minsterworth Ham too, despite the smaller data set, winter flocks on floodwater may number over 100 (maxima 110 in November 2019, 130 in March 2020).
- 5.157. Along the Severn, upstream of Gloucester: up to 40 recorded at Alney Island; up to 20 along the Severn between Gloucester and Maisemore (mainly Maisemore brick-pits). At floodplain sites, the Coombe Hill and Ashleworth complex has traditionally held good numbers of Shoveler in winter. At Coombe Hill the highest count was 120 in January 2007, but since 2016 there has been a steady stream of three figure counts – 300 in January 2016, 103 in February 2018, then exceptional numbers in January 2020 with a count of 426 on 11 January when water levels, still extensive, had dropped a little, creating excellent conditions for surface-feeding ducks of all species; this was shortly after the record counts of 330 at Slimbridge; there is unfortunately no way of knowing whether the same individuals were involved or not. Numbers at Coombe Hill diminish sharply when floodwaters are very deep, since as noted above, Shoveler prefer shallow water bodies. At Ashleworth too, Shoveler are traditionally recorded in good numbers, though not quite as spectacular as those at Coombe Hill: maxima of 220 in February 2008, 190 in March 2002, 135 in March 2016. On the Leigh and Cobney Meadows along the Chelt, flooding occurs less frequently than at Coombe Hill or Ashleworth, but in time of flood a maximum of up to 40 Shoveler is recorded. At Longdon too, three figure counts are occasionally recorded on the open but shallow floodwater in the northern sectors of Longdon Marsh, probably birds that had fled deep flooding at Coombe

Hill or Ashleworth: maxima of 100 in February 2014 and 150 in January 2016; good numbers also occur on Hill Court Farm where the shallow waters and thick vegetation seem more suitable for Shoveler: 150 in January 2016, 56 in February 2017, probably birds commuting from Longdon Marsh north.

- 5.158. Three-figure winter counts of Shoveler may also occur at the deeper water bodies along the Severn, notably at Bow Farm (Ripple Lakes), Grimley and Upton Warren, which are probably used as day roosts. At Bow Farm (Ripple Lakes), maxima of 101 in January 2016 and 73 in February 2019, but numbers of 25 or less are more usual at this site which is fairly deep and has little cover. At Clifton, which also provides little of the cover generally sought by this species, Shoveler are generally recorded in single figure totals with a maximum of 30 in November 2019. At Grimley there are two counts of over 100 at the new workings at Camp Lane, 120 in November 2016 and 101 in February 2017, but peak numbers are generally lower and there are few records from the old overgrown workings in the north. At Westwood Pool Shoveler is a “*common winter visitor, scarce in summer*” with numbers occasionally just reaching 100 in the early 2000s, with peaks of 60 or 70 in recent winters. At Upton Warren counts of 100 have occurred, with 151 in October 2014, 115 in October 2015 and 123 in October 2016.
- 5.159. All sites along the Avon (Throckmorton, Lower Moor, John Bennett, Gwen Finch Kemerton Lake, Bredon’s Hardwick) record Shoveler in winter with maximum counts of up to 40, but usually rather lower; small numbers are also recorded in summer, a reminder that Shoveler nest at John Bennett.

#### Counter interviews

- 5.160. Counters’ comments have been incorporated into this account. Worcestershire counters consider, as for other species of surface-feeding ducks, that there is no sign of influxes to the county from the SPA.

#### Information from other sources

- 5.161. Severn estuary wildfowling report that the majority of Shoveler shot in the Gloucestershire section of the SPA are shot at Frampton, which is the most popular shooting area, and that very small numbers are shot at Hills Flats (near to Oldbury Power station) or Lydney. (T. Bailey, F. Bihlmeier, N. Blayney, P. Walkden<sup>18</sup> (pers. comm.).

#### Ringling recoveries

- 5.162. Considerable numbers of Shoveler have been ringed in Gloucestershire in the past, although the species is regarded by ringers as one of the most difficult surface-feeding ducks to catch (A. Fox, C. Mitchell<sup>19</sup>, R. King<sup>20</sup> pers. comm.). Shoveler are not readily attracted to traps baited with grain, and rarely swim into floating duck traps, unless the arched entrance is very high (R. King, pers. comm.). Most Shoveler ringed in UK have been marked at the different WWT ringling stations, with fair numbers ringed at Slimbridge but mostly between the 1950s and 1990s; since then, scarcely any Shoveler have been ringed there – only two since 2010 - and very few ringed elsewhere in the British Isles either (BTO Online Ringling Report). The reason for this decline in catches at Slimbridge is not clear: in the 1980s and 1990s Shoveler would follow Bewick’s Swans into the swan catching pipe on the Rushy Pen; fewer swans now reach Slimbridge, so fewer are caught, which may be

<sup>18</sup> All of these sources are prominent members of the Wildfowling community.

<sup>19</sup> Wildfowl and Wetlands Trust C. Mitchell Project Manager (Flyways)

<sup>20</sup> Former head ringer at the WWT ringling station, R King Abberton Reservoir in Essex

one reason for the decrease in Shoveler catches (C. Mitchell pers. comm.); another reason may be that Shoveler are nowadays using different areas of the reserve, notably the shallow South Lake (where the large counts in 2019/2020 were made) and where there have been no ringing activities.

- 5.163. The BTO Online Ringing Report shows no recoveries of Shoveler ringed in Worcestershire (probably because very few, if any, have been ringed in the county). The only recovery in the county is the one mentioned below from Slimbridge to Chateau Impney.
- 5.164. The BTO Online Ringing Report shows recoveries at Slimbridge of three birds ringed in other English counties (Essex, Lincolnshire and Wiltshire), though (rather surprisingly) there are no recoveries in Slimbridge of birds ringed abroad. Conversely, 31 birds ringed at Slimbridge have been recovered in other counties of the UK and Ireland (12 in Ireland, six in Wales, the others in counties of southwest and eastern England with just one in Worcestershire); in addition, there are 83 European recoveries of birds ringed at Slimbridge: some to the south, usually in later winters (32 in France; three in Spain; two in Italy; one in Portugal), others en route to their breeding grounds (22 in Russia - with only a very few going further north than 60°N and only a couple going further east than 60°E: 13 in The Netherlands; five in Denmark; one each in Latvia and Estonia; and three in Finland). Only one of these Shoveler recoveries occurred in the 21st century (in France). As for most ducks, the majority of recoveries come from birds shot by wildfowlers.
- 5.165. One Shoveler ringed in Lincolnshire on 07.07 1973 was shot at Berkeley in the SPA on 16.12.73.
- 5.166. The following Shovelers were ringed at Slimbridge and recovered within or close to the SPA:
- Ringed 05.12.48, recovered Glebe Farm, Saul, 16.12.48 (same winter)
  - Ringed 24.09.49, recovered Glebe Farm, Saul, 23.09.50
  - Ringed 12.04.50, recovered Glebe Farm, Saul, 15.11.51
  - Ringed 17.09.63, recovered Edge near Stroud, 19.01.64 (same winter)
  - Ringed 11.09.65, recovered Berkeley 04.12.65 (same winter)
  - Ringed 12.09.67, recovered Brimscombe, near Stroud, 23.12.67 (same winter)
  - Ringed 23.09.79, recovered Berkeley 22.09.80
  - Ringed 11.02.85, recovered Nastfield Farm, Frampton, 01.12.87. This may be a reference to open shallow water of the working gravel pits that now form Frampton Pools, or indeed the works between there and the A38 which subsequently were landfilled.
  - Ringed 13.01.87, recovered near Lydney 01.01.88
- 5.167. A number of recoveries demonstrate movements of Shoveler from Slimbridge into the Vales in the same winter, some within a month of ringing (even if they were a long time ago):
- Ringed 21.10.51, recovered Wainlodes 14.11.51
  - Ringed 30.12.53, recovered Quedgeley 25.01.54 (rapid movement)

- Ringed 29.10.56, recovered Pittville Park, Cheltenham 15.12.56
- Ringed 07.01.64, recovered Quedgeley 19.01.64 (rapid movement)
- Ringed 12.01.87, recovered Maisemore 25.01.87 (rapid movement)
- Ringed 09.02.89, recovered Gloucester 01.11.89

5.168. There are also a number of recoveries from Slimbridge to the Vales in later winters:

- Ringed 26.01.79, shot at Chateau Impney, Droitwich, 06.09.82.
- Ringed 03.10.81, recovered at Witcombe 20.11.82.
- Ringed 19.02.89, recovered Minsterworth 29.12.90

#### Summary findings of fieldwork carried out in 2019/20

5.169. Record counts of Shoveler were made in winter 2019/20, both at Slimbridge (330) and at Coombe Hill (426). At Slimbridge, many of the Shoveler were recorded in the WWT grounds and specifically on the shallow water of the South Lake, an area created in the 1980s and 1990s, which has since matured; perhaps the conditions there attract Shoveler away from the deeper Rushy Pen.

#### Synthesis of findings for Shoveler

- 5.170. Shovelers' winter distribution takes them further south than most other surface-feeding ducks; recent increases in winter temperature may have led them to winter further to the north; it would also mean that any icy periods do not last as long, so that Shoveler could sit through cold snaps more easily.
- 5.171. Shoveler occur in near international numbers on the SPA, and have at times reached national importance level at the Coombe Hill complex.
- 5.172. Shoveler gather in day roosts, where they may feed a little, but most feeding occurs at night, usually at sites not far from the day roost.
- 5.173. Along the Severn and Avon Vales upstream of the SPA, many of the sites under consideration attract numbers well in excess of the 1% SPA population threshold for Shoveler at times of shallow flood.
- 5.174. In floodplain sites upstream of Gloucester, the biggest concentrations of Shoveler occur in the Coombe Hill / Ashleworth complex, which may well serve both as a day roost and a night feeding area in time of flood. If the flooding becomes too deep, Shoveler may well leave the area, probably moving to the Longdon Marsh area. During icy periods, which rarely last more than a few days, Shoveler often gather with other surface feeding ducks round holes in the ice.
- 5.175. Along the Severn corridor from Bow Farm (Ripple Lakes) northwards, Shoveler occur in numbers up to 100 at former gravel pits and other artificial water bodies, like Grimley or Upton Warren, probably using them as day roosts, but also feeding locally at Camp Lane in Grimley, or Upton Warren, where there are shallow feeding areas.
- 5.176. Along the Avon smaller numbers occur at most of the classic sites.

- 5.177. There has been a very slight recent increase in breeding records, both around Slimbridge and Frampton, and at some inland sites like Upton Warren and John Bennett.
- 5.178. Ringing recoveries indicate that there is some movement between the SPA and the Vales, with a number of inland recoveries in the same winter. But these recoveries are mostly very old, and there has been almost no ringing of Shoveler for at least ten, probably twenty-five, years, so they need to be interpreted with care.
- 5.179. Increased temperatures throughout their range may have affected Shoveler numbers and habits in the last 20 to 25 years. Wintering numbers may increase, and shallow pools and floodwater areas may be increasingly used for feeding.
- 5.180. Known and implied movements of Shoveler are illustrated on Map 5 in Appendix 1.

### Conclusions

- 5.181. Good (and probably increasing) numbers of Shoveler winter in the SPA and inland.
- 5.182. Climate change may be a factor in this increase, since Shoveler generally winter in warmer areas than other surface-feeding ducks.
- 5.183. There have been several recent breeding records, both in the Slimbridge / Frampton area, and at some inland sites.
- 5.184. Little is known of their movements, either between sites, or between day roosts and night feeding areas, mainly because the only ringing recoveries are rather old.
- 5.185. Notwithstanding the difficulty of catching Shovelers, it would be good to resume ringing, preferably with GPS tags, which would clarify movements between sites, but also local movements between day roosts and night feeding areas.

## **Gadwall**

### General ecology, phenology and movements of the species

- 5.186. Unlike most other surface-feeding ducks found in the Severn and Avon Vales, Gadwall nests not in the tundra, but in more southerly areas of Eurasia (and central North America) between 60° and 40°N, wintering south to the Mediterranean and west to Atlantic coasts. Habitat preference in winter tends toward local concentration in suitable shallow and sheltered parts of large wetlands. In England, birds on ornamental waters and reservoirs often originate from introductions, though further build-up of numbers occurs, possibly assisted by settlement of wild birds. Food is chiefly vegetative parts of plants, obtained mainly while swimming with head under water, including roots, leaves, tubers, buds and seeds of pondweeds (Cramp and Simmons 1977).

### Overview of status in UK as a whole

- 5.187. To qualify as internationally important, a site must regularly hold 1200 Gadwall. Only one site in Great Britain or Ireland currently reaches this level. This is Rutland Water in the East Midlands, with a five-year mean of 1291.
- 5.188. To qualify as nationally important in GB, a site must regularly hold 310 Gadwall. There are 23 sites that meet this criterion, among them the Somerset Levels (second after Rutland Water with 802),

Cotswold Water Park (eleventh in the list with 534) and Chew Valley Lake (twentieth with 428); the Severn Estuary is well below the qualifying level. Most of the other sites are in southern or eastern England.

- 5.189. According to BirdFacts<sup>21</sup> on the BTO website, Gadwall is a migrant/resident breeder and winter visitor in UK, with 2225 breeding pairs in summer and 31,000 individuals present in winter. It has been amber listed in UK since 1996 because of declines in range and numbers.
- 5.190. The 2007-2011 Breeding Atlas (Balmer *et al.* 2013) comments that “...*the original breeding stock originates largely from pinioned wild birds caught at Dersingham Decoy, Norfolk, and introduced into Breckland around 1850. Much of the present population is descended from this source, although genuinely wild birds wintering here may have stayed to breed and thus contributed to the population*”.

#### Overview of status in Severn Estuary SPA

- 5.191. Gadwall is one of the qualifying species for the Severn Estuary SPA listing; the five-year mean number for the period 2013/14 to 2018/19 is given as 191 birds, so the 1% SPA population is just 2 birds. The maximum WeBS count totals for the whole of the estuary in recent winters have been as follows: 208 in January 2014; 197 in December 2014; 179 in October 2015; 173 in October 2016; 192 in January 2018; and 214 in August 2018. It is noticeable that, in contradistinction to other surface-feeding ducks, there is no very large variation in peak numbers from one year to another; and that, during the course of each winter, the population remains stable at around 200: hence there is little indication of major winter immigration from outside the SPA.
- 5.192. For Gloucestershire, Kirk and Phillips (2013) note that Gadwall were rarely encountered in the county until the establishment of the WWT in 1946; they add that some captive birds escaped and a nest was discovered at Frampton Pools in 1956, that 20 birds were released around Slimbridge in 1967 and that within 20 years this population had become naturalised; they suggest that the county in 2013 held perhaps 40 pairs, heavily concentrated in the Frampton/Slimbridge area and the Cotswold Water Park; they note that the Gloucestershire section of the Water Park averages maximum counts of 300 wintering individuals, and WWT Slimbridge averages 150-200. Indeed, counts of Gadwall in the SPA are dominated by counts from this single site: between 1999 and 2004 there were eight counts of over 200 (all from November to February, with a maximum of 277 in January 2000); counts at Slimbridge in the last ten years have tended to peak between 100 and 150; given the rather modest maximum counts of around 200 for the SPA as a whole, it would appear that the vast majority of Gadwall in the SPA are in fact in the Slimbridge area; BTO has confirmed that prior winter 2018/19 (the latest for which full figures are available) that the peak counts at Slimbridge were 133 in August 2018 and 107 in June 2019; a figure of 50 Gadwall was reached on only two other occasions (53 at Portbury Wharf near Bristol in October 2018 and 58 at Goldcliff Lagoons near Newport in May 2019; only five other sites in the SPA reached double figures for Gadwall: Severn Beach, Uskmouth Reedbed Lagoons, WWT Steart Marshes and Saltmarsh Lagoons.
- 5.193. Several counts from Frampton Pools in recent years (in midwinter months) have recorded over 100, with two counts over 150. It seems likely that there are considerable exchanges between Frampton

<sup>21</sup> <https://www.bto.org/understanding-birds/birdfacts>

Pools and Slimbridge. There are frequent breeding records in the Slimbridge and Frampton area.

### **Overview of status on inland wetlands in Severn and Avon Vales**

- 5.194. For Worcestershire, the available information on Gadwall is less detailed than for Gloucestershire, but the West Midland Bird Reports for 2015 and 2016 both refer to this species as a “*Frequent and increasing winter visitor. Common breeding species*”. The BTO Online ringing report gives no recoveries of Gadwall ringed in Worcestershire and just one Gadwall recovery in Worcestershire of a bird from Slimbridge.
- 5.195. Downstream of Gloucester: Most records are from the winter months. There are occasional records at Wilmore Common at Rodley, which attracted good numbers of Gadwall in high flood in February and March 2020 (maximum 53), also up to 30 in February 2014, with smaller numbers in November 2014, but no other records; the species is recorded much more regularly at Walmore (maxima of 38 in December 2015 and 36 in December 2018); at Minsterworth maxima were 45 in February 2020 and 42 in January 2016.
- 5.196. Upstream of Gloucester Gadwall occur, mainly in winter, at overgrown riverside sites: at Alney Island up to 11, along the Severn from Gloucester to Maisemore up to 17; at Lower Lode brickpits a maximum of 22 in November 2018. Also at floodplain sites, sometimes in spring and summer too: at Ashleworth regularly recorded, with several counts of between 50 and 75 in the first months of 2006, many more recent counts up to 50, mainly in winter but with up to ten into April and May; regular at Coombe Hill too with one count of 50 in February 2008, and many counts of 30 or 40 since then, also in the summer and autumn months if there is water; nested successfully for the first time in 2018, and again in 2019; often recorded on the Chelt Meadows (maximum of 20). Regularly recorded too at Longdon Marsh and Hill Court (maxima up to 40), nested successfully at Hill Court in 2016.
- 5.197. Along the Severn corridor from Bow Farm (Ripple Lakes) northwards: regularly reported, throughout the year, at Bow Farm (Ripple Lakes) (maximum 28 in February 2019) and at Clifton (maximum 24 in March 2020), occasional at Pirton Pool (up to 18 in January 2012) and at Oakley Pool (only two). At Westwood Pool it is a “*common winter visitor*” (maximum 47 in January 2006, lower numbers recently), “*scarce in summer, has bred*” (Dutton 2017). At Grimley many counts of over 50 at the Camp Lane new workings in the winter months (maximum 89 in January 2019 and February 2020), also two June counts of over 50, nested in 2016. At Upton Warren present throughout the year with biggest numbers in winter (maximum 21 in October 2019); bred In 2013, 2015 and 2016.
- 5.198. Along the Avon: small flocks of up to 20 in many sites, mainly in winter. At Throckmorton maxima of 11 in February 2013 and 18 in February 2015; at Lower Moor maximum of 20 in February 2014; at John Bennett 13 in February 2017; at Gwen Finch five in March 2012, 12 in February 2018; at Kemerton (KCT) maxima of 24 in October 2019 and 26 in February 2015 (nested for the first time in 2018, again in 2019); at Bredon's Hardwick maxima of 16 in February 2012 and 25 in February 2015. Nested along the Avon near Twyning in 2019.

### Counter interviews

- 5.199. The comments from counters have been incorporated into this account.

### Ringed recoveries

- 5.200. Many Gadwall have been ringed at Slimbridge with a wide range of recoveries within Britain and central Europe.
- 5.201. The table of recoveries on the BTO website tells a quite different story from the midwinter WeBS counts. Birds ringed in Gloucestershire, largely at Slimbridge, have yielded 133 recoveries in Ireland and other UK counties (including 51 from Gloucestershire, many of which are later re-traps at Slimbridge, or birds shot on the SPA in the immediate vicinity of Slimbridge, at Frampton, Purton or Westbury-on-Severn). The remaining 82 range from Cornwall (one recovery) via Wexford (one) and Perth and Kinross (four) to Norfolk (with the largest number of recoveries at 18), and just one from Slimbridge to Worcestershire. There are 121 foreign recoveries, but they come, not from the Urals and beyond (like the recoveries of Wigeon, Teal and Pintail), but from the near Continent: 75 in France, 25 from The Netherlands and five from Germany, with no more than three each from other countries (though the two Russian recoveries are far to the east, respectively in 69° and 62°E) and there is even a winter recovery from Algeria. Thus, despite appearances in the WeBS counts, there certainly are exchanges between SPA and continental Gadwall populations.
- 5.202. Some of these recoveries demonstrate movements by Gadwall from Slimbridge to sites in or near the Vales, with at least one to Worcestershire, nine in Gloucestershire and one in Herefordshire along the Wye. Records in the same winter definitely demonstrate movement between the SPA and the Vales. Records in later winters are less clear for this species than for other ducks: Gadwall do not necessarily leave in summer to breed on the European continent, so these individuals may in the intervening summer(s) have departed to Europe, then returned; or they may be non-migrant residents staying permanently in the SPA/Severn Vales area. Details of all relevant recoveries are given below, those in the same winter first, then those in later winters:
- 5.203. Recoveries in the Vales (or nearby) in the same winter.
- Ringed Slimbridge 21.09.78, recovered at Fownhope, Hereford (Wye) on 13.10.78
  - Ringed Slimbridge 06.10.91, recovered at Sandhurst near Gloucester on 17.11.91
- 5.204. Recoveries in later winters:
- Ringed Slimbridge 21.03.60, recovered at Knightsbridge (Coombe Hill) on 08.10.60
  - Ringed Slimbridge 19.12.79, recovered at Leddington near Dymock on 10.10.81.
  - Ringed Slimbridge 01.12.84, recovered at Maisemore on 03.01.87.
  - Ringed Slimbridge 10.01.85, recovered at Gloucester on 01.11.89
  - Ringed Slimbridge 10.02.85, shot at Westwood Pool in Worcestershire on 27.10.91.
  - Ringed Slimbridge 07.01.00, recovered Sandhurst on 21.01.12
  - Ringed Slimbridge 21.01.05, recovered at Tirley on 13.01.12.
  - Ringed Slimbridge 06.01.10, recovered at Barrow Farm, Sandhurst, on 22.12.16.

- 5.205. The pattern is reminiscent of recoveries of the closely related Mallard (many of which do not emigrate in summer either) - a tendency to wander in the environs of the ringing site, with no particular pattern of movement.

#### Summary findings of fieldwork carried out in 2019/20

- 5.206. The project team noted many small groups of about 20 Gadwall at inland sites. It often appeared that these groups were operating as a unit, moving between sites, as water levels and feeding conditions varied. Main sites where similar numbers were seen on successive dates were Coombe Hill, Ashleworth, Lower Lode brick pits and Wilmore.

#### Synthesis of findings for Gadwall

- 5.207. Gadwall numbers on both the SPA and at inland sites are modest compared with numbers of other surface-feeding ducks. There are no flocks of thousands that arrive for the winter. On the contrary, the only sites where numbers exceed 150 are Slimbridge and Frampton Pools. However, the 1% population threshold for this species is only 2 birds and this number is reached or exceeded at a number of sites.
- 5.208. Numbers of Gadwall do not vary greatly through the course of the year, suggesting that there is little immigration. Many, even perhaps most, Gadwall in the SPA and the Vales probably descend from introductions or escapes from the WWT at Slimbridge.
- 5.209. Ringing recoveries show some movement from Slimbridge inland towards the Vales. However, ringing recoveries from Slimbridge make it clear that there is definitely movement of Gadwall between the estuary and the continent, with a winter influx mainly from central rather than northern Europe, and many recoveries of Gadwall shot in France in later winters.
- 5.210. At inland sites in the Vales Gadwall congregate in small flocks, often of 20-40 birds, which occur in the usual wetland areas, but also in secluded sites like small pools or brickpits. Numbers are largest in winter but the species occurs throughout the year, and birds have nested in many sites in Gloucestershire and Worcestershire.
- 5.211. Severn upstream of the SPA to Gloucester: Gadwall occur regularly at Walmore, and occasionally at Wilmore, Minsterworth and Alney Island.
- 5.212. Severn upstream of Gloucester: small numbers along the river between Gloucester and Maisemore. Flocks of up to 50 at Ashleworth, Coombe Hill (where it has begun to breed in recent years) and on the Chelt Meadows, also Longdon Marsh in winter and at Hill Court (where it has bred).
- 5.213. Along the Severn Corridor north of Bow Farm (Ripple Lakes), similar small flocks occur at Bow Farm (Ripple Lakes), Clifton, Grimley Westwood Pool and Upton Warren, with the largest numbers (nearly 100) at Grimley and breeding records from Westwood Pool, Grimley and Upton Warren.
- 5.214. Along the Avon, small groups of similar size occur, the largest numbers at Kemerton Lake (KCT), but also at Throckmorton, Lower Moor, John Bennett, Gwen Finch and Bredon's Hardwick; it has recently begun to breed at Kemerton and on the Avon between Tewkesbury and Twynning.
- 5.215. Known and implied movements of Gadwall are illustrated on Map 6 in Appendix 1.

## Conclusions

- 5.216. Many Gloucestershire and Worcestershire Gadwall are probably descendants of birds released or escaped from Slimbridge, which may explain their tendency to remain at local sites throughout the year.
- 5.217. Ringing recoveries show that there is in addition a distinct influx in winter from central Europe.
- 5.218. There is some indication from ringing recoveries of exchanges between the SPA and wetlands in the Vales, but no regular or systematic pattern of exchanges (rather similar to Mallard).
- 5.219. The local population may be increasing as the number of breeding attempts seems to be growing larger, with new sites colonised.

## **Wigeon**

### General Ecology, phenology and movements of the species

- 5.220. Wigeon is predominantly a grazing duck, originally found mainly in maritime situations, feeding on Eel-grass (*Zostera* spp.) (Owen and Williams, 1976). The species is nowadays frequently found in the UK, at least at inland sites, grazing on pastures associated with water, such as gravel pits and wide estuary floodplains. Dietary studies have indicated a wide range of plant species are eaten (Soons *et. al.* 2016) and feeding strategies other than grazing, such as up-ending and dabbling can be important, depending on water depths and the availability of grazing areas (Owen and Thomas 1979). Whilst Wigeon primarily graze the green parts of aquatic macrophytes, they also quite frequently take seeds of *Potamogeton* and *Ruppia* species (Clausen *et. al.* 2002).
- 5.221. Wigeon is essentially a winter visitor to the UK, although small numbers do breed in this country, mainly in northern areas. Ringing recoveries show most birds wintering in the UK breed in Russia, east to 65E; the Icelandic breeding population also winters largely in Ireland and Britain (Cramp and Simmonds 1996).
- 5.222. There is evidence of Wigeon short-stopping to winter in the Baltic because of milder winters in the last 20 years, although over 75% of the population of over 1 million individuals still winters in Belgium, the Netherlands, UK and France, and there has been no evidence for a major movement in the centre of gravity of the wintering distribution (Fox *et. al.* 2016).
- 5.223. There is also evidence that Wigeon are site-faithful between winters, at least in part because pair bonds are established in this season (Mitchell 1997). Several of the ringing recoveries reported below also indicate fidelity to wintering sites over successive winters.
- 5.224. Wigeon remains a popular quarry species, both on estuaries and at inland sites. Nearly all ringing recoveries of Wigeon come from birds shot by wildfowling; few Wigeon are caught in normal ringing operations but a few recoveries come from cannon-netting operations.

### Overview of status in the UK as a whole

- 5.225. To qualify as internationally important, a site must regularly hold 14,000 Wigeon. There are six sites in the UK that meet this criterion. These are the Ribble Estuary, Breydon Water and Berney Marshes, the Ouse Washes, the Somerset Levels, the Swale Estuary and Lindisfarne.
- 5.226. To qualify as nationally important, a site must regularly hold 4,500 birds. There are 13 sites

additional to those listed above in Great Britain that meet this criterion. These are the Nene Washes, The Wash, Lower Derwent Ings, North Norfolk Coast, Severn Estuary, Morecambe Bay, Dee Estuary (England and Wales), Thames Estuary, Severn Estuary (English counties), Blackwater Estuary, Alde Estuary, Exe Estuary and Dee Estuary (English counties).<sup>22</sup>

#### Overview of status on the Severn Estuary SPA

- 5.227. The five year mean peak for Wigeon on the Severn Estuary (2014/15 to 2018/19) is 7,881 so the 1% population threshold for importance of a site within the SPA is 79 birds.
- 5.228. This species is a winter visitor, although the first birds arrive in September and the last birds leave in March/April. The largest numbers occur from late November to mid-February. The largest concentrations of birds nearest to the area of study but within or immediately adjacent to the SPA can be found at WWT Slimbridge and the estuary as far as Purton, Berkeley Pill and Aylburton Warth. Other strongholds for the species within the SPA have been listed as Bridgewater Bay, Newport Wetlands Reserve and the adjacent Welsh Grounds (Burton *et. al.* 2010).
- 5.229. Movements of Wigeon within the SPA have been subject to limited study. Few birds have been ringed at WWT Slimbridge, where catching is mainly practised in a duck decoy and a swan pipe, which are located in habitat not frequently visited by this species. GPS tagging of birds on the South Wales coastline within the SPA took place in 2015/16 as part of studies into the movements of birds that could be affected by a tidal lagoon power proposal (Scragg *et. al.* 2016). This showed that the small sample population of Wigeon had small home ranges (average 82-85ha). Studies elsewhere have also indicated that most commuting distances between roosts and feeding areas are less than 8km and frequently less than 5km (Owen and Williams, 1976), with one review giving distances of around 2.5km (Johnson, Schmidt, and Taylor, 2014).
- 5.230. Shooting of Wigeon occurs or has occurred on the estuary at Aylburton, Brimspill, Berkeley and Frampton, and rings of shot birds are regularly submitted to the BTO by local wildfowlers, who describe (TB, PW, NB and FB, pers. com.) large numbers of Wigeon (and other ducks, notably Teal) leaving the estuary in the evening to graze inland and returning at first light, but do not know how far inland they may be going.

#### Overview of status on inland wetlands in the Severn and Avon Vales

- 5.231. As is found elsewhere in the UK, Wigeon are winter visitors to the Vales. There have been no breeding records at all in Gloucestershire or Worcestershire; non-breeding birds occasionally noted in summer are probably injured birds that could not migrate back to their breeding grounds.
- 5.232. Numbers of Wigeon increase in times of shallow flood at inland sites; if the flooding becomes too deep, the birds move off to other inland sites where the flood is shallower; this behaviour is especially noticeable between the Coombe Hill/Ashleworth complex (where floodwater becomes deep quite rapidly) and Longdon Marsh, which floods rather more slowly and where floodwater generally remains shallow. This is a reflection of the feeding ecology of the species, which needs grassland near to water for grazing and/or shallow water on which to dabble or up-end for floating seed and aquatic weed. Numbers also decrease in times when floodwater ices over, because food is unavailable. If icy conditions persist, numbers of Wigeon decrease at sites with shallow flooding like Coombe Hill or Ashleworth; it was thought in the past that, under such conditions, birds went to

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<sup>22</sup> As listed at <https://app.bto.org/webs-reporting/>

the saltier waters of the estuary, which never ice over; but it is just as likely that they simply move a short distance to larger waters like Bow Farm (Ripple Lakes) or Bredon's Hardwick, which may have ice around the shallow edges but nevertheless retain ice-free waters in their deeper central area. Severe and prolonged icy conditions are happening less frequently now due to climate change, so such movements are occurring less often. Ringing recoveries (see below) support, at least to some extent, this explanation of Wigeon movements.

5.233. Shooting has occurred or still occurs at a number of inland sites: formerly at Ashleworth and Bredon's Hardwick, currently at Walmore Common, along the Chelt at Wainlodes, and sometimes on land immediately south of the lakes at Bow Farm (Ripple Lakes).

5.234. Since about 1980, more and more Wigeon have spread out to take advantage of newly available habitat at gravel pit sites in the Severn and Avon Vales, notably in Worcestershire (Bredon's Hardwick, Lower Moor, Grimley, Clifton, Bow Farm (Ripple Lakes)).

5.235. Favoured sites in the Severn and Avon Vales:

- Downstream of Gloucester and closer to the SPA, Walmore Common and Minsterworth attract good numbers of Wigeon in time of shallow flood.
- The Coombe Hill/Ashleworth complex has always been a favoured site for Wigeon, Coombe Hill becoming increasingly important since the creation of scrapes there by the Gloucestershire Wildlife Trust (GWT) in 2003.
- Upham Meadow was a favoured site before gravel extraction began in the surrounding area in the 1980s and birds moved off to gravel pits. Upham is now much less important for this species, except in time of extreme flood, when feeding resources are covered elsewhere but remain available (in extreme conditions as in late February/March 2020) at Upham because raised banks by the river at the upstream end and grassland fields that grade shallowly down from the M5 embankment on the west side of the Meadow are seldom completely covered.
- Bredon's Hardwick Pits were greatly favoured in the 1980s until early 2000s; in the last few years Bow Farm (Ripple Lakes) (more open and less disturbed) have become more important. It is thought that the reason for the decline in numbers at Upham and then at Bredon's Hardwick is that Bow Farm (Ripple Lakes) offers more open roosting and feeding areas with less tree cover.
- Longdon Marsh - the floodable area north of Marsh Lane, rather than the Worcestershire Wildlife Trust (Worcs WT) reserve at Hill Court Farm - which floods later and with shallower floodwater than other sites, often acts as a refuge when other sites are heavily flooded and feeding is rendered more difficult or impossible by depth of water. The importance of Longdon Marsh has only recently been fully recognised (hence its recent registration as a WeBS site), but it has fulfilled this role as a relief site for Wigeon (and even more so for Pintail) for at least 20 years as illustrated by records in the West Midland Bird Club annual reports<sup>23</sup>.
- Wigeon occur at sites further upstream (Clifton, Grimley, Westwood, Upton Warren) and along the Avon but numbers are relatively lower. Nevertheless, numbers at Clifton have reached or exceeded the equivalent of 1% of the SPA population on a number of occasions in the last 10

<sup>23</sup> <https://www.westmidlandbirdclub.org.uk/archives>

years (see Site Accounts section below).

### Counter interviews

- 5.236. The general view of the many experienced Worcestershire observers interviewed is that there is little if any movement of Wigeon between inland sites and the Severn Estuary. In their opinion, once Wigeon are settled in winter quarters in Worcestershire they make only very local movements, which are monitored by observers on the spot. As noted above, a preference for short-distance movements between roosting and feeding areas has been documented in published studies, so this assumption is likely to be correct.
- 5.237. Worcestershire counters believe that Wigeon may leave Bow Farm (Ripple Lakes) to feed on shallow floodwater at Longdon Marsh, approximately 4.5km away; or in case of disturbance or high water levels at Bow Farm (Ripple Lakes), they may move to the pools at Clifton, roughly 10km distant from both Bow Farm (Ripple Lakes) and Longdon. Movements of Wigeon are also regularly observed between Bow Farm (Ripple Lakes) and their former preferred haunts, on the Avon, at Bredon's Hardwick or Mitton (Andy Warr pers. com.), both sites approximately 4km from Bow Farm (Ripple Lakes). On the Avon between Fladbury and Eckington (at sites such as Lower Moor, the Avon Meadows reserve at Pershore, Gwen Finch and John Bennett nature reserves) there is no evidence of influxes of Wigeon from the estuary; once arrived, the Wigeon stay in very much the same area with only slight movements between sites (Rob Prudden pers. com.). The much smaller numbers of Wigeon found further north at Grimley, Westwood Park or Upton Warren (only a few kilometres apart) may commute between these sites but observers find no sign of movement to and from the estuary (RB, JB, WD and AH pers. com.).
- 5.238. Gloucestershire birdwatchers have tended to assume that there was considerable movement of Wigeon between the SPA and inland sites such as Ashleworth or Coombe Hill. But closer examination of the evidence and ringing results provides little evidence to support this view (see below).
- 5.239. In previous winters, in periods of cold weather, water at shallowly flooded sites like Coombe Hill and Ashleworth have been iced over. Total icing-over, while it does occasionally occur, is rare, and in general Wigeon and other ducks (with considerable help from larger birds like swans and geese) manage to maintain an area of open water and concentrate in large flocks (often numbering thousands of individuals) around the hole in the ice. If the icy conditions prevail for any length of time, numbers of Wigeon may dwindle, and observers (in Gloucestershire at least) have in the past presumed that they have returned to the estuary. Worcestershire observers however once again see no evidence of an exodus to the SPA (Andy Warr, Rob Prudden pers. com.). They maintain that even in very long periods of cold weather (nowadays increasingly unusual) there is enough open water on large deep lakes (Bredon's Hardwick in the past, Clifton or Bow Farm (Ripple Lakes) currently) for the ducks to rest by day and feed on nearby grassy fields at night.
- 5.240. It remains entirely possible that during icy periods in the past at Coombe Hill and Ashleworth, Wigeon and other ducks have simply moved off to sites such as Bredon's Hardwick or Bow Farm (Ripple Lakes), returning to Coombe Hill or Ashleworth when the thaw sets in.

### Interviews with other sources

- 5.241. Observations from wildfowling suggest that local movements of Wigeon regularly occur between the SPA and nocturnal feeding sites near the estuary (e.g. Vale of Berkeley, Frome valley, Walmore

Common, and as far north as Minsterworth Ham), though they are unable to tell just how far inland the birds may be flying (Trevor Bailey, Nigel Blayney, Felix Bihlmeier, Paul Walkden pers. com.). If there is extensive flooding, and if disturbance is minimal, the Wigeon may stay all day at such sites. This is frequently observed at Walmore, and in the very wet winter of 2019/20 Minsterworth Ham was under flood for an unusually long period, with large flocks of Wigeon being observed by day on several occasions (Andy Jayne<sup>24</sup> pers. com.).

#### Ringling recoveries

- 5.242. Fortunately for the purposes of the present study, a large number of Wigeon have been cannon-netted at Bredon's Hardwick in a project by the Wychavon Ringing Group, supported by Steve Dodd and specially designed to catch Wigeon, though much smaller numbers of other ducks were also caught. From 1996 to 2003, 1826 Wigeon (including 97 birds retrapped on site) were caught and marked with metal rings (Hodson 2005), though cannon-netting continued there until 2009. There have also been two other recent cannon-net catches in Worcestershire at Bow Farm (Ripple Lakes) on 3 February 2019 (which caught 205 new Wigeon) and 11 March 2019 (which caught 31 new Wigeon with one retrap), organized by Stuart Brown with the support of Steve Dodd. In addition, there have been three cannon-net catches at Ashleworth in Gloucestershire (one on 29 February 2004 which caught 49 Wigeon, a second on 29 January 2006 which caught 63, and a third on 22 February 2006 which caught 21), organized by WWT with the support of Mervyn Greening<sup>25</sup>. The BTO Ringing Office has advised that the total number of Wigeon ever caught in the two counties are 1863 in Worcestershire and 501 in Gloucestershire (which illustrates the relatively small number of Wigeon, compared to other ducks, ringed at Slimbridge, given that a small number were also ringed at Aylburton Warth in Gloucestershire in the 1960s). Wigeon were not marked with colour rings nor with GPS tags in these operations. Recoveries from these catches provide a valuable insight into movements of these species within the Vales (see below).
- 5.243. Wigeon ringed at Bredon's Hardwick, Ashleworth and Bow Farm (Ripple Lakes) show large numbers of birds moving back to their Arctic summer quarters beyond the Urals, with a few birds recovered in summer in Iceland. Many Wigeon recoveries from Bredon's Hardwick show that birds often winter in one site in one winter but choose a quite different area in subsequent winters (e.g. southeast England, the French Channel coast). But there is no evidence of movements of any distance within the same winter once birds are settled in their winter quarters (Hodson 2005).
- 5.244. In 14 years of Wigeon ringing at Bredon's Hardwick, none of the Wigeon was ever recovered in the SPA. Indeed there are no recoveries of Wigeon ringed at Bredon's Hardwick anywhere along the Severn estuary or Bristol Channel, either in the same winter (which would demonstrate movements between inland sites and the estuary) or in following winters (which would not demonstrate movement to the SPA, because during the summer the birds would have returned to their breeding grounds in the Arctic). Even movements in the general direction of the south-west are rare: there is a single recent recovery of a Wigeon ringed at Bredon's Hardwick in February 2009 and shot in the Somerset Levels in January 2010 (i.e. not in the same winter, so not a direct flight), and there is one recovery of a Wigeon ringed at Bredon's Hardwick in March 1996 and recovered in December 1996 (hence again with a visit to Arctic Russia in between) on the Cleddau estuary in Pembrokeshire. With the number of wildfowlers active on the Severn estuary, the likelihood of some

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<sup>24</sup> A well-respected local ornithologist.

<sup>25</sup> Currently the Chairman of Gloucestershire Naturalists' Society and an active bird ringer.

recoveries of Wigeon being reported to indicate movement between inland sites and the SPA would seem high.

- 5.245. Local recoveries of Wigeon ringed in previous years at Bredon's Hardwick do on the other hand demonstrate return in subsequent years to the same wintering area within the Severn and Avon Vales: one Bredon's Hardwick ringed bird was shot four years later 2.5km away at Bushley on the Severn and another six years later at nearby Croome Park 10km to the north, hence not in the same winter. Seven Bredon's Hardwick ringed Wigeon have been recovered at Ashleworth (six at cannon netting sessions, one shot) and one at Bow Farm (Ripple Lakes), in 2019, ten years after ringing. Of these, only one of the eight was in the same winter.
- 5.246. Nor have more recent Wigeon cannon-netting sessions at Bow Farm (Ripple Lakes) and Ashleworth provided any recoveries in the SPA, though (as noted above) they too have shown short distance movements between Bredon's Hardwick, Bow Farm (Ripple Lakes) and Ashleworth, though only one was in the same winter.
- 5.247. As for recoveries of Wigeon ringed at Slimbridge in the SPA, Mitchell (in a review of recoveries before 1990) listed just three birds which were recovered in the same winter: two were on the estuary near Lydney, while one very old recovery was ringed on 25/12/1948 and shot at Tirley in the Severn Vale on 18/01/1949; there is a second recovery of a Slimbridge ringed-bird at Tirley, but it was not in the same winter (ringed on 19/09/1954, shot on 29/11/1955). There is one single recent Wigeon recovery from Slimbridge to the Severn Vales, a bird ringed at Slimbridge on 30/11/2005 and recovered during a cannon-netting session at Ashleworth on 29/01/2006 (hence during the same winter).
- 5.248. This review suggests that there is a distinct lack of ringing evidence of movement from the Severn Vales to the SPA, though there are one or two indications of movement from the SPA inland.
- 5.249. It should be noted that most recoveries of cannon-netted Wigeon come from shot birds, which are rarely recovered in the same winter of capture. Ideally, more extensive tagging of Wigeon with GPS tags would be carried out to show whether or not such movements occur. The tagging of Wigeon by the WWT on the Usk estuary in south Wales, under contract to BTO (Scragg *et. al.* 2016) demonstrated that Wigeon there moved only within a small area, although one of the authors (G. Hilton, pers. com.) provided a commentary on this result, stating that although home ranges were found to be very small, there are few/no other similar studies of wintering Wigeon. It was strongly emphasised that the WWT/ BTO study entailed short-term deployments (about a month) in one area on the Welsh side, in one late-winter period and that we should be extremely cautious about using them to make wider inference about what Wigeon from other parts of the estuary do; what they might do in particular weather/flood conditions; what they might do on passage or in early winter.
- 5.250. This review leads to a question which seems rarely to have been asked in the past, and deserves greater attention: how site-faithful are Wigeon to wintering sites? Some birds caught early in the winter may be on their way through to wintering sites further west and south. This is why most catches at Bredon's Hardwick, Bow Farm (Ripple Lakes) and Ashleworth were purposely timed to occur late in the winter, when most wildfowling had finished (John Hodson, Steve Dodd, pers. com.). Recoveries of cannon-netted birds at these sites suggest that most birds, once arrived in winter, stay faithful to their wintering site.

- 5.251. Evidence from other ringing sites suggest that the same is true there. This included evidence from Peter Potts (Solent Ringing Group) regarding Southampton Water and Seaton, Devon, as well as Carl Mitchell (WWT) regarding the Severn estuary and East of England. The data from three ringing sites in Norfolk (Pensthorpe), Suffolk (Nacton) and Essex (Abberton) suggest that wintering birds are indeed faithful to specific areas, although these can be very large and they do overlap to some extent. It should be noted that this is not the product of a detailed analysis (Carl Mitchell, pers. com.).
- 5.252. It has been acknowledged that little evidence from GPS tagging is available and staff at WWT Slimbridge had intended to attach tags in winter 2019/20. However, very few Wigeon were caught.

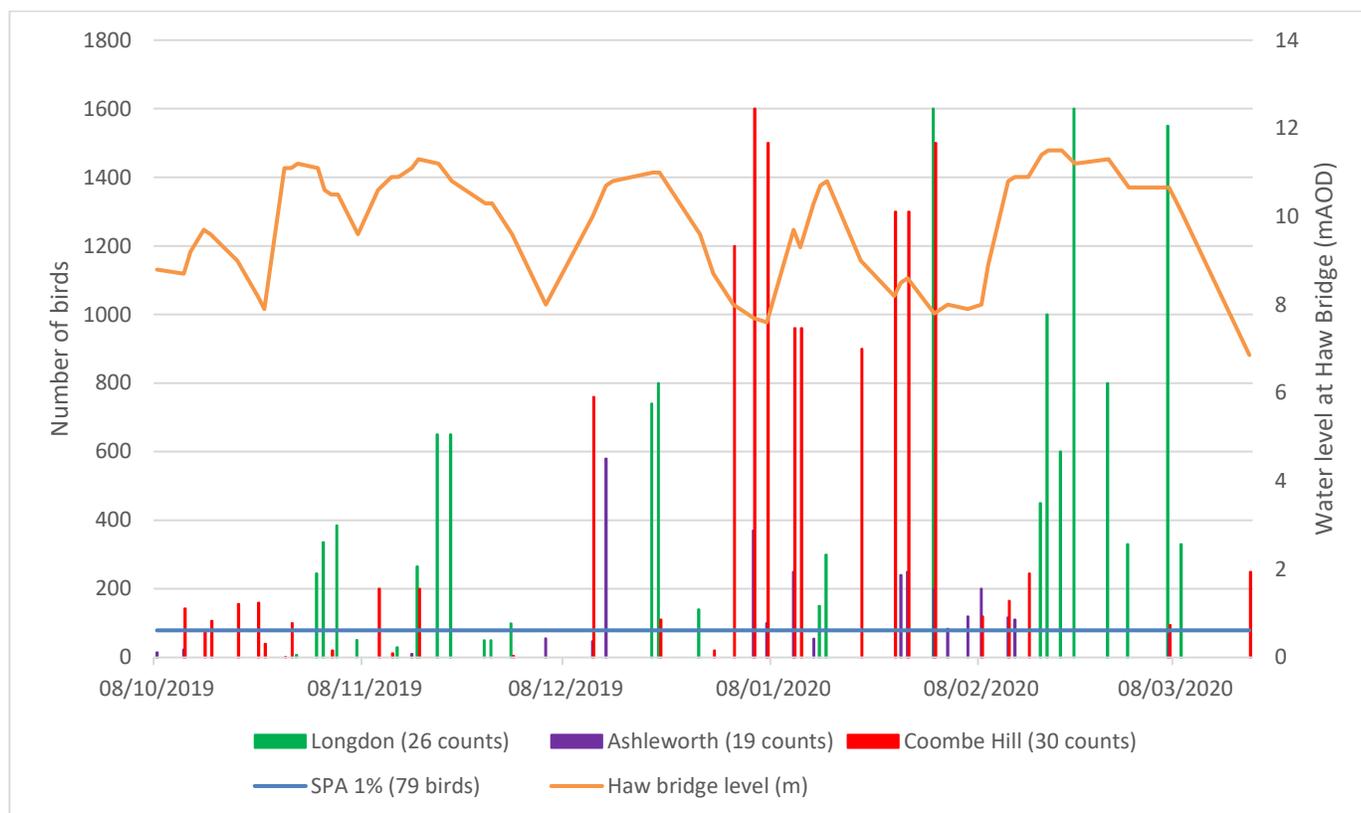
#### Other evidence of Wigeon movements

- 5.253. A leucistic female Wigeon was observed for several winters at Coombe Hill; it was first observed there in winter 2012/13, then recorded again on 29/10/2013, then on 10/01/2014 at Minsterworth, again at Coombe Hill on 27/02/2016 and on 7 and 10/02/2017 and 01/03/2017. A leucistic Wigeon was noted on several occasions at Slimbridge, but it is not known whether it was the same individual on all occasions.

#### Findings of field work carried out in 2019/20

- 5.254. The findings of field work in the winter of 2019/20 largely corroborated the opinions of the counters. We found, as in previous years of flood, that birds vacated sites when flooding was deep (notably at Ashleworth, Coombe Hill and Bow Farm [Ripple Lakes]) and, at least circumstantially, were re-found at sites where flooding occurred later and/or was shallower (notably at Longdon Marsh and Upham). Figure 4.1 below illustrates how numbers at Ashleworth, Coombe Hill and Longdon Marsh fluctuated within this period, probably to a large extent in response to river water levels, as measured at the Environment Agency gauging station at Haw Bridge, which is located at NGR SO844278, this is the closest station to Ashleworth and Coombe Hill. Although not formally analysed, the counts suggest that as river levels rose and flooding across Ashleworth and Coombe Hill occurred, numbers at those sites dropped whilst those at Longdon rose. This in turn suggests that the populations at these three sites are linked, although this is still only circumstantial evidence of a link and may not take account of more complex bird movements between these and other sites, including the SPA. Given that more intensive studies (reviewed above) have shown that Wigeon maintain a strong site fidelity and disinclination to travel far within winters, the likelihood is that the majority of birds observed did remain within the smaller area between the non-SPA sites.
- 5.255. It should be noted that a specific cause and effect of flooding can only be inferred by water levels at Haw Bridge because these measurements cannot illustrate fully the effect and duration of flooding onto land on the other side of the river floodbanks. However, over-topping of the Severn floodbank in the general area begins to occur when river levels reach or exceed 10.75m AOD. This adds to surface flooding that began to occur as tributary streams backed up at much lower river water levels. Having received water from both tributaries and the main river, the floodplain may then retain water for some time as it is discharged back to the river via non-return valves on ditches, which are at a lower level than the river floodbanks and which therefore depend on river levels dropping below their outfall heights before draining out.

**Figure 4.1 - Numbers of Wigeon at Ashleworth, Coombe Hill and Longdon Marsh North, October 2019 to March 2020**



- 5.256. Shallow flooding at Walmore, Wilmore and Minsterworth generated large numbers of birds, although in the case of Walmore there was little to suggest that large scale bird movements were occurring.
- 5.257. Winter 2019/20 was very wet, but also fairly mild, with very little frost causing floodwater to be iced over. The only period when ice lasted for a few days was during the short period from 18-21 January 2020; Bow Farm (Ripple Lakes) Pits were still completely unfrozen on 19 January with only four Wigeon and few other ducks; on the same date there was little flooding at Longdon Marsh, with no Wigeon. At sites with shallow floodwater, ducks gathered around holes in the ice but did not leave the area: thus on 19 January at Hill Court Farm there were 10 Wigeon, with larger numbers of Teal, sitting on the thin ice; while on 21 January at Coombe Hill there were still 900 Wigeon on the ice with very large numbers of Teal.

#### Synthesis of findings for Wigeon

- 5.258. The following synthesis summarises the evidence for Wigeon movements between the SPA and upstream sites in the Severn and Avon Vales, as well as between sites.
- 5.259. Severn upstream of the SPA to Gloucester:
- Observations from wildfowlers confirmed that there are extensive and regular evening movements from day roosts on the SPA to inland sites for nocturnal feeding, probably at no great distance. Grassland near the estuary and autumn sown crops quite close to the estuary are likely to be important sources of food for Wigeon.

- Observations over multiple visits indicated that Wigeon probably move readily in time of flood between the SPA and inland marshy areas like Upper Dumball (this is described in the Phase 4 report) or Wilmore Common at Rodley, Walmore Common or Minsterworth Ham, all relatively close to the SPA; observations show Wigeon moving out from these sites towards the estuary in early morning. If the floods persist and disturbance is limited, the birds may use these inland floods as day roosts, staying all day.
- Wigeon may also move from the estuary to Frampton Pools, where small numbers occur on Court Lake.

#### 5.260. Severn upstream of Gloucester:

- There may be some movement between the SPA and Coombe Hill/ Ashleworth complex, but there is little evidence for this. No very large counts occurred in 2019/20 to match the figures of up to 3500 often recorded in recent winters, precisely because the flood water was so deep and the birds were constantly on the move to adapt to local conditions. The biggest counts at Coombe Hill in winter 2019/20 (1500 in early January) were at times of only moderate flooding.
- In time of deep flood, Wigeon leave Ashleworth/Coombe Hill because the water submerges their preferred feeding areas. At times like this, they move off to Longdon Marsh, where the flood is later and shallower, but only stay there for a very short while; counts of up to 1600 Wigeon were made at Longdon in February and early March 2020, when floods at Coombe Hill and Bow Farm (Ripple Lakes) were very high, and numbers of Wigeon had decreased; counts were not so high in the big November 2019 flood because many Wigeon had not yet arrived.
- In hard weather, when shallow floods are covered with ice, ducks generally maintain an area of open water and sit in numbers around the edge of this hole until the thaw. In hard weather conditions numbers of ducks decrease; they may then move to deeper waters nearby which do not freeze over completely (which seems most likely); or some may return to the SPA (though there is little or no evidence for this).
- There is much local movement between the sites of Bow Farm (Ripple Lakes), Bredon's Hardwick, and Upham Meadow, all of which are close to one another, as disturbance occurs or water levels vary. Currently Bow Farm (Ripple Lakes) is the preferred site but it and the other two sites were totally submerged on several occasions in 2019/20, so the birds also moved to nearby Longdon.
- There may be some movement from Bow Farm (Ripple Lakes) to Clifton.
- Sites between Clifton and Grimley do not have wintering Wigeon. At Grimley, birds seem to stay put throughout the winter.

#### 5.261. Along the Avon:

- Gwen Finch, John Bennett and Lower Moor currently have low numbers of Wigeon, though ten years ago they (especially Gwen Finch) used to hold higher numbers before much of the best habitat for Wigeon was scrubbed over.

#### 5.262. Known and implied movements of Wigeon are illustrated on Maps 7 and 8 in Appendix 1.

### Conclusions

#### 5.263. The Severn Estuary SPA is a major wintering site for Wigeon, and these birds feed at night on

inland fields, probably as far north as Minsterworth Ham. They may stay at these sites all day if floodwater is present and they remain undisturbed. Current evidence suggests that movements of Wigeon between the SPA and sites north of Gloucester are minimal.

- 5.264. Large numbers of Wigeon also winter at inland sites along the Severn north of Gloucester, notably at Ashleworth Ham, Coombe Hill, Longdon Marsh and Bow Farm (Ripple Lakes) Lakes, with smaller numbers at Clifton, Grimley, Upton Warren, and along the Avon at Mitton, Bredon's Hardwick, Gwen Finch, John Bennett and Lower Moor.
- 5.265. Wigeon certainly perform local movements in time of high flood; in particular they move away from sites like Ashleworth Ham, Coombe Hill and Bow Farm (Ripple Lakes) Lakes especially to the northern part of Longdon Marsh, which floods later than the principal sites and where floods are much shallower.
- 5.266. Bow Farm (Ripple Lakes) has in recent years become a major concentration site for waterbirds, particularly in dry autumns (unlike 2019) when other floodplain wetlands hold no surface water. It has as yet no protected status, and any plans for future use must take account of its importance for waterbirds. The same, to a lesser extent, can be said for Clifton which, at least during 2019/20, was host to numbers in excess of the 1% criterion and is the most northerly of the sites studied that had large numbers of this species.
- 5.267. All these sites are of major importance for Wigeon (and indeed other waterbirds) and deserve a high level of conservation concern.
- 5.268. Further research, in particular involving use of GPS tags on Wigeon, is needed to confirm this lack of movement between SPA and inland sites.
- 5.269. Too little attention has been paid in the past to where Wigeon go if they leave a site in icy periods. In future there should be coordinated counts in time of icy conditions at Coombe Hill, Ashleworth, Bow Farm (Ripple Lakes) and Bredon's Hardwick, in times of winter ice cover on shallowly flooded sites. Given how infrequently this now occurs, mobilisation, at short notice, of volunteer effort seems to be the only means by which this could be achieved.

## ***Mallard***

### General ecology, phenology and movements of the species

- 5.270. Mallard's outstanding characteristic is its adaptability to a wide range of habitats; it is essentially a bird of still and shallow waters. It is tolerant of human presence and ready to exploit artificial food supplies; omnivorous and opportunistic, it chiefly takes seeds and green parts of plants in the early part of the year, then as spring leads into summer invertebrate animals are taken more frequently. Mallard breeds throughout Europe, right down to the Mediterranean; it is mostly migratory, but some populations are more sedentary, abmigration<sup>26</sup> is frequently reported in northwest Europe from artificially reared stock released by sportsmen, which bolster numbers (Cramp & Simmons 1977). It is the most abundant and widespread of northern hemisphere ducks in both North America and Eurasia; in north, east and central Europe, most Mallard migrate south and west for the winter; however in temperate northwest Europe, including Britain, Mallard is largely sedentary or dispersive

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<sup>26</sup> A northward summer migration of birds without a corresponding southward migration the previous autumn.

(Wernham *et al.* 2002).

#### Overview of status in UK as a whole

- 5.271. To qualify as internationally important, a site must regularly hold 20,000 Mallard. No sites in the UK or Ireland reach this level.
- 5.272. To qualify as nationally important in GB, a site must regularly hold 6700 Mallard, to qualify anywhere in Ireland a site must hold 280. No sites in GB reach the 6700 level; three Irish sites reach the All-Ireland level, the first being Lough Neagh and Beg, the only site in GB or Ireland with over 4000 Mallard. The Severn Estuary comes fifth in the list of GB sites with a winter mean of 2379 individuals over the five winters from 2014/15 to 2018/19; (Cotswold Water Park ranks third with 2838).
- 5.273. According to BirdFacts<sup>27</sup> on the BTO website, Mallard is an introduced and resident breeder and winter visitor, with 103000 breeding pairs and a wintering population of 675000 individuals (2012-2017). Its UK conservation status is Amber. The European breeding population is estimated at 2.0 to 3.4 million pairs.
- 5.274. The 2007-11 Breeding Atlas comments that there has been a significant and widespread increase in breeding abundance in the UK (but not in Ireland), adding that in some areas numbers are boosted by releases of captive-bred birds for shooting purposes. These breeding season trends are not matched in winter. The widespread nature of the species belies the fact that there has been a general reduction in the size of the wintering population since around 1990 (Balmer *et al.* 2013).

#### Overview of status in Severn Estuary SPA

- 5.275. Mallard is not one of the eight qualifying species for the SPA designation, but is one of the eleven species listed in the SPA assemblage of species (2001 review) - together with other surface-feeding ducks including Wigeon, Teal, Pintail and Shoveler. The five-year mean winter total for the Severn Estuary SPA from 2014/15 to 2018/19, as noted above, is 2379 individuals, so the 1% population is 24 birds. The maximum WeBS count totals for the whole of the estuary SPA in recent winters have been as follows: 2916 in September 2013; 2293 in August 2014; 2417 in December 2015; 2766 in September 2016; 1809 in September 2017; and 2611 in September 2018; the largest counts in the SPA thus often occur in early autumn, perhaps reflecting releases of birds by sportsmen and as yet limited shooting; these figures do not indicate any major immigration from colder climes to the northeast, as is the case with other surface-feeding ducks.
- 5.276. For Gloucestershire Kirk and Phillips (2013) remark that numbers wintering in Gloucestershire have not declined as much as the national picture would suggest, and that the Severn Estuary regularly attracts over 3000 Mallard (which, as shown above, has not been the case in the period since their volume was produced).
- 5.277. Counts in the SPA: At Slimbridge between 2004 and 2006 there were twelve counts of between 1500 to 2026 (all from August to October except for one in December and one in January); since then there has been only one four figure count (2000 in October 2015), and counts are more often of the order of 500 to 800. At Frampton Pools there are no counts in three figures, and only two of over 50 (in January 2016 and January 2017). On the west bank of the estuary, counts at Aylburton have only exceeded 30 when tame birds on a shooting pond near Plusterwine are included and

<sup>27</sup> <https://www.bto.org/understanding-birds/birdfacts>

even then, the highest count in the last 15 years is only 85.

#### Overview of status in inland wetlands in Severn and Avon Vales

- 5.278. In the archives of the West Midland Bird Club, Mallard is referred to as a “*common resident and very common winter visitor*”. The tables suggests that in most sites there is a late summer peak from July to October (presumably of local breeders) with another (often lower) winter peak, no doubt encompassing winter immigrants; there are however a few three-figure counts along the Severn at Diglis (near central Worcester), with numbers around or over 200 from August to October in 2015 and 2016, when numbers at Upton Warren also reached 600. At most sites Mallard are recorded throughout the year, with multiple breeding records.
- 5.279. Counts between the SPA and Gloucester: At Wilmore Mallard numbers have only ever exceeded 100 once (165 in August 2014) and rarely pass 30 in winter. At Walmore the highest counts, in time of winter flood, were 326 in January 2014 and 306 in December in 2015 but counts of over 200 have occurred with some regularity in recent years. At Minsterworth Ham, with a short data set, the highest count was of 57 in November 2019.
- 5.280. Along the Severn above Gloucester: At Alney Island, Mallard numbers have not exceeded 40, at Maisemore a long series of counts have only twice been above 50 (56 in December 2020 and 68 in December 2010). At floodplain sites: at Coombe Hill the highest counts of 200 to 300 often occur from July to September (with one exceptional count of 615 in September 2008), with a few counts of some hundreds in December or January; at Ashleworth counts are similar to those at Coombe Hill with maximum counts of 150 to 270, but generally in midwinter rather than in late summer and autumn. At Longdon Marsh, with a short data set, counts have never exceeded 40.
- 5.281. Along the Severn corridor from Bow Farm (Ripple Lakes) northwards: At Bow Farm (Ripple Lakes), apart from two counts of 553 in December 2018 and 272 in December 2015, Mallard counts rarely reach three figures, the highest generally in November / December, but with an evening roost count of 128 in June 2017; the count of 553 in December 2018 was also a roost count, and may have been caused by wildfowling on neighbouring sites (A. Warr pers. comm.); the count of 277 was a daytime count. Similarly at Clifton, the only three figure count is of 114 in October 2011, while counts at Pirton Pool only once exceeded 100 (112 in September 2016). At Westwood Pool, Mallard is classified as ‘Resident and common winter visitor, breeds’; numbers have been altogether lower in recent years with few three figure counts nowadays and a distinct late summer peak from July to September. At Grimley too three figure counts are uncommon with a maximum of 161 in February 2015. At Upton Warren numbers are much larger, with regular late summer peaks several times reaching 600 birds, and lower midwinter maxima of a few hundred.
- 5.282. At sites along the Avon a similar pattern emerges: few counts of over 100 (maxima at Bredon’s Hardwick of 144, at Kemerton (KCT) of 212, at John Bennett of 145, at Gwen Finch of 108, at Beckford of 49), late summer peak from July to September with a smaller winter peak in December.
- 5.283. This summary indicates that almost all of the sites under consideration have been host to the equivalent of 1% or more of the SPA population, as is shown under the site accounts below.

#### Counter interviews

- 5.284. The comments from the counters have been included in the text on Mallard. Some counters take little notice of, or interest in, Mallard, and it may be that their numbers are less accurately assessed.

### Ringling recoveries

- 5.285. The BTO Online Ringing Report gives details of the recoveries of the vast numbers of Mallard ringed over the years in Gloucestershire, mainly at Slimbridge with catches continuing until the present day, unlike Shoveler, though the majority of recoveries are quite old, dating from the 1950s to the 1990s. Of nearly 1600 recoveries of the thousands of Mallard ringed at Slimbridge and recovered in Britain and Ireland, very many come from neighbouring counties: 174 from Worcestershire, 230 from Herefordshire, 128 from Wiltshire and 123 from Avon, with smaller numbers from more distant counties. But there is evidence of considerable movement out of Britain too: 627 foreign recoveries, some in more southerly wintering grounds (127 mostly shot in later winters in France), but the majority back in central European breeding areas or en route there: 134 in The Netherlands, 100 in Denmark, 73 in Sweden, 60 in Germany, 56 in Finland, and 47 as far away as Russia.
- 5.286. The Online Ringing Report for Worcestershire shows a much smaller number of birds ringed there (mainly at Bredon's Hardwick), with 15 recoveries in counties other than Worcestershire (eight in Gloucestershire, two each in Shropshire and Herefordshire) but no foreign recoveries at all. Of the eight recoveries in Gloucestershire of Mallard ringed in Worcestershire, most are in the Vales, in the immediate neighbourhood of the ringing site (Tewkesbury, Twynning); only one is back at Slimbridge (ringed Sledge Green on the Wye on 08.02.60, caught at Slimbridge on 14.03.60, thus a same winter recovery).
- 5.287. Particular interest has been devoted to Mallard movements over many years at Slimbridge: the late Prof. Geoffrey Matthews devoted much attention to studies of "nonsense migration" in Mallard (wherever released, they always seemed to fly southwest). Of the large number of Mallard ringed at Slimbridge and recovered in the Vales, most are once again (as with Shoveler) relatively old recoveries, from the 1950s to the 1980s; perhaps shooting pressure has declined in recent years? Many of the recoveries come from the same familiar farm locations where a local landowner is clearly a keen sportsman, and shooting is (or was) regular. Among local recoveries, many are in the SPA itself, some to the west in or near the Forest of Dean, some to the east in the Cotswolds; of 185 birds that moved north towards the Vales (or in neighbouring sites in Herefordshire and along the Wye), 69 (or just over a third) were in the same winter, 116 (nearly two thirds) were in later winters, not only at farm sites but at many of the sites regularly mentioned in the present report: Walmore, Minsterworth, Elmore, Over, Gloucester, Maisemore, Coombe Hill, Ashleworth, Tirley, Longdon and Hill Court, Westwood Pool, Grimley, Bredon's Hardwick, Lower Moor, Kemerton, Beckford. Thus there is clearly extensive winter movement of Mallard from Slimbridge to the Vales, but also in other directions; it is hard to detect any regular pattern, perhaps more a random dispersal.

### Summary findings of fieldwork carried out in 2019/20

- 5.288. During fieldwork in the very wet winter, the project team could confirm that numbers of Mallard in the Vales are nowhere as spectacular as numbers of other ducks which come as winter visitors.

### Synthesis of findings

- 5.289. Mallard (with Gadwall) is one of the only species of dabbling duck present in numbers throughout the year in the SPA and the Vales, and breeding over a large area.
- 5.290. Although it is ubiquitous, Mallard nowhere gathers in very large concentrations, the biggest on the SPA at Slimbridge barely reaching four figures of late, and the biggest inland at Upton Warren once

reaching 600. Elsewhere few sites can boast counts of over 200; the species is found everywhere, but in small groups. Nevertheless, these groups frequently meet or exceed the equivalent of 1% of the SPA population.

- 5.291. There is generally a peak in numbers, both on the estuarine sites of the SPA and inland, in late summer (July to September or October), presumably brought about by the summer's production of ducklings before the shooting season begins.
- 5.292. Another (often smaller, and barely perceptible) peak occurs in midwinter, presumably caused by the influx of wintering birds from the continent. Ringing recoveries of birds ringed at Slimbridge show that a large number of Mallard ringed in winter return to continental breeding sites in summer, as far off as Finland and Russia; without these ringing recoveries the winter influx would not be so apparent.
- 5.293. The ringing recoveries show considerable movement of Mallard to inland sites in the Vales, often in the same winter; there are also movements to the Cotswolds and to areas to the west of the Severn, but there is little obvious pattern in these movements.
- 5.294. Many Mallard are bred and released into the wild by sportsmen; the proportion of these birds in the local Mallard population of the SPA and Vales is unknown. It may be that some of the movements revealed by ringing recoveries relate to these released birds.
- 5.295. Known and implied movements of Mallard are illustrated on Map 9 in Appendix 1.

### Conclusions

- 5.296. Mallard is a very common and widespread species in the SPA and the Vales, but its very familiarity and tameness may mask a decline in numbers, particularly of wintering birds.
- 5.297. No sites in Britain or Ireland reach the qualifying level of 20,000 for international importance, but even so, the Severn Estuary SPA with a current winter count of 2379, is one of the top five sites for Mallard numbers; (the Cotswold Water Park is another).
- 5.298. The two peaks in numbers of Mallard probably reflect locally-bred birds in late summer and immigration from the continent in mid-winter.
- 5.299. It would be interesting to find out just how many local Mallard spring from introductions by shooting interests.
- 5.300. It would also be of interest to analyse in more details the Mallard recoveries from Slimbridge.
- 5.301. The decline in numbers of recoveries since the much higher rates from the 1950s to the 1980s probably reflects a decrease in hunting pressure on Mallard in the area.

### ***Pintail***

#### General ecology, phenology and movements of the species

- 5.302. Pintail in its winter habitat is predominantly a duck of shallow waters, either freshwater marshes or saltier shallow estuaries. It feeds on a "*wide variety of plant and animal materials; obtained..... chiefly by upending. Long neck may be adaptation for bottom feeding providing advantage over other Anas in same habitat.... Plant material chiefly seeds, tubers and rhizomes. Animal materials*

*mainly insects... also molluscs*" (Cramp & Simmons, 1977).

- 5.303. The species is essentially a winter visitor to the UK, though some do breed in lowland wetlands as well as in Scotland. Breeding birds from Iceland winter in UK, as do birds nesting in northern Eurasia as far east as north-west Siberia (Cramp & Simmons, op.cit.). The population of some 60,000 individuals which winters in Ireland, UK and along the coasts of the North Sea and English Channel has been identified as separate from the much larger population (nearer a million birds) that winters in the Black Sea, Mediterranean and West Africa, and other Asian and American populations.
- 5.304. Pintail remains a quarry species in UK and most of Europe, and the vast majority of ringing recoveries, as with other ducks, comes from birds shot by wildfowlers.

#### Overview of status in the UK as a whole

- 5.305. To qualify as internationally important, a site must regularly hold only 600 Pintail (because UK birds form part of the discrete population wintering in NW Europe). There are 13 sites in the UK that meet this criterion. These are Blackwater Estuary, Burry Inlet, Dee Estuary (England and Wales), Dee Estuary (English counties), Duddon Estuary, Longdon Marsh, Medway Estuary, Morecambe Bay, Ouse Washes, Ribble Estuary, Severn Estuary, Solway Estuary, Solway Estuary (Scottish counties).
- 5.306. To qualify as nationally important, a site in Britain must regularly hold 200 Pintail. There are 34 sites in Great Britain that meet this criterion. These are Abberton Reservoir, Alde Estuary, Dee Estuary (Welsh counties), Dee Flood Meadows, Dengie Flats, Dornoch Firth, Dyfi Estuary, Exe Estuary, Fleet and Wey, Inner Moray and Beaulieu Firths, Lindisfarne, Lock Leven, Lower Derwent Ings, Mersehead RSPB Reserve, Nene Washes, Newtown Estuary, North Norfolk Coast, North Warren and Thorpeness Mere, North West Solent, Pagham Harbour, Poole Harbour, River Severn and River Vyrnwy Confluence, Severn Estuary (English counties), Severn Estuary (Welsh counties), Severn Hams (i.e. the Ashleworth and Coombe Hill complex), Solway Estuary (English counties), Somerset Levels, Stour Estuary, The Wash, Traeth Bach, Traeth Melynog, Wigtown Bay and WWT Martin Mere<sup>28</sup>.
- 5.307. The main wintering areas of Pintail in the UK are estuaries in Wales and north-western England. Pintail however readily move rapidly and suddenly inland to freshly flooded shallow inland marshes (e.g. the Ouse Washes, Dee Marshes or Severn Hams) (Carl Mitchell pers. com.).
- 5.308. Austin *et al.* (2014) note that "*Compared to other wildfowl species, the annual WeBS index for Pintail tends to be characterised by relatively large inter-year fluctuations. This reflects the aggregated nature of this species' occurrence on a relatively small selection of sites, coupled with its high mobility and tendency to exploit temporarily flooded areas. However, one cannot ignore the marked decline that has taken place since 2005/06*".

#### Overview of status on the Severn Estuary SPA

- 5.309. The five year mean peak for Pintail on the Severn Estuary (2014/15 to 2018/19) is 786 so the 1% population threshold for importance of a site within the SPA is 8 birds.
- 5.310. Pintail is a winter visitor to the Severn estuary, present from September to March, with the largest numbers occurring from late November to mid-February. Numbers usually exceed the 600 level for

<sup>28</sup> As listed at <https://app.bto.org/webs-reporting/>

international importance: in the entirety of the Severn Estuary SPA, the highest monthly maxima in WeBS counts were: 382 in 2013/14, 932 in 2014/15, 1074 in 2015/16, 663 in 2016/17, 643 in 2017/18 and 618 in 2018/19.

#### Overview of status on inland wetlands in Severn and Avon Vales

- 5.311. Pintail is undoubtedly one of the most significant species in the Severn and Avon Vales, because of the relatively large, internationally important concentrations which occur (not every year, but in most winters) when conditions on shallow floodplain wetlands are suitable for them. These big groups often only last for a short time – for just as long as the ideal conditions persist. Pintail numbers in the Severn Vales hence tend to fluctuate more sharply than numbers of other wintering duck species.
- 5.312. There are no breeding records at all in Gloucestershire or Worcestershire, and the species is only very rarely noted in summer; any birds recorded from May to August are probably injured birds that could not migrate back to breeding grounds, and rarely survive the summer. The species is a winter visitor, with the first few arrivals generally occurring in September and numbers building up as flooding increases; in a wet autumn good numbers may already be present by September or October, but the peak is usually from December to February, with the last ones departing in March or early April.
- 5.313. Birds on the Severn floods are often observed in active courtship groups, with groups of drakes chasing a smaller number of females, and pair formation is undoubtedly an important activity at this time.
- 5.314. As for Wigeon, Pintail numbers increase as floodwaters rise, but even more than for Wigeon, sudden influxes are noted when conditions are especially suitable, and on several occasions in the last twenty years groups of up to 1500 Pintail have occurred at Longdon, Coombe Hill and Ashleworth or Hasfield, the totals often exceeding the numbers normally found on the whole of the Severn SPA. It would therefore seem obvious that they must have come from further afield, but the origin of these influxes remains a mystery. Similar sudden increases have been observed when conditions are perfect for the birds (fresh flood, shallow water, presumably abundant vegetal and invertebrate food in the water) at other inland flood-lands like the Ouse Washes or the Dee Marshes (Carl Mitchell pers. com.).
- 5.315. If the floodwaters become too deep at sites like Coombe Hill or Ashleworth, the Pintail will seek other shallower sites, and the flat grassland on either side of Longdon Brook at Longdon Marsh, which floods later than other sites and where water often remains shallow, is a particularly favoured site; some Pintail will also appear at the Worcs WT Hill Court Farm Reserve, but in much smaller numbers. Large numbers rarely stay for any length of time at Longdon however, as the birds move away as soon as the floodwater begins to abate.
- 5.316. Elsewhere in Worcestershire, Pintail is a scarce species. Outside of Longdon Marsh and the nearby Hill Court Farm Reserve, Pintail is one of the least numerous surface-feeding ducks in Worcestershire, rarely recorded in double figures at the former gravel pits and other wetlands further north along the Severn and Avon.
- 5.317. At times of icing over of their wintering sites Pintail, like other surface-feeding ducks, initially concentrate around holes in the ice kept open by waterbirds of various species, but numbers may

decline if the hard weather persists. It is not known whether on such occasions they return to estuaries (exactly which estuary remains, as stated above, uncertain) or whether they simply move to other deeper unfrozen waters nearby. These latter areas must, however, present poor feeding opportunities other than at their margins.

5.318. Favoured sites in the Severn and Avon Vales:

- Downstream of Gloucester and closer to the SPA, Walmore Common and Minsterworth Ham attract good numbers of Pintail (up to several hundred, especially at Walmore) in time of shallow flood, very probably birds coming to feed from the SPA. If the floodwater persists, the Pintail may stay for a longer period without returning to the estuary by day.
- The Coombe Hill/Ashleworth complex has always been a favoured site for Pintail, Coombe Hill becoming increasingly important since the creation of scrapes at Coombe Hill by GWT in 2003. Pintail occur in flocks of several hundred here, and when conditions are particularly favourable the total may exceed one thousand, notably on shallowly flooded low-lying fields at Hasfield Ham.
- Some of the largest concentrations of Pintail (up to 1500 birds) have occurred at Longdon Marsh in time of shallow flood. Such concentrations have been observed for at least the last twenty years, as shown by records in the West Midland Bird Club archives, though their significance has only recently been recognised and Longdon Marsh has only recently been established as a WeBS site. At Longdon, Pintail may occur on flooded grassland or, in years of deep flood, on flooded maize stubble. When floodwater is deep at Coombe Hill and Ashleworth, Pintail seem to move out from these sites, but numbers seem to be augmented from other more distant origins too.
- Bow Farm (Ripple Lakes) Lake only holds small numbers of Pintail, and numbers are only slightly larger than at the other gravel pits, so Bow Farm (Ripple Lakes) cannot be the origin of the big influxes noted at Longdon Marsh only 4.5 kms away.
- Pintail occur in small numbers at sites further upstream (Clifton, Grimley, Westwood, Upton Warren), rarely reaching double figures.

Counter interviews

- 5.319. Worcestershire counters only occasionally see this species north of Longdon. They do not consider that there are any regular movements of this species from the estuary. Those who visit Longdon Marsh are aware that quite large influxes of Pintail occasionally occur there but consider that they originate from Gloucestershire sites like Coombe Hill or Ashleworth, or perhaps much further afield.
- 5.320. Gloucestershire counters have in the past recorded the presence of large numbers of Pintail, when shallow flood conditions are available at Walmore, Minsterworth, Coombe Hill and Ashleworth. They consider that at sites near the estuary like Walmore and Minsterworth, the Pintail are probably moving in directly from the SPA. In the past they have considered that some Pintail at Coombe Hill and Ashleworth may come from the SPA but that the larger flocks must come from further afield, since the numbers involved are larger than those normally present on the estuary. In the light of the comments from Worcestershire observers about the lack of exchanges with the estuary, and of ringing data, they now begin to feel that there is little proof of major movements between the SPA

and the Severn Vales.

- 5.321. In hard weather Pintail, like other ducks, initially gather around holes in the ice, then numbers decline if the conditions persist. There is little clarity on where the birds go as numbers drop.

#### Interviews with other sources

- 5.322. Wildfowlers agree that Pintail fly inland from the estuary at evening flight, but numbers are never anywhere near as large as those of Wigeon or Teal.

#### Ringling recoveries

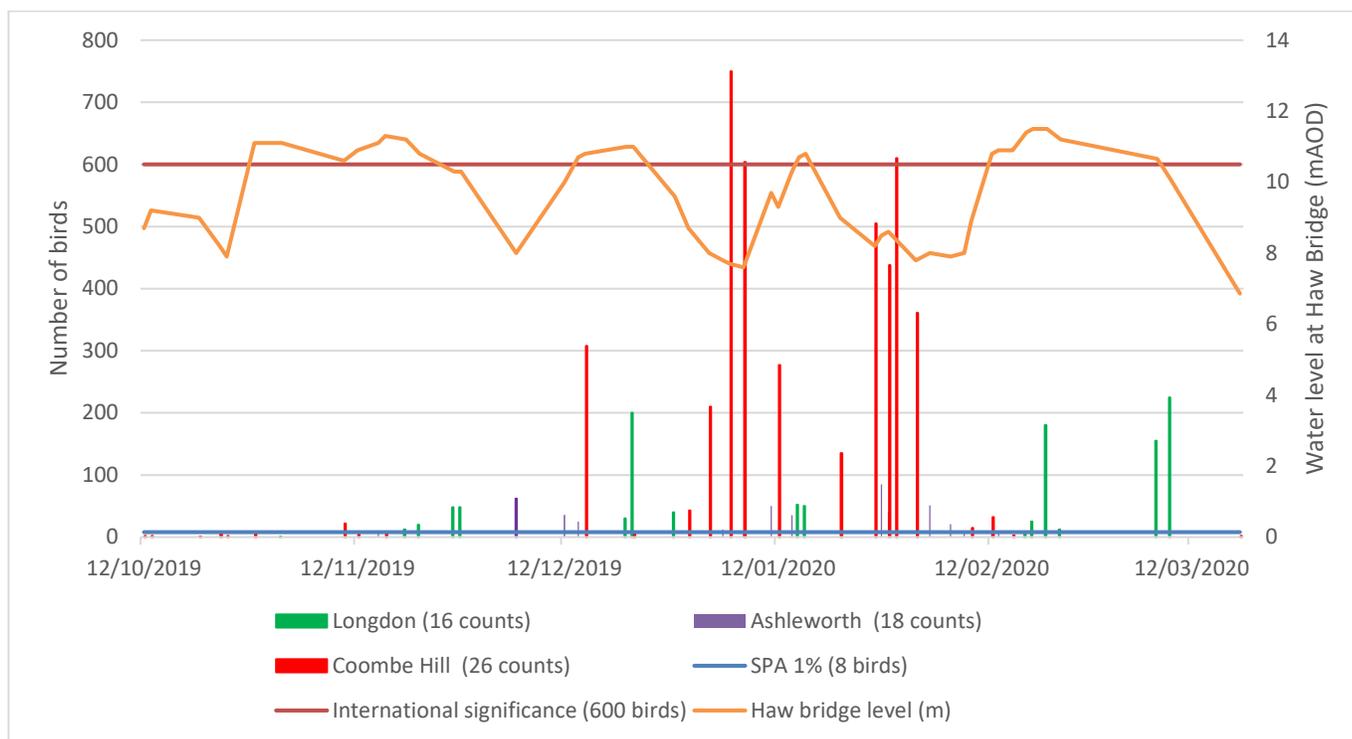
- 5.323. Ringing of Pintail in the Severn Vales has been less extensive and systematic than for Wigeon. Conversely, at WWT Slimbridge, large numbers of Pintail have been ringed in both the decoy and swan pipe. The total number of Pintail ringed (excluding re-traps) in Gloucestershire (mainly at Slimbridge) is 3005, in Worcestershire just two. Very small numbers of Pintail have been caught during cannon-netting sessions in the Severn Vales which were mainly directed at Wigeon, at Bredon's Hardwick and Ashleworth. Between 1996 and 2003 only a single Pintail was caught at Bredon's Hardwick (Hodson 2005); at Ashleworth the session on 29/02/2004 caught two Pintail, while the session of 26/02/2006 caught fifteen; so far, none have been caught at Bow Farm (Ripple Lakes).
- 5.324. There has not as yet been any detailed analysis of Pintail movements or of ringling recoveries within the SPA. GPS tagging of Pintail has not yet been used at either Slimbridge or in the Vales, although there are plans to tag birds caught at WWT in the near future. The BTO/WWT study on the Usk estuary in winter 2015/16 (Scragg *et. al.* 2016) did not succeed in GPS tagging any Pintail, but their highest priority recommendation was to GPS track individuals of this species to obtain information on home-ranges and on the distances between feeding and roosting sites. Similar considerations apply to investigations of movements of Pintail in the northern part of the SPA and the Vales.
- 5.325. Recoveries of Pintail ringed at WWT Slimbridge show many spectacular movements back to breeding areas well beyond the Urals in Russia. Some Pintail ringed at other duck-catching sites within Britain (generally operated by WWT) such as Martin Mere or Abbotsbury are re-trapped later at Slimbridge. As noted by many observers, the difficulty with recoveries of duck rings is that they tend to illustrate where duck-catching facilities are located, rather than where the ducks actually go.
- 5.326. As for Wigeon, the number of recoveries of Pintail between Slimbridge and the Severn Vales is remarkably low; there are no recoveries of Pintail moving from the Severn Vales to the SPA (although the number of Pintail ringed in the Vales is very small). There are five recoveries of Pintail in the same winter between the SPA and the Severn Vales: two of them are quite old, one featuring a bird ringed at Slimbridge in October 1957 and shot along the Chelt near Norton in January 1958, the second of a bird ringed there in October 1991 and shot two weeks later at Bury Hill (near Ross on Wye, Herefordshire). There are also three more recent examples of fairly rapid movements from Slimbridge to Ashleworth: the first was ringed at Slimbridge on 13/01/2006, the second on 20/02/2006; both were cannon-netted at Ashleworth on 26/02/2006 (hence one of them only a week later); the third was ringed at Slimbridge on 23/12/2009 and shot along the Chelt at The Leigh on 17/01/2010. In addition, there is a second record of a Pintail ringed at Slimbridge and shot along the Chelt near Norton, this one five years after ringling in 1962. Another six recoveries came from birds shot, not in the same winter, in the immediate neighbourhood of the estuary near Slimbridge, the furthest being at Westbury on Severn.

5.327. Thus there are slightly more recoveries of Pintail than of Wigeon from the SPA to the Severn Vales, which demonstrates that there is some movement from the SPA to inland sites, though given the large numbers ringed at Slimbridge (six times as many as Wigeon) the number of recoveries is small. Some sign of movement is to be expected, given that local observers record considerable influxes of Pintail to the Severn Vales when habitat conditions are right (shallow flooding which provides good feeding opportunities). However, ringing recoveries shed no light on the origin of these considerable influxes; the inland birds are surely too numerous for all birds to be from the Severn estuary; WeBS counts at national level show that many major British Pintail wintering sites are estuaries in Wales or northwest England. For the moment the origin of the influxes to the Severn Vales remains a mystery, which could best be solved by GPS tagging of birds in the SPA.

#### Summary findings of fieldwork carried out in 2019/20

- 5.328. Fieldwork on Pintail reflected the observations of earlier counters and observers. Pintail may move in some numbers over the short distance from the SPA to flood-lands near the estuary such as Walmore or Minsterworth. North of Gloucester, Pintail appear very suddenly, probably coming from much further afield than the SPA, though their exact origin remains unknown; as previously noted, Pintail from the Ashleworth/Coombe Hill complex often move in time of deep flood to Longdon Marsh (but rarely further north). Figure 4.2 below illustrates how numbers at Ashleworth, Coombe Hill and Longdon Marsh fluctuated within this period. As for Wigeon, Pintail numbers are compared to river water levels, as measured at the Environment Agency gauging station at Haw Bridge. A pattern of bird movement between these three sites is far less obvious for this species than for Wigeon. Pintail numbers at Coombe Hill rose sharply in January and February 2020 and could not be accounted for by numbers occurring prior to that period at the other two sites. This suggests that the birds came in from more distant locations, potentially including the SPA.
- 5.329. The same caveats regarding interpretation of this data that were laid out in the Wigeon account apply equally to Pintail.

**Figure 4.2 - Numbers of Pintail at Ashleworth, Coombe Hill and Longdon Marsh North, October 2019 to March 2020**



5.330. As noted elsewhere in this report, this winter was unusually wet and the very wet conditions from late September onwards created ideal conditions for Pintail. They might have been expected to occur in large numbers in the Severn Vales in such favourable conditions. In fact, numbers at sites near the SPA like Walmore and Minsterworth remained low; further inland, although numbers were well over the international threshold of 600 at Coombe Hill in January, the flocks of over a thousand recorded at Longdon in some winters did not appear and the maximum count there was of 250 in late February and early March.

5.331. Despite favourable flood conditions, numbers at Walmore barely reached double figures at any time in this winter period: three on 20/10/2019, two on 15/11/2019, seven on 24/11/2019, 12 on 25/11/2019, two on 18/02/2020. Numbers were somewhat higher in periods of high flood at Minsterworth Ham: one on 01/11/2019, ten on 06/11/2019, four on 15/11/2019, then in the November high flood 24 on 24/11/2019 and 70 on 25/11/2019. There were few in December and January, then in the February high flood 63 on 18/02/2020.

5.332. At Coombe Hill numbers built up to 308 on 14 December, a not unusual total; there was an increase to a minimum of 568 (and probably 750 actually present) on 5 January, 277 on 11 January, minimum of 361 (and probably 500 present) on 1 February, numbers lower in high flood from mid-February to mid-March, when they probably moved to Longdon Marsh. At Ashleworth / Hasfield numbers this winter were never as high as at Coombe Hill and the site was much affected by heavy flooding for long periods: ten Pintail were recorded on 15 November, 62 on 5 December, but 290 on 18 December, then nine on 4 January, ten on 7 January, 50 on 11 January, 85 on 27 January, then (between floods) 40 on 28 January, ten on 8 February, seven on 12 February. At Longdon Marsh numbers remained fairly low until the February flood when counts reached 250: 30 on 21 December,

40 on 28 December, 52 on 15 January, 25 on 18 February, 180 on 20 February, 250 on 29 February, 225 on 9 March. Numbers at Worcs WT Hill Court reserve near Longdon also built up in February but were always lower than Longdon Marsh proper: 35 on 18 December, 72 on 9 January, 15 on 19 January, 20 on 28 January, 46 on 30 January, at least 80 (but probably 100 in all) on 13 February, 80 on 18 February, 25 on 22 February, two on 27 February, eight on 14 March..

- 5.333. It is perhaps the case that the lack of large concentrations at sites near the SPA such as Walmore and Minsterworth emphasizes that the higher numbers further up the Severn Vale have come from sites beyond the SPA.
- 5.334. Numbers of Pintail counted at WWT Slimbridge on the SPA were not unusually high for the site in winter 2019/20, although they exceeded the threshold for international significance in January 2020, with a peak count of 829 (M. McGill<sup>29</sup> pers. com.). The threshold for national significance was exceeded in December 2019 and February 2020, with counts of 233 and 457 respectively, whilst the threshold was nearly reached in November 2019, with a count of 194.

#### Synthesis of findings for Pintail

- 5.335. The following synthesis summarises the evidence for Pintail movements between the SPA and upstream sites in the Severn and Avon Vales, as well as between sites.
- 5.336. Severn upstream of the SPA to Gloucester:
- Wildfowlers confirm that Pintail, like Wigeon and Teal, move inland from the SPA to feed at dusk, but in very much smaller numbers than the other species
  - In winter 2019/20, Pintail did occur at riverside marsh flood-lands such as Walmore and Minsterworth, with small peaks of up to 70 at the latter at the time of the November and February floods. It seems likely that these were birds from the SPA.
- 5.337. Severn upstream of Gloucester:
- As in previous years significant numbers of Pintail occurred at Coombe Hill/ Ashleworth and Longdon Marsh north over winter 2019/20. These concentrations were not quite as large as in some earlier years but remain of high significance. Perhaps the very wet winter meant that suitable feeding conditions were available over a large area, so that they could spread out quite widely.
  - Numbers at Coombe Hill were already high at over 300 by mid-December 2019 and increased in early January 2020, with counts of six to seven hundred at the same time as the Slimbridge WeBS count of 829 in mid-January. Numbers at Ashleworth were also near 300 in mid-December 2019, but decreased in the new year. Numbers at Longdon were moderate in the November 2019 and January 2020 floods, but reached 250 in the February flood; these birds are thought to have moved in from Coombe Hill/ Ashleworth.
  - As has been found to be the case in previous years, numbers of Pintail in winter 2019/20 at sites further north along the Severn in Worcestershire remained modest, barely reaching double figures.

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<sup>29</sup> Senior Reserve Warden, WWT Slimbridge

- There is little evidence that the large numbers of Pintail north of Gloucester originate from the SPA. Ringing recoveries reveal only five direct movements from the SPA to the Severn Vales in the same winter – this is more than has been recorded for Wigeon, but numbers of Pintail ringed at Slimbridge have been six times as high for Pintail as for Wigeon. The large numbers of Pintail recorded are thought to come from further afield than the SPA, and represent birds moving to take advantage of suitable feeding opportunities.

5.338. Along the Avon:

- As along the northern reaches of the Worcestershire Severn, numbers along the Avon remained modest, generally in single figures.

5.339. Known and implied movements of Pintail are illustrated on Maps 10 and 11 in Appendix 1.

### Conclusions

- 5.340. The UK has a particular responsibility for conservation of the discrete population of Pintail which overwinters in northwest Europe, being host to a large proportion of the 60,000 birds spending the winter in the region.
- 5.341. The Severn estuary SPA has long been recognised as one of the UK sites where Pintail regularly occur in numbers exceeding the 600 threshold for international significance. Numbers in the Slimbridge sector alone (not counting sectors like Bridgwater Bay or Newport Wetlands) exceeded this level in winter 2019/20.
- 5.342. Some Pintail from the Slimbridge sector of the SPA probably moved to inland sites near the estuary such as Minsterworth Ham and Walmore Common when the latter were under shallow flood.
- 5.343. The Severn Vales (and notably the Coombe Hill/ Ashleworth complex and Longdon Marsh) also hold numbers reaching international significance in most winters; this international role has recently been recognised by inclusion of Longdon Marsh by BTO in its list of sites reaching the international threshold; Coombe Hill and Ashleworth have been recognised as being of national importance and must be very close to achieving international status. Very few Pintail move further up the Severn north of Longdon, or up the Avon.
- 5.344. These concentrations in sites in the Severn Vale occur in conditions of shallow flooding, which provide ideal feeding opportunities for the species.
- 5.345. It is thought that these concentrations in the Severn Vales originate not in the SPA but much further afield, perhaps coming from estuaries in Wales or northwest England.
- 5.346. There is as yet however no proof of the origin of these Pintail and more detailed investigations, involving coordinated counts, ringing and marking with GPS tags, would be highly desirable. More information is also needed on the reactions of Pintail to episodes of hard weather and icy conditions.

## **Teal**

### General ecology, phenology and movements of the species

- 5.347. Teal is one of the smallest ducks, often hiding away in thick vegetation in small wetlands, even ponds, so that its numbers are easily under-estimated. It is omnivorous: *“Food varies with locality and season. But basically seed-eating in autumn and winter, with relatively more animal materials*

*in summer.... Considerable variation in frequency of particular feeding method, depending on habitat, time of day, season and sex*: it may “*filter mud with bill in water of a few centimetres... swim with head or neck under water....or upend*” (Cramp & Simmons, 1977).

- 5.348. The breeding range of Teal extends much further to the south than that of most other ducks considered in this report: it “*breeds throughout middle latitudes of west Palearctic, from cold coastal tundra southward through steppe forest and steppe to desert fringes*” (Cramp & Simmons, 1977). In the UK it is classed as a “*Resident breeder (between 2700 and 4500 breeding pairs), a passage migrant and winter visitor*” with a five-year rolling average of 435000 individuals in winter between 2012 and 2017 (Frost *et al.* 2018). It is currently Amber listed in the UK because of recent declines both in breeding and wintering numbers, and also in breeding and winter range (BTO BirdFacts<sup>30</sup>). Teal wintering in Britain and Ireland come from breeding grounds in Iceland, northern Europe, the Baltic states, and a large area of Russia north of about 55°N and extending eastwards to about 60°E (Wernham *et al.* 2002).
- 5.349. Teal remains a popular quarry species in UK and most of Europe, and the vast majority of ringing recoveries, as with other ducks, comes from birds shot by wildfowlers.
- 5.350. Unlike Wigeon, which are grazing ducks that sit out in the open and are relatively straightforward to observe and count; or Pintail, which occur in sudden influxes when shallow flooding conditions are optimal for them, Teal are more secretive and difficult to count, even though many sites are host to regular flocks. With Teal most often encountered in thick vegetation stands, it is often difficult to assess the numbers present and they are often heard as much as seen and as a result estimates of numbers at the same site may suffer significant inaccuracies.

#### Overview of status in the UK as a whole

- 5.351. To qualify as internationally important a site must regularly hold 5000 Teal. There are nine sites in the UK that meet this criterion. These are Abberton Reservoir, Dee Estuary (England and Wales), Lock Leven, Lower Derwent Ings, North Norfolk Coast, Ouse Washes, Ribble Estuary, Severn Estuary and Somerset Levels.
- 5.352. To qualify as nationally important in Great Britain, a site must regularly hold 4300 Teal. There are four sites in the UK that meet this criterion. These are Blackwater Estuary, Hamford Water, Severn Estuary (English counties) and Thames Estuary

#### Overview of status on the Severn Estuary SPA

- 5.353. The five year mean peak for Teal on the Severn Estuary (2014/15 to 2018/19) is 5028 so the 1% population threshold for importance of a site within the SPA is 50 birds.
- 5.354. Breeding by Teal in the SPA is exceptional; the picture is “*distorted because of the continued presence of birds until the end of April*” (Balmer *et al.*, 2013). The last winter visitors or passage migrants may not leave until late April or even early May, and the first returning birds may be back as early as late June, with quite considerable numbers by July. But Teal is predominantly a winter visitor to the SPA, with numbers building up during autumn and reaching their peak from November to February. Peak WeBS counts in the past ten years in the Slimbridge area have ranged between 1572 and 3820 individuals, thus falling short of national importance (though the total for the whole

<sup>30</sup> <https://app.bto.org/birdfacts/results/bob1840.htm>

of the SPA easily meets the international threshold); monthly maxima for the whole of the Severn estuary are: 6008 in 2013/14, 6101 in 2014/15, 6291 in 2015/16, 5588 in 2016/17, 2884 in 2017/18 and 4277 in 2018/19 (figures from the BTO WeBS database).

- 5.355. Shooting of Teal on the Severn Estuary within Gloucestershire occurs at the usual wildfowling sites along the estuary foreshore - Aylburton, Brimspill, Berkeley and Frampton. Wildfowlingers report very large numbers of Teal (and Wigeon) flying out from the estuary on evening flight and returning on morning flight, no doubt to feed on fields or wetlands near to the estuary (TB, PW, NB and FB, pers. com.).

#### Overview of status on inland wetlands in Severn and Avon Vales

- 5.356. Teal breed only exceptionally in Gloucestershire and Worcestershire (Kirk and Phillips 2013, Steven Payne pers. com.), but the last departing winter birds stay well into April and sometimes May. Very small numbers of birds, sometimes in pairs, may stay throughout the summer, but the first returning migrants are back by July and numbers build up in August and September before the arrival of larger numbers from October and November onwards.
- 5.357. In autumn Teal are often in dull eclipse plumage, but once the moult is complete (from about October), birds on the Severn floods are often observed in active courtship groups of ten to twenty birds, the drakes chasing females, and pair formation is undoubtedly an important activity in the early winter and some laggards may continue into the new year.
- 5.358. The major Severn Vale sites often hold many hundreds, if not a thousand or more Teal. However, because they tend to skulk in thick vegetation (either in marshy vegetation or in willow carr), Teal numbers are often difficult to count with precision and the presence of considerable numbers is often revealed by their constant calling from the flooded undergrowth. In hard weather they may be forced out of their hiding-places to sit around holes in the ice, and the best counts are often obtained in icy conditions when the birds are easier to see.
- 5.359. Favoured sites in the Severn and Avon Vales:
- Downstream of Gloucester and closer to the SPA, Walmore Common has a permanent wintering group of Teal, numbering up to 200 individuals, which spend their time in the ditches. In time of shallow flood, numbers may increase to almost a thousand. It seems that this increase comes from birds on the SPA.
  - Minsterworth Ham has few shallow open ditches like Walmore, so that there is no similar resident group here. However, once some flooding appears Teal appear on the floodwater, probably coming from the SPA.
  - Overgrown former brick-pits like Maisemore, Walham and Sandhurst, as well as the wetter areas of Alney Island, often have small winter groups of Teal, although the pit at Maisemore has recently been cleared of vegetation by its current owner to create a fishing lake, rendering it less likely, at least in the short term, to be host to this species.
  - Coombe Hill often holds up to 200 Teal in late summer and early autumn; they concentrate on the Long Pool (NGR SO870271) which usually holds water when other sites are still dry. Numbers build up as the winter advances, and in times of light flooding, many hundreds shelter (often heard but unseen), in the old withy beds around the Long Pool. In periods of moderate

flooding they will perch on low branches over the water. In very deep flooding when their food sources are no longer accessible, they may move away. In icy conditions they will congregate around holes in the ice, out in the open, and these are often the occasions when the most accurate counts are made.

- Ashleworth may also hold several hundred Teal as soon as the pools on the GWT reserve hold any water in autumn. Here too, it is often difficult to appreciate just how many birds are present, since they hide away among willows and thicker vegetation along the ditches. At times of heavier flooding, good numbers are often to be found around flooded meadows at Hasfield Ham. As at Coombe Hill, the most accurate counts are obtained when the birds are forced out onto the ice in hard winter weather.
- Hill Court Farm Reserve is the major site in south Worcestershire, with up to 1000 Teal present. This site is strongly favoured since its central area remains undisturbed and is well vegetated, thus providing good cover. Even when water levels rise and the site is difficult to approach, the volume of calling indicates that good numbers are still present. Numbers here probably remain throughout the winter and may well be under-estimated as there is no access to the central area.
- Longdon Marsh and Bow Farm (Ripple Lakes), both being large open waters with little cover, tend to be less attractive to Teal, though on occasion several hundred may appear, perhaps if they are disturbed by a Peregrine or a human intruder at nearby Hill Court.
- Teal occur in moderate numbers at the various waters further north along the Severn – Clifton, Grimley, Westwood Pool and Upton Warren.
- Along the Avon too, small flocks of Teal are regular: at Bredon's Hardwick, Gwen Finch, and Lower Moor.
- The main ringing site for Teal in the SPA and the Severn and Avon Vales has always been WWT Slimbridge, where over many years considerable numbers have been caught in the duck decoy and swan pipe. By contrast, only very few Teal have been ringed at other sites, generally as a by-catch of efforts to ring other birds, either by mist-netting at night or by cannon-netting for Wigeon. There are a few recoveries of Teal caught at Astley in Worcestershire in the late 1970s; only 38 Teal were caught at Bredon's Hardwick from 1996 to 2003 (against 1826 Wigeon). Just six Teal were trapped in three cannon-netting sessions at Ashleworth in 2004 and 2006.

### Counter interviews

- 5.360. Teal is a familiar and omnipresent species to most counters in Worcestershire. They have not registered any signs of sharp fluctuations in numbers caused by birds moving in from the SPA. They consider that once Teal (like Wigeon) have arrived in Worcestershire wintering grounds, they tend to remain in the same place all winter before returning to their breeding grounds in spring. They note that sites like the Hill Court reserve act as a refuge for Teal, holding good numbers throughout the winter.
- 5.361. Gloucestershire counters consider that influxes of Teal to sites near the estuary like Minsterworth or Walmore may well come from the nearby estuary. They formerly thought that fluctuations in the numbers of Teal (like other species of ducks) at Severn Vale sites north of Gloucester were caused by movements to and from the SPA, but given the lack of evidence and the scant ringing recoveries,

they are now rather uncertain, and think it quite possible that variations in counts may come from the difficulty of making precise estimates of the numbers of this species; (as noted above, the highest counts of Teal often occur in icy periods when the birds are obliged to move out onto more uncluttered open areas); alternatively it may be that in times of very high flood (when Teal numbers manifestly decrease) that the birds may simply have moved to other more shallowly flooded sites nearby.

#### Interviews with other sources

- 5.362. Wildfowlers on the foreshore sites around the estuary note that Teal (like Wigeon) fly inland in the evening in considerable numbers, no doubt to feed inland, most returning in the early morning. It should be noted that Teal are also shot at inland sites along the Severn, e.g. Maisemore brick pits, along the Chelt near The Leigh and at Tirley and Hasfield.

#### Ringling recoveries

- 5.363. Since the establishment of the WWT in the 1940s, large numbers of Teal have been marked with metal rings in the duck decoy in the Decoy Wood or the swan pipe on the Rushy Pen at Slimbridge. Many of these ringed birds have been recovered (as for Wigeon and Pintail) on their breeding grounds, across central and northern Europe, but have also provided a number of local recoveries of relevance to the present study; the total number of Teal ever ringed in Gloucestershire is 7068 (the vast majority at Slimbridge), with a Worcestershire total of just 33; these figures do not include re-traps.
- 5.364. There has not as yet been any detailed analysis of Teal movements or of ringling recoveries within the SPA. GPS tagging has not yet been used at Slimbridge on Teal, though there are plans to do so in the near future. However, a BTO/WWT study at Newport Wetlands near the Usk estuary in winter 2015/16 caught 15 Teal and fitted them with GPS tags to monitor local movements; Teal in this study had average (95%) home range sizes of 32.2 ha (for the 14 day period) and 35.2ha (for the 28 day period) and thus in this study appeared to be largely site faithful (Scragg *et al.* 2016). Analysis of recoveries of Teal around the WWT ringling stations at Abberton in Essex and Borough Fen in Northamptonshire showed large numbers of Teal shot in the immediate area of the ringling sites (C. Mitchell, pers. com.)
- 5.365. Many of the recoveries from Slimbridge show birds staying in or around the reserve in winter, with local movements to the Cotswolds and Wiltshire, several birds moving down the Severn estuary (including one bird ringed at Slimbridge and recovered twelve days later at Bridgwater), and others going to south Wales, not all of these recoveries in the winter of ringling. There are quite a few within-winter movements of Teal to the south and west (suggesting that birds pass through Slimbridge), but very little evidence of movements within the Severn Vale (C. Mitchell pers. com.)
- 5.366. Teal ringed at Slimbridge do give evidence of some movement into the Severn Vales. There are seven movements from Slimbridge to the Vales (plus five more just outside or beyond) in the winter of ringling which makes it likely that the movements were direct. Nearly all the birds were shot, as follows:

**Table 4.1 - Within-winter movements of Teal from the SPA (WWT Slimbridge) to inland sites**

Recovery locations within the Severn Vale			
Date of ringing	Date of recovery	Location of recovery	Days between ringing and recovery
12/10/1947	15/12/1947	Quedgeley	64
01/01/1981	16/01/1981	The Stream, Ashleworth	15 (rapid movement)
24/09/1995	03/03/1996	Twyning	163
22/12/1996	30/12/1996	Bredon's Hardwick	8 (rapid movement)
28/10/1997	21/12/1997	Maisemore	54
01/09/2001	01/01/2002	Bredon's Hardwick	122
29/09/2001	23/11/2001	Hasfield	55
07/12/2010	08/01/2011	Maisemore	33
Recovery locations just outside of Severn Vale			
22/11/1956	06/01/1957	Redditch	45
05/09/1957	01/12/1957	Kidderminster	87
11/11/1996	28/12/1996	Bromyard	47
06/09/1998	10/10/1998	Ludlow	34
02/01/2010	13/01/2010	Longhope	11 (rapid movement)

5.367. There are in addition a number of Slimbridge-ringed Teal which were recovered in the Vales (nine) or just beyond (five) but not in the winter of ringing. This of course does not demonstrate direct movement between the SPA and the Vales, because the birds will have returned to (probably continental) breeding sites in the intervening summer(s). These recoveries are as follows:

**Table 4.2 - Between-winter movements of Teal from the SPA (WWT Slimbridge) to inland sites**

Recovery locations within the Severn Vale			Recovery locations just outside of Severn Vale		
Date of ringing	Date of recovery	Location of recovery	Date of ringing	Date of recovery	Location of recovery
18/02/1981	31/10/1982	Hardwicke	24/11/1981	07/09/1984	Enville (Stourbridge)
08/08/1982	26/12/1988	Chaceley	07/09/1988	25/11/1989	Malvern Wells
26/09/1996	05/08/2003	Cheltenham	20/10/1996	19/09/1998	Martley
28/08/2000	26/12/2001	Hasfield	30/08/2010	21/09/2003	Wichenford (N. Malvern)
18/09/2001	07/10/2002	Maisemore	18/12/2008	13/10/2009	Welland
04/01/2002	16/02/2003	Bredon's Hardwick			
23/12/2009	18/12/2010	Maisemore			
25/09/2009	08/01/2012	Walham Pools, Gloucester			
07/02/2010	08/01/2011	Maisemore			

5.368. Teal therefore show a greater propensity than other ducks to move into the Vales, and indeed beyond, going somewhat further - to Kidderminster, Malvern and Ludlow. Even so, the numbers found in the Vales, in relation to the numbers ringed at Slimbridge (over seven thousand in Gloucestershire as a whole), are not enormous. The usual caveats of course apply: ringing recoveries do not prove movement between the SPA and the Vales. GPS tagging would be required to provide absolute proof.

#### Summary findings of fieldwork carried out in 2019/20

5.369. Fieldwork on Teal confirmed the findings of earlier counters that Teal are widespread and numerous in inland sites in the Severn Vales.

- 5.370. Teal are often overlooked or underestimated in flooded sites as they skulk in bushy or grassy vegetation, which may explain some of the variations in numbers. Teal remained in numbers (of the order of a thousand) at the Worcs WT Hill Court Farm reserve throughout the period of flooding, occasionally venturing in their hundreds onto the open flood water at Longdon Marsh a short way off. At Coombe Hill and Ashleworth which were at times inaccessible, numbers fluctuated considerably but the peak was almost two thousand: some probably moved away at times of very high flooding, but in moderate flooding they may well have been hidden in the vegetation.
- 5.371. In the course of this very wet winter of 2019/20, there was almost permanent floodwater on the riverside meadows, but six major flood peaks occurred: in the second half of October, the second half of November, from 18-26 December, from 12-21 January, from 10-27 February (the highest of the winter) and from 10-15 March. At times of high flood some sites (notably Coombe Hill and Ashleworth) became inaccessible, hence there are some gaps in coverage.
- 5.372. Sites near the estuary: At Walmore, near the estuary, where Teal are always present in the ditches in moderate numbers even without flooding, numbers increased in time of extensive shallow flood: going from 80 on 14 October to 250 on 20 October, then in mid-November to 490 on 8 November and 500 on 17 November with 580 on 25 November; then 350 on 15 December. In the new year: 100 on 8 January, 250 on 12 January; 100 on 6 and 8 February, 130 on 13 February, 150 on 18 February; 530 on 27 February, 160 on 3 March, 230 on 8 March, 260 on 11 March, 180 on 18 March. At Wilmore near Rodley, numbers of Teal generally remained small, but there were 200 on 27 February. At Minsterworth, a little further from the estuary, numbers of Teal were much lower and the biggest numbers of birds appeared when flooding was extensive: none on 14 or 28 October, five on 30 October, six on 1 November, ten on 6 November, 45 on 15 November, but 260 in high flooding on 25 November, 350 on 15 December, only 12 on 23 December; in the new year: 26 on 4 February, 46 on 18 February, 35 on 8 March, 66 on 11 March, 130 on 14 March. All these observations were made by day, and it is thought that Teal moved in from the SPA in time of flood without returning by day to the SPA. At Maisemore up to a dozen Teal were present throughout. At Alney Island 150 on 5 January, 200 on 19 January, 96 on 12 February, at least 50 on 16 February (before floods were too high), at least 60 on 28 and 31 March. These Teal were thought to be resident, not moving very far.
- 5.373. Ashleworth / Hasfield / Coombe Hill complex: At Ashleworth and Coombe Hill numbers were larger than at sites nearer the estuary: count results varied because of extensive flooding, though good numbers of Teal were probably present throughout, as calling Teal could regularly be heard in the thick vegetation. At Ashleworth there were: 20 on 17 October, 240 on 5 December, 153 on 12 December, 700 on 14 December, 1000 on 18 December. In the new year: 320+ on 4 January, 200 on 7 January, 400 on 11 January, at least 100 on 23 January, 250 on 28 January; 84 on 2 February, 41 on 3 February, 91 on 6 February, 200 on 8 February, 120 on 12 February, 205 on 13 February; 72 from Severn flood-bank on 7 March; 100 (probably an under-estimate) on 21 March.
- 5.374. At Coombe Hill the central area was often inaccessible, so that counts had to be made from the northern side at Apperley and were generally low – either because the birds had departed or were too far off to be seen: 40 on 16 October, 250 on 20 October, 120 on 24 October, 20 on 10 November, 150 on 16 November, 25 on 30 November, 505 on 14 December. In the new year: rough estimate of 500 on 2 January, 900 on 5 and 7 January, 1,450 on 11 January, good count of 1850 on 21 January (made when the birds were forced by icy conditions to emerge from thick vegetation onto the ice), 1500 on 26 and 28 January and 1 February, only 200 on 8 and 12 February (maybe under-

estimates), good count of 1055 on 15 February (again when very strong winds forced the birds out on to open water to shelter in the lee of a hedge), just 17 from Apperley side on 7 March, 300 on 19 March. It seems likely that the high numbers of over 1000 recorded at times in January and February may have been present throughout but were perhaps overlooked when flood levels were moderate allowing birds to 'disappear' into the vegetation.

- 5.375. Longdon / Bow Farm (Ripple Lakes) complex: The Worcs WT Hill Court Reserve is quite rightly a non-access reserve to prevent disturbance of the birds present, and is fairly heavily overgrown, so that it can be difficult to make an accurate assessment of duck numbers, especially Teal. The usual approach from Marsh Lane was often impassable because of flooding, but even under such conditions large numbers of Teal could often be heard from Marsh Lane. The reserve can fortunately be viewed in time of flood from high ground near Hill Court Farm. Even so, it remained difficult to make accurate counts unless the birds flew up (for example when disturbed by a raptor). It appeared that Teal were present in numbers throughout the winter, even though actual counts varied considerably. Counts: only 15 on 27 October (high flood), 660 on 7 November (floods lower, birds flew up), 1200 on 30 November (floods lower, birds disturbed by distant shooting and flew up), 700 on 13 December (moderate flooding, birds did not fly), 500 to 600 on 18 December, minimum of 500 on 18 December (from Hill Court in high flood, birds did not fly), absolute minimum of 500 on 21 December (from Hill Court in high flood, birds did not fly), 700-800 on 28 December (floods lower, but birds did not fly). In the new year: at least 610 on 9 January (floods low, birds did not fly), 220 on 19 January (on ice around hole in water, did not fly); absolute minimum of 152 on 30 January (floods modest, birds did not fly), absolute minimum of 107 on 13 February (floods modest, birds did not fly), at least 300 on 18 February (heavy flood, from Hill Court, no flying), minimum of 200 on 22 February (heavy flooding, from Hill Court), 680 on 7 March, 900 on 14 March (floods dropping, birds disturbed by gunshot and Peregrine).
- 5.376. Teal were therefore present in numbers throughout the winter at Hill Court, though estimates varied. It seems very likely that a group of perhaps a thousand Teal was present all winter, and remained despite flooding, ice or disturbance, so that Hill Court is clearly a major refuge for Teal in south Worcestershire. On the open flood waters of Longdon Marsh, Teal occasionally fed in small numbers around the edge of the flood, but were occasionally found in large numbers out in the open, presumably when disturbed from Hill Court: numbers low in October and the first half of November but 50 in high flood on 19 November and 200 on 26 November, few in late November and early December but more than 600 on high flood on 22 December; then after low numbers in January and February 719 on 7 March and 560 on 9 March, out on open flood water.
- 5.377. Bow Farm (Ripple Lakes), as a recently excavated gravel and sand pit with little cover around the edges, does not provide much attractive habitat for Teal and so numbers there rarely exceed 20 or 30, unless the Lake itself is submerged and the fields immediately to the south are flooded in which case good numbers may occur: 400 on 1 January (on flooded fields to south of lake), 35 on 14 March, 65 on flooded southern fields on 21 March; probably birds from Hill Court.
- 5.378. Clifton, like Bow Farm (Ripple Lakes), has limited habitat for Teal but numbers there may be considerable: 543 on 11 December, 33 on 14 January, 114 on 5 February, 176 on 21 March. Grimley also regularly holds Teal, albeit in small numbers: at Camp Lane 34 on 14 January.
- 5.379. Along the Avon: Bredon's Hardwick continues to hold small numbers of Teal, up to 50 in time of flood. Nearby Mitton provide quite sheltered conditions and Teal numbers there may be higher: 11

on 18 October, 67 on 12 January, 98 on 30 January, 85 on 6 February, 29 on 12 March. Further north Gwen Finch and John Bennett reserves and Lower Moor sustain small flocks of Teal in winter.

#### Synthesis of findings for Teal

- 5.380. Teal often seek thick vegetation, so it is often difficult to make accurate counts; numbers appear to fluctuate when in fact they may be stable. The most accurate counts at densely vegetated sites like Coombe Hill or Hill Court are often obtained when they fly up or when floods, ice cover or disturbance force birds to move into the open.
- 5.381. Many Teal probably remain in these sites for the whole of the winter, only moving away if flood waters become very deep.
- 5.382. Considerable numbers of Teal have been ringed for many years at Slimbridge, though very few have been ringed in the Vales themselves. Some Teal ringed at Slimbridge have been recovered in the Severn Vales (and indeed beyond, as far inland as Ludlow or Redditch), indicating that some Teal do move upstream. There are also a number of ringing recoveries in subsequent winters. Signs of movement are greater in Teal than in Wigeon or Pintail, but in proportion to the large number ringed at Slimbridge there are few signs of movement inland. Worcestershire observers see no signs of movement between the Vales and the SPA.
- 5.383. Severn upstream of the SPA to Gloucester:
- Wildfowlers confirm that Teal, like Wigeon, move inland in large numbers at dusk from the SPA to feed, probably to fields only a short distance from the estuary.
  - A little further inland, Walmore Common holds up to 200 Teal in the ditches even when it is not flooded, but numbers may increase to almost 1000 in time of shallow flood. Minsterworth Ham generally only holds Teal at times of flood.
- 5.384. Severn upstream of Gloucester:
- Small numbers of Teal are resident at former brick-pits along the Severn above Gloucester (e.g. at Maisemore – where some shooting occurs – Walham and Sandhurst)
  - The Ashleworth / Hasfield / Coombe Hill complex holds considerable numbers of Teal in winter, in most years up to two or three thousand. In times of heavy flooding, they may move out to other surrounding wet areas.
  - The Worcs WT reserve at Hill Court near Longdon Marsh is another major wintering area for Teal, with almost a thousand birds resident throughout the winter.
  - Teal appear in smaller numbers (rarely more than a few hundred) at sites further north – Clifton, Grimley, Westwood and Upton Warren (though Clifton registered a very high count of 543 on 11 December).
- 5.385. Along the Avon:
- Teal continue to occur along the Avon in small groups at Mitton, Bredon's Hardwick, Gwen Finch and John Bennett nature reserves and at Lower Moor
- 5.386. Known and implied movements of Teal are illustrated on Maps 12-14 in Appendix 1.

### Conclusions:

- 5.387. Teal occur in numbers of international significance (over 5000 individuals) on the SPA.
- 5.388. Teal is a widespread winter visitor throughout the Severn and Avon Vales, found in many wetlands too small to attract other surface-feeding ducks; its numbers in the Vales do not reach the threshold of national significance.
- 5.389. Particular hot-spots for Teal in the Vales are: Walmore Common; the Ashleworth / Coombe Hill complex; and Hill Court Reserve near Longdon.
- 5.390. At times of very high flooding, especially at Ashleworth / Coombe Hill, Teal may move out to other sites where flooding is shallower.
- 5.391. There has for many years been extensive ringing of Teal at WWT Slimbridge. Some Teal ringed there with metal rings have been recovered in the winter of ringing in the Severn Vales, suggesting that some Teal do move inland from the SPA and to the Severn Vales. However, the number of recoveries is small and Worcestershire counters observe little or no sign of exchanges with the SPA.
- 5.392. As yet there has been little use of GPS tags to mark Teal in the SPA. One limited study using these tags at Newport Wetlands demonstrated that (in this particular case which may not be applicable elsewhere) Teal there maintained a very small home range.
- 5.393. Further studies in the SPA using GPS tags on Teal would provide further, more reliable information on Teal movements and are highly desirable.

### ***Diving ducks***

#### General ecology, phenology and movements of the species

- 5.394. Diving ducks (such as Tufted Duck, Pochard, Scaup (*Aythya marila*), Goldeneye (*Bucephala clangula*), Goosander (*Mergus merganser*) and Red-breasted Merganser (*M. serrator*)) obtain their food underwater, whereas surface-feeding ducks like Wigeon and Teal collect food from the surface by grazing and dabbling. Diving ducks therefore require deeper water than their surface-feeding relatives and are less numerous on the estuaries and or on shallow floodplain wetlands except when the latter are deeply flooded. They find ideal habitat for their needs in the sea or in deeper (often artificial) water bodies like active and former gravel pits or reservoirs. They mostly feed on invertebrates; only sawbills (Goosander, Red-breasted Merganser and Smew) feed on fish. Most diving ducks are northern breeders, many of them breeding on tundra lakes; many are predominantly found in winter on the sea, and some species such as Common Scoter or Long-tailed Duck are almost exclusively maritime.
- 5.395. Some studies have found relatively long-distance within-winter movements of diving ducks. Korner-Nievergelt *et. al.* (2009) modelled movements of Tufted Duck and Pochard using ring re-encounter rates and suggested that birds studied in Switzerland could travel as far as 200km on a regular basis, partly in response to food availability. This could also be the case in the UK, although eutrophic lowland lakes and gravel pits are less likely to be depleted of food than oligotrophic mountain lakes in central Europe.
- 5.396. One study (Gourlay-Larour *et. al.* 2014) has found that amongst Pochard in one wintering

population, all wintering individuals displayed a high fidelity to one area at least (in the Loire Atlantique area of France) from one winter to the next. This may be a pattern elsewhere in this, and other diving duck species' wintering ranges.

- 5.397. Of additional relevance is the phenomenon of differential migration, whereby females settle further south on wintering grounds than males. This has been noted for Pochard, Tufted Duck and Goldeneye (Carbone and Owen, 1995). In areas where breeding and wintering populations are found, females are more likely to be resident than males (Gourlay-Larour *et. al.* 2014).

#### Overview of status in the UK as a whole

- 5.398. Diving ducks generally breed in northern latitudes and many are essentially winter visitors to Britain as a whole and to southern England in particular, the main exceptions to this rule being Tufted Duck and to a lesser extent, Pochard. The brief summaries of the status in the UK given below for each diving duck are taken from the BirdFacts<sup>31</sup> section of the BTO website. The figures given for the breeding and winter population size of each species refer to numbers in the UK, unless otherwise specified; figures for numbers on passage are not given for diving ducks; where species are marked as "scarce breeder", this normally means that a tiny number of pairs nest in Ireland or in northern GB in the nearest equivalent to their preferred tundra nesting sites. The Red, Amber or Green status is generally for the UK; as for migrant waders, it is notable how many of these species have a Red or Amber status.

#### Overview of status on the Severn Estuary SPA

- 5.399. Some diving ducks winter in the Severn estuary SPA, though only for Pochard and Tufted Duck is the SPA really part of their habitual range; for the other species (as the figures below show), the SPA is of very low importance, and many are not even recorded annually in the SPA or areas immediately adjacent to it. With the possible exception of the piscivorous species (Goosander and Red-breasted Merganser), the estuary does not offer deep enough water for birds in this group to dive for their food, and in the case of Pochard and Tufted Duck particularly, the turbid intertidal waters with little or no aquatic vegetation offer either poor feeding opportunities or none at all. For these species, the estuary itself can only really provide a roosting site, with birds generally likely to commute to foraging areas within non-estuarine rivers and still waters elsewhere.
- 5.400. Phase 4 of this work found that Pochard and Tufted Duck were largely absent from the estuary. The Desk Study for that Phase found records of low numbers of roosting Pochard at Frampton Breakwater and the area between Beachley and Pillhouse Rock. The only locations within the Phase 4 study area where these species were found during primary field work were WWT Slimbridge (partially within the SPA) and Lydney Harbour Pools (outside of the SPA, and therefore considered in the context of this study to be potentially functionally Linked to the SPA). In addition to this, a flock of Pochard was observed incidentally just outside of the study area on the estuary to the south of Beachley Point and there are desk study records of both species on other waters adjacent to the SPA, such as low numbers of Tufted Duck at Sharpness Dock.
- 5.401. Further downstream within the Welsh section of the SPA, neither species is abundant. In a study carried out in relation to two separate tidal lagoon proposals for Newport and Cardiff in winter 2014-15 (Palmer and Sutton, 2016), the maximum count of Pochard did not exceed 16 in the Newport section and this species was absent from the Cardiff section. For Tufted Duck, the maximum count

<sup>31</sup> <https://www.bto.org/understanding-birds/birdfacts>

was 176 for the Newport section and 16 for the Cardiff section. Almost all of the records of diving ducks encountered during this work were from RSPB Newport Wetlands, which is a still water habitat that was once a dumping lagoon for ash from the adjacent power station. Again, this is outside of the SPA.

- 5.402. Within the Phase 5 study area, as elsewhere, these species occur more often on deeper waters at the edges of the estuary. The site closest to the SPA under consideration here is Frampton Pools. Although the pools within the grounds of WWT Slimbridge are outside of the SPA, these were considered in Phase 4 and are linked to Frampton, as was pointed out in that report (Palmer, 2017). This linkage is reviewed in more detail in this Phase of the work.

#### Overview of status in inland wetlands in the Severn and Avon Vales

- 5.403. Diving ducks are much more numerous in the Worcestershire part of the Severn and Avon catchments than in the Gloucestershire Severn catchment, partly because there are more deep waters suitable for them in Worcestershire. In Gloucestershire the only diving duck which occurs in any numbers in the Vales is Tufted Duck, with Pochard usually present in much smaller numbers. Other species that occur regularly in small numbers in Worcestershire, such as Goosander and Goldeneye, are less frequent in the Gloucestershire section of the Vales, and often occur in Gloucestershire only when a spell of hard weather drives them a little further downriver. Numbers of diving ducks only become larger in Gloucestershire in the far south of the Vales, near the SPA in the deeper water bodies at Frampton Pools and WWT Slimbridge.
- 5.404. It must be emphasized at this point that the Cotswold Water Park (CWP), just over 30km away from the SPA, a short flight distance, has become of increasing importance for diving ducks, as new deep water pits have been dug over the last 20 years or more, providing excellent feeding opportunities for these ducks. Numbers of diving ducks in the CWP are on an altogether different and much higher level than in the upper reaches of the SPA and the Vales, and there are few data about, and little understanding of, interchanges of these species between the CWP and the Severn estuary or Vales. However, there is some limited evidence of movements of birds, as described under the Ringing Recoveries section of this account set out below.

#### Pochard

- 5.405. UK status:

- Breeding: 720 pairs (European population 100,000-180,000 pairs). winter: 29,000 individuals. Conservation status: Red because globally Vulnerable.

- 5.406. SPA status:

- winter visitor in moderate numbers. One of the two species of diving duck named in the SPA Assemblage under the 2001 SPA Review.
- 1% international threshold: 2,000.      1% national GB threshold: 230.      1% of SPA: 3.
- Maximum monthly count in whole of the Severn SPA since 2013/14: 386 in February 2015.

- 5.407. Severn and Avon Vales:

- Common winter visitor to areas of deeper water, but much less numerous than Tufted Duck. Numbers in the Worcestershire sector of the Vales much larger than in the Gloucestershire sector. Numbers build up from late summer, highest in midwinter.
- At sites near the SPA, midwinter maxima at Slimbridge in recent years have been around 150 with Frampton Pools supporting low numbers through the winter, frequently between two and 10 birds and with counts infrequently above this and a maximum over the last 10 years of 68 in January 2010. In the floodplain sites (Walmore, Coombe Hill and Ashleworth) Pochard are recorded only at time of high flood and in the last ten years have rarely reached double figures (though there were 25 at Longdon Marsh in February 2014). In former gravel pits: at Bow Farm (Ripple Lakes), numbers build up from late summer, occasionally reaching three figures by midwinter; at Clifton and Grimley regularly recorded, but rarely more than 50; at Westwood a “*common winter visitor, scarce in summer*”, occurring regularly between April and August, but rarely in double figures; winter monthly maxima generally below 100, maximum 136 in January 2016; at Upton Warren (generally on the Moors Pool), the situation is similar, with regular records, sometimes reaching 50. Along the Avon, Pochard are also regularly recorded at sites with deeper water: Bredon’s Hardwick, Kemerton Lake (KCT), John Bennett, Throckmorton Lagoons, in most cases in single figures but (mainly at Bredon’s Hardwick and Kemerton) sometimes reaching double figures with 50 on rare occasions.
- Known to have nested at least once at Westwood Pool in 1966 (W. Dutton 2017).

### Tufted Duck

#### 5.408. UK status:

- Breeding: 18000 pairs (European population 200000-320000 pairs). winter: 140000 individuals. Conservation status: Green.

#### 5.409. SPA status:

- winter visitor in moderate numbers. Small numbers breed in pools alongside the estuary (e.g. Frampton Pools and the WWT grounds at Slimbridge). The second of the two species of diving duck named in the SPA Assemblage under the 2001 SPA Review.
- 1% international threshold: 8900. 1% national GB threshold: 1300 1% of SPA: 9.
- Maximum monthly count in whole of the Severn SPA since 2013/14: 932 in February 2015.

#### 5.410. Severn and Avon Vales:

- Winters in good numbers near the SPA and further north in the Vales, notably at Grimley, Westwood and Bow Farm (Ripple Lakes) (from where birds may depart to Clifton if disturbed). Nests regularly at deeper waterbodies like Witcombe Reservoir, Bow Farm (Ripple Lakes), Kemerton Lake (KCT), Clifton Pits, Westwood, Grimley (Wagon Wheel Lane Pits) and Upton Warren (Moors Pool). This species will also often nest on smaller waters like the canal or scrapes at Coombe Hill (one or two pairs), or even ornamental lakes like Barrow Ponds at NGR SO880255 or Maisemore Court Lake at NGR SO815215.
- At sites near the SPA, midwinter maxima at WWT Slimbridge have generally been up to 700 in recent winters, with up to 150 at Frampton Pools (one exceptional count of 277 in February 2011), up to 71 at Witcombe. On floodplain sites, Tufted Ducks (like Pochard) occur largely at time of flood with maxima in single figures at Walmore, very occasionally reaching 50 at Coombe Hill, 20 at Ashleworth and Longdon. Numbers larger in deeper water like Bow Farm (Ripple

Lakes) (sometimes over 100), Clifton (over 50), Grimley (occasionally over 100). At Westwood recorded in every month in the last fifteen years, but with few records of over 100 birds, (maximum 192 in October 2007). At Upton Warren occasionally up to 100. Regularly recorded along the Avon, in larger numbers than Pochard: at Bredon's Hardwick and Kemerton sometimes up to 50; fewer at John Bennett, Gwen Finch and Throckmorton, generally in single figures occasionally more.

- The only diving duck which nests regularly in the Vales.

### Scaup

#### 5.411. UK status:

- Breeding: Breeds on tundra lakes, scarce breeder in UK, 0-1 pairs. winter: 6400 individuals, often at sea. Conservation status: Red because globally Vulnerable.

#### 5.412. SPA status:

- Rare winter visitor.
- 1% international threshold: 3100. 1% national GB threshold: 39. 1% of SPA : N/A.
- Maximum monthly count in the Severn SPA since 2013/14: 10 in March 2017.

#### 5.413. Severn and Avon Vales:

- Rare winter visitor, not recorded every year.
- The site where Scaup have been recorded most frequently within the study area is Frampton Pools, although even here there have only been five records in the last 10 years, with a maximum of four in February 2009; occasional records from the pools at Slimbridge. Singletons also recorded very occasionally at floodplain sites: at Coombe Hill (8 February 2010), Elmore Marsh (Groundless Pool, 20 February 2011) and Walmore Common (22 February 2014). Slightly more records in Worcestershire deep water sites (Bow Farm (Ripple Lakes), Clifton, Grimley, Upton Warren) but never more than three individuals); at Westwood considered a rare winter visitor and passage migrant, with 22 records of 26 birds between 1966 and 2017. No records at sites along the Avon. Records in the Cotswold Water Park limited, only occasional ones and twos, probably a reflection of its preference for maritime sites.

### Goldeneye

#### 5.414. UK status:

- Breeding: 200 pairs, mainly in nest-boxes in Speyside. (European population 290,000-380,000 pairs). winter: 21,000 individuals. Conservation status: Amber in UK.

#### 5.415. SPA status:

- Rare winter visitor.
- 1% international threshold: 11,400. 1% national GB threshold: 190. 1% of SPA (estimate): N/A.
- Maximum monthly count in the whole of the Severn SPA since 2013/14: 1 (recorded in only four of the last six winters).

## 5.416. Severn and Avon Vales:

- Regular winter visitor in small numbers (rarely into double figures) to sites near the SPA and to inland Vales sites, where it is much more frequent in Worcestershire than in Gloucestershire. With Goosander, probably the third most common diving duck after Tufted Duck and Pochard, though altogether less numerous than either. In the Cotswold Water Park numbers are much larger and have reached 25 or more on a single pit.
- Near the SPA, recorded nearly every year in ones and twos on the pools at Slimbridge, with slightly larger numbers at Frampton Pools. At floodplain sites irregular, with only ones and twos (invariably at times of high flood) at Walmore, Coombe Hill, Ashleworth (but five among ice floes on the Severn near Lower Lode on 28 December 2010). At Worcestershire gravel pit sites, recorded every year in small numbers, only very rarely reaching double figures at Bow Farm (Ripple Lakes), Clifton, Grimley, Upton Warren; at Westwood a “*common winter visitor*” from October until April with one May record, numbers since 2011 in single figures but in earlier years counts of almost 20 were frequent. Less frequent along the Avon, but occasionally ones and twos at Bredon’s Hardwick and Kemerton.

Goosander

## 5.417. UK status:

- Breeding: 4800 pairs. (European population 39000-65000 pairs). winter: 16000 individuals. Status: Green in UK.
- Goosander nests in Welsh forests, not very far from the Severn Vale.

## 5.418. SPA status:

- Scarce winter visitor.
- 1% international threshold: 2100. 1% national GB threshold: 150. 1% of SPA: N/A.
- Maximum monthly count in the Severn SPA since 2013/14: 21 in February 2019.

## 5.419. Severn and Avon Vales:

- Winters in small numbers (normally in single figures) in the SPA and the Severn Vales, though counts of fifty or more at a single site do occur. In the Vales is more numerous in Worcestershire, usually occurring in Gloucestershire floodplain sites only in spells of hard weather.
- Near the SPA, at Frampton Pools occasional records of one or two, no records from the pools in the grounds at Slimbridge. In the Vales, few records on floodwater sites: the occasional single at time of high flood at Coombe Hill; more often recorded, sometimes in small groups of up to six, on the Severn itself (at Newnham, Westbury, Longney, Maisemore, Wainlodes, Chaceley, Tewkesbury, Kempsey, Worcester/Diglis, Grimley, Bewdley). Also on less familiar sites such as the lake at Pittville Park, Cheltenham (up to six) and Witcombe and Dowdeswell Reservoirs. On deeper waters, it is found at the usual sites of Bow Farm (Ripple Lakes), Clifton, Grimley, Upton Warren and Westwood (where it is “*a common winter visitor*” over the last 50 years, though numbers only very rarely reach double figures). Quite large numbers in less familiar sites in northern Worcestershire such as Bittell Reservoir (up to 30), Trimpley Reservoir near Kidderminster (18 birds), Stanford on Teme (up to 80), Lodge Pool near Redditch and Brake Mill Pool near Hagley. Along the Avon, ones and twos at Kemerton Lake (KCT), on the river itself at Eckington and Nafford, at John Bennett, Lower Moor Leisure Park and Throckmorton Lagoon.

- Nests in holes in trees (or nest boxes) including small numbers in Welsh forests, and in the Wye catchment in Herefordshire, which would explain why considerable numbers are recorded in winter at Forest of Dean sites like Woorgreens (up to 60) with smaller numbers at Soudley, Cannop Ponds and Speech House Lake. As a fish-eater is often found on rivers. Also occurs in high numbers (up to 20 in the last ten years, older counts of up to 40) in the Cotswold Water Park.

### Red-breasted Merganser

#### 5.420. UK status:

- Breeding: 1650 pairs. (European population 64000-108000 pairs). winter: 11000 individuals, sometimes at sea. Conservation status: Green in UK, Near Threatened in Europe.

#### 5.421. SPA status:

- Red-breasted Merganser: Rare winter visitor.
- 1% international threshold: 860. 1% national GB threshold: 100. 1% of SPA: N/A.
- Maximum monthly count in the Severn SPA since 2013/14: 1 (recorded in only two of the last six winters).

#### 5.422. Severn and Avon Vales:

- Much less numerous than its close relative the Goosander, and more of a maritime species. Rare winter visitor, not recorded every year. Very few records from the Cotswold Water Park, reflecting its maritime and salt-water preferences.
- Many of the few available records come from the shallow waters of the estuary around WWT Slimbridge. Records at Frampton few and far between, only the odd singleton, not every year. Upstream, some records on the Severn at Minsterworth (four birds) and Lower Parting near to Alney Island (three), but no records on floodwater sites, and only a few records from the Worcestershire gravel pit sites - up to two at Bow Farm (Ripple Lakes). At Westwood "...a rare winter visitor and passage migrant" with just 17 records of 28 birds since 1981. No records along the Avon.

### Smew

#### 5.423. UK status:

- Breeding: Not in UK, breeds northern Eurasia. (European population 1300- 2000 pairs). Winter: 125 individuals. Conservation status: Amber in UK, Least Concern in Europe.

#### 5.424. SPA status:

- Very rare winter visitor.
- 1% international threshold: 300. 1% national GB threshold: no figure given. 1% of SPA: N/A.
- Maximum monthly count in the whole of the Severn SPA since 2013/14: Not recorded in the last six winters.

#### 5.425. Severn and Avon Vales:

- The third and least common of the saw-bills, not recorded every year, much more numerous in the Vales in Worcestershire than in Gloucestershire, where it is almost never recorded in the Vales. The vast majority of Gloucestershire records come from the Cotswold Water Park, where it is recorded annually, and in some numbers (up to 11).
- Near the SPA the occasional record, but not every year, in the pools at Slimbridge and at Frampton Pools (up to four). Inland in the Vales, not recorded on floodwater sites, but small numbers (usually single birds, sometimes three or four) have occurred on deep water sites (but again, not every winter) such as Bow Farm (Ripple Lakes), Clifton, Grimley and Upton Warren. At Westwood a rare winter visitor with 15 records of 18 birds since 1967.
- On 13 November 2018 two first winter males appeared at Clifton and were seen through the winter at a variety of Worcestershire sites. Since this is such a rare species and the plumage is distinctive it seems reasonable to assume that the same two individuals were involved each time, at Holt and Grimley in November, December and January, then a singleton at Kemerton from mid-January to mid-February. In 2020 an adult male appeared on the Avon in Gloucestershire on 7 February, then moved into Worcestershire, on the Avon at Bredon on 10 February, then on the fishing pool at Bredon's Hardwick (where the water must be less turbid) from 10 February to 7 March.

#### Long-tailed Duck

##### 5.426. UK status:

- Breeding: Scarce breeder in UK, breeds tundra lakes (European population 20,000-50,000 pairs). winter: 14,000 individuals, often at sea. Conservation status: Red in UK, Vulnerable in Europe.

##### 5.427. SPA status:

- Rare winter visitor.
- 1% international threshold: 16,000. 1% national GB threshold: 130. 1% of SPA: N/A.
- Maximum monthly count in whole of the Severn SPA since 2013/14: 2 in December 2013 (only recorded in two of the last six winters).

##### 5.428. Severn and Avon Vales:

- Extremely rare winter visitor, not recorded every year. Very much a maritime species, but if an individual takes up residence at an inland site, it may remain through the winter. Most records are of single individuals, but three have been found on one pit in the Cotswold Water Park.
- Near the SPA, some records in the estuary and occasional singletons at Frampton Pools. Some inland records (Gloucester-Sharpness canal, Witcombe); unusually two records at floodplain sites: one in November 1967 at Walmore, one at Coombe Hill in October 2012 following strong northerly winds the previous week; rather more records at deep water sites (Witcombe, Bow Farm (Ripple Lakes), Clifton). At Westwood a very rare winter visitor with seven records since 1970.
- A single bird noted at Bow Farm (Ripple Lakes) in December 2019 and reported there again on 13 January 2020, was presumably the same individual as the one at Clifton from 1 January until at least 22 March.

Common Scoter

## 5.429. UK status:

- Breeding: 52 pairs in UK, breeds on tundra lakes (European population 3900-12000 pairs). winter, often at sea: 135,000 individuals. Conservation status: Red in UK, Least Concern in Europe.

## 5.430. SPA status:

- winter visitor in very small numbers; recorded more often on passage.
- 1% international threshold: 7500. 1% national GB threshold: 1,300. 1% of SPA (estimate): N/A.
- Maximum monthly count in whole of Severn SPA since 2013/14: 43 in March 2017.

## 5.431. Severn and Avon Vales:

- Extremely unusual as a winter visitor; of the relatively few records of this species, most are in the passage period (March to May or July to September). Very much a marine species with a major wintering ground in Carmarthen Bay holding up to 20000 birds (Kershaw & Cranswick 2003), which is likely to be the source of most records of this species in the SPA or the Vales. The large number of records in spring and autumn suggest that this is the one species of diving ducks which does use inland migration routes through the Severn Vales. There are increasing numbers of records of overland routes followed by this species, including within and near to the Vales, as evidenced by recent recordings of birds moving through at night<sup>32</sup>. Relatively few records in the Cotswold Water Park, most of them in passage periods.
- Most records are of up to three or four birds, but two records in the migration period are of flocks on the estuary at Slimbridge: 98 on 2 April 2002, and 15 on 6 July 2004. Occasional singletons at Frampton Pools. At floodplain sites a single record at Coombe Hill (in deep flooding in April 2018). At Worcestershire gravel pit sites recorded at Bow Farm (Ripple Lakes), Clifton (seven in October 2013, singletons in March 2015 and 2016, four in May 2018, single females in November and December 2018 and in March 2019), at Grimley a female in March 2018, at Upton Warren a drake in April 2018. At Westwood 'a scarce passage migrant and winter visitor' with over 100 birds noted, some in winter, some in spring or autumn passage (usually in ones and twos, but 30 with 28 drakes in July 1983, five pairs in April 2005, four in December 2017). Along the Avon at Lower Moor one on 19 September 2017, at Kemerton Lake five in November 2013.

Favoured sites in the Severn and Avon Vales:

5.432. It is obvious that the favoured sites for diving ducks will be those with deep waters. The chain of former gravel pits along both Severn and Avon in Worcestershire present excellent deep water feeding places for this group, among which Tufted Duck and Pochard are the only ones that occur in appreciable numbers.

- The oldest and longest established site, with a long history of records of diving ducks (which no doubt was the justification in the SSSI site account for the reference to the most important sites for ducks in Worcestershire) is clearly Westwood Pool.

<sup>32</sup> <https://soundapproach.co.uk/common-scoters-strange-places/>  
<https://www.birdguides.com/articles/migration/citizen-science-reveals-nocturnal-scooter-migration-routes/>

- The Moors Pool at the Worcs WT reserve at Upton Warren also offers good conditions for diving ducks
- Grimley Gravel Pits (both the mature pools around Top Barn and the recently completed new workings at Camp Lane) provide excellent habitat and hold good numbers of birds.
- Clifton Pits offer excellent conditions for this group.
- Bow Farm (Ripple Lakes), formerly gravel pits, are one of the largest and most open of these waters.
- Along the Avon, the recently created John Bennett reserve is deep enough to hold diving ducks; Bredon's Hardwick still holds good numbers of diving ducks despite the amount of tree cover.
- In Gloucestershire, the floodplain sites of Coombe Hill and Ashleworth only hold any numbers of diving ducks at times of high flood.
- Some smaller ornamental lakes north of Gloucester like Barrow Ponds and Maisemore Court Lake may hold small numbers of diving ducks.
- Nearer to the SPA Frampton Pools (also former gravel pits) hold good numbers of Tufted and Pochard, and there is much movement of diving ducks between Frampton Pools and the pools within the enclosures of the WWT at Slimbridge.

#### Counter interviews

- 5.433. Worcestershire counters noted the greater numbers of diving ducks found on the deeper waters of their county, and in their opinion these birds moved south into Worcestershire, probably following the Severn from more northern sites, and not from the SPA. Gloucestershire counters had in the past thought that diving ducks in the Severn Vale might come in time of hard weather from the Cotswold Water Park, but now consider that there is also a possibility that the small number of diving ducks in the Gloucestershire section of the Vales probably move down the Severn and Avon from further north.

#### Ringling recoveries

- 5.434. Ringling of diving ducks demands specialised equipment and staff (essentially duck decoys and decoy operators), which are few in number across the UK as a whole, and generally operated by WWT, one of the principal decoys being at Slimbridge. Among diving ducks, Tufted Ducks and Pochard are by far the species most frequently caught and ringed in the UK and Ireland. Totals of each species (the vast majority adults, with very few ducklings) ringed from 1909 to 2018 (from the BTO Online Ringing Report) are as follows: Tufted Duck 40356; Pochard 16350; Goosander 1576; Goldeneye 701; Red-breasted Merganser 229; Scaup 224; Common Scoter 77; Long-tailed Duck 46. As with all duck species, most recoveries come from hunters (though there are a fair number of exchanges between decoys), so there is some bias in recoveries towards countries (like Russia) where summer shooting is still practised or towards countries with heavy shooting pressure in winter (like France). Nevertheless, the ringling recoveries (many of them from Slimbridge) present an overall picture of the breeding range of Tufted Ducks (some in Iceland, others in northern Scandinavia and in Russia, extending as far as the Urals, and a few going beyond). Pochard recoveries demonstrate them moving not quite as far north as Tufted Duck, but going much further east, well past the Urals into Kazakhstan, with even one recovery in China. In fact the number of

- Pochard ringed at Slimbridge and later recovered anywhere (906) is (surprisingly, given that Pochard numbers there are smaller) very much higher than the corresponding number for Tufted Duck (88), suggesting perhaps that facilities at Slimbridge are better suited to catching Pochard.
- 5.435. While ringing recoveries from Slimbridge show Tufted Ducks and Pochard moving far into the Arctic and western Asia, they reveal little about their local movements in winter. Few if any diving ducks have been ringed in Worcestershire and there are no recoveries of diving ducks ringed there, though a few birds ringed elsewhere have been recovered in the county. Diving ducks are probably a less attractive quarry for local wildfowlers, which may account for the limited number of recoveries.
- 5.436. Among Tufted Duck there is only one recovery from Slimbridge to the Vales in the same winter: ringed on 30 November 1982 it was recovered in February 1983 at Frogmore (SO6323) near Weston under Penyard; another five were recovered in or near the Vales in subsequent winters: three along the Avon at Bredon's Hardwick, Beckford and Wyre Piddle (SO9647); one at Nineveh (SO6873) along the Teme and one at Credenhill (SO4543) along the Wye. For Pochard there are no recoveries in the Vales in the winter of ringing, and five recoveries in or near the Vales in subsequent winters: one in Gloucester, one near Longdon Marsh, others much further to the north in Smethwick (SP0287), Bridgnorth (SO7488) and Montgomery (SO2495).
- 5.437. There are also a small number of recoveries in or near the SPA of birds ringed at Slimbridge. Three Tufted Ducks were recovered in the same winter at Lydney (SO6303), Uley (ST7898) and near Amesbury (SU2037); eight were recovered in subsequent winters – two at Frampton, one at Broadoak near Newnham (SO7013), one at Lydney, one at Standish (SO7908), one in the Forest of Dean (SO6312), one near Falfield (ST6993).
- 5.438. In addition to these recoveries in or near the Vales and the SPA, there are a number of recoveries of birds moving inland to the Cotswolds and beyond, suggesting that for diving ducks, links with the Cotswold Water Park (CWP) may be as important as links with the Vales, or indeed more so. However, none of the recoveries are of birds found in the SPA and inland in the same winter.
- 5.439. One Tufted Duck has been recovered, not in the same winter, at South Cerney (SU0697) and two in the Thames Valley, one in the same winter near Faringdon (SU3191), one not in the same winter near Wantage (SP5110). There is also a single colour ringed Tufted Duck, whose movements defy interpretation: originally marked in Portugal in November 2005, it was resighted in the CWP in June 2007, at Cheddar Reservoir in Somerset in February 2009, at CWP again in January and October 2010 and in April 2011, then at Slimbridge in February 2012, in Leicestershire in April 2012 and finally in Huntingdon in January 2018.
- 5.440. For Pochard there are three recoveries in the Cotswold Water Park (none in the same winter).
- 5.441. There is thus little indication from ringing recoveries of diving ducks moving habitually between the SPA and the inland wetlands, although this is potentially due to the lack of opportunities for recovery, given that the only facility for catching diving ducks is at WWT Slimbridge and so few are shot within the Vales area. The only species for which any regular movement can be discerned (and only very small numbers stop over within the SPA or the surrounding areas) is Common Scoter which occurs in the spring and autumn migration seasons at inland sites and must be moving from wintering areas in the Bristol Channel via inland routes to its northerly breeding areas.
- 5.442. It seems possible (though there is little evidence in support) that diving ducks wintering in or near

the SPA at Frampton and Slimbridge arrive by different routes, not down the Severn Vale from the north, but perhaps from the east (Thames Valley and Cotswold Water Park), or perhaps from maritime routes following the coast.

#### Summary findings of fieldwork carried out in 2019/20

- 5.443. The project team took part in fieldwork during winter 2019/20, notably observing eight Goosanders at Grimley in January, and the Bredon's Hardwick Smew in March. Their observations chimed with those of the WeBS counters, that numbers of diving ducks in the Vales proper are much larger in Worcestershire than in the Gloucestershire Severn, where Tufted Ducks and Pochard occur only in small numbers when floodwater on shallow marshes is high.

#### Synthesis of findings for diving ducks

- 5.444. Most diving ducks essentially nest in the far north of Europe, moving south to winter in the British Isles and the European continent. This situation is quite different from that of migratory waders which are moving through the SPA on route to winter quarters much further south, often in Africa.
- 5.445. The numbers of birds moving back northwards in autumn from the SPA through the Severn Vales is small, the more so as many ducks are maritime species and are more likely to move north over the sea.
- 5.446. In addition to diving ducks in the Vales proper (mainly in Worcestershire), there are comparable numbers wintering in the area immediately adjoining the SPA at Frampton and Slimbridge.
- 5.447. It is particularly difficult to interpret movements of diving ducks between the SPA and the Vales. This is because they are, in comparison to surface-feeding ducks, relatively few in number in the Severn Vale and the upper reaches of the SPA. The largest concentrations occur either at pools close to the SPA like those at Frampton and Slimbridge, or at former gravel pits in the northern sector of the Vales in Worcestershire, and there is little hard evidence of links between these two concentrations - indeed such links may not exist.
- 5.448. Ringing recoveries throw little additional light on the situation, partly because diving ducks are not a favoured quarry species among local wildfowlers, and partly because there are almost no colour-ringed or GPS-tagged diving ducks. However, there is some limited evidence of within-winter dispersal within the SPA and to sites distant from it. Between-winter movements of this nature have been recorded but are of limited value on their own in an assessment of Functional Linkage. Nevertheless, there is likely to be connectivity with the Cotswold Water Park. There is thus little compelling information, either from observations by counters or from ringing recoveries on the routes taken by diving ducks to reach winter quarters near the estuary or inland to the Vales.
- 5.449. The one species of diving duck for which there is evidence of movement though the inland route along the Vales (though in tiny numbers) is Common Scoter; these are probably birds that winter in Carmarthen Bay and are returning to breeding grounds in the north.
- 5.450. Diving ducks in the Vales generally occur on much deeper waters than surface-feeding ducks; many of these sites are artificial waters: long-established ornamental lakes like Westwood Pool, more recently on former gravel pits such as Grimley, Clifton, Bow Farm (Ripple Lakes) or Frampton along the Severn, or Bredon's Hardwick or Kemerton Lake (KCT) by the Avon.
- 5.451. Floodplain sites like Longdon, Coombe Hill or Ashleworth only attract diving ducks in times of high

flood.

- 5.452. Known and implied movements of Pochard are illustrated on Map 15 and those for Tufted Duck on Map 16 in Appendix 1.

### Conclusions

- 5.453. Diving ducks occur in relatively small numbers in the Severn Vales. Nevertheless, artificial sites like Westwood or other former gravel pits provide essential habitat for these ducks.
- 5.454. There is very little understanding of the relationship between diving ducks wintering in the Cotswold Water Park, near the SPA and the Severn and Avon Vales, both within and outside of the SPA. Given the increasing importance of the Cotswold Water Park for wintering diving ducks, further investigation of this issue is urgently needed.
- 5.455. There is very little evidence of movement by diving ducks from the Severn estuary SPA through the Severn and Avon Vales, except in the case of Common Scoter. This may not necessarily indicate that no other species does this.
- 5.456. Small numbers of Tufted Ducks nest in the Vales; Pochard has nested on very rare occasions.

### ***Wintering waders***

#### General ecology, phenology and movements of the species

- 5.457. Waders are in general birds of coasts and shorelines, particularly in their winter quarters, feeding mainly on invertebrates by probing with their long bills in mudflats or sandy shores. Many of them breed in far northern or tundra habitats, undertaking long migrations from their Arctic breeding grounds, through middle latitudes to winter quarters far to the south, sometimes beyond the equator. The present section deals with a small group of migratory waders which winter in the SPA and in the Severn and Avon Vales.
- 5.458. Four waders are listed as SPA qualifying species: Ringed Plover, Dunlin, Redshank and Spotted Redshank; of these four, Ringed Plover, Redshank and Redshank are extremely unusual, if not totally absent, in winter in the inland wetlands of the Vales and generally occur there only in migration periods in spring and autumn, so have been covered in the group account of Migratory Waders (which also mentions Dunlin). A further four waders (Curlew, Grey Plover, Lapwing and Whimbrel) contribute to the SPA Species Assemblage; of these, Curlew, Grey Plover and Whimbrel are extremely unusual in winter in the Vales. Curlew is covered by a full species account, while both Grey Plover and Whimbrel are covered under the account of Migratory Waders. Nine waders are mentioned in the SSSI citation: Curlew (for a second time), Dunlin, Grey Plover, Redshank, Ringed Plover and Whimbrel plus Knot, Snipe and Turnstone; in this report, all but Curlew are covered under the accounts of Migratory or Breeding Waders; both Dunlin and Snipe occur in the Vales in winter however so are mentioned in this account too. Finally an additional three waders are not mentioned in any of the SPA lists but have been added to the species covered by the present report because of their occurrence in the Vales: Black-tailed Godwit, Golden Plover and Ruff.
- 5.459. The present section on Wintering Waders therefore covers six of the above wader species that winter in the Vales: most attention is devoted to Lapwing, Golden Plover and Snipe (the most numerous waders in the Vales in winter), with references to Black-tailed Godwit, Dunlin and Ruff

(plus Jack Snipe (*Lymnocyptes minimus*), another wader occurring purely as a winter visitor). Green Sandpiper, which also winters in the Vales in small numbers, is covered under Migratory Waders.

- 5.460. WeBS winter counts have suggested for some time that there is a general and gradual retreat within the British Isles of most wintering waders from west to east, caused by climate change; because of warmer winters in the east, waders (just like Bewick's Swans and White-fronted Geese) are remaining in the east and simply not coming as far west as they used to (Austin and Rehfisch, 2005).
- 5.461. It should be emphasized at the outset that there is little or no definite evidence of winter movement of the seven wader species covered here between the SPA and the Vales, so that the comments below, based on comments and observations by experienced observers in Gloucestershire and Worcestershire, should be regarded as speculative.

#### Overview of status in UK as a whole

- 5.462. To qualify as internationally important, a site must regularly hold 1% of the north-western European population. To qualify as nationally important, a site must regularly hold 1% of the national GB population (there is a separate All-Ireland threshold covering the Irish Republic and Northern Ireland).
- 5.463. The threshold figures for each of these seven wader species, taken from the latest available BTO report on Waterbirds in the UK 2018/19 (Frost et al. 2020) are as shown in Table 4.3 below:

Table 4.3 – International and National thresholds for Wintering Waders

Species	International	National	Severn SPA
Lapwing	20000	6200	114
Golden Plover	9300	4000	33
Snipe	20000	10000	5
Black-tailed Godwit	1100	390	9
Dunlin	13300	3400	302
Ruff	20000	9	1
Jack Snipe	20000	1000	N/A

- 5.464. The notion of 10000 Snipe or 1000 Jack Snipe in a single site is bizarre and demonstrates the theoretical nature of these figures. The notes below (from BTO BirdFacts) have already been presented in part under the accounts of Migratory and/ or Breeding Waders (but not for Golden Plover or Jack Snipe, or for wintering numbers).

#### Lapwing

- 5.465. UK status:
- GB: 98000 breeding pairs in 2016 (from 140000 pairs in 2009); 635000 individuals in winter (2006/07). Europe: 1.1 to 1.7 million breeding pairs. Status in UK: Red, rapid decline. Status in Europe: Vulnerable. Global status: Near Threatened.
- 5.466. SPA status:

- Maximum monthly WeBS count for the species in the whole of the Severn SPA since 2013/14: 13,252 in January 2014.
- Kirk and Philips (2013) note that concentrations of Lapwings used to appear in Gloucestershire as early as June or July; *“such flocks were still being observed at Slimbridge in the 1980s, but not since 1990 either on the estuary or in the Cotswold Water Park”*; they add that *“...wintering numbers had declined in some previously favoured areas and that the species had practically disappeared from the high Cotswolds during winter because of a movement to Slimbridge where feeding opportunities had improved”*.
- Very large numbers of Lapwings continue to winter at Slimbridge (where altered management practices seem to have concentrated Lapwings on site), with figures of five, six or seven thousand often recorded in the last ten years and an absolute maximum of 8620 in January 2008. Numbers elsewhere in the Gloucestershire sector of the SPA are nowhere near as large: at Aylburton single counts of 2150 in February 2009, 2000 in February 2007 and 1000 in November 2011, but recent counts rarely reaching 500; in the Rodley/Dumball area some counts of 1000 or 2000, most recently in 2011.

#### 5.467. Severn and Avon Vales:

- Downstream from Gloucester: Records of considerable numbers (many records over 1000 and up to 2500) at Rodley mainly come from the foreshore of the estuary at Lower and Upper Dumball. At Wilmore (only a little way inland, so probably birds from the Rodley sector of the estuary), small numbers of Lapwings with occasional counts of up to 400. At Walmore there are two older winter counts in four figures from the same winter (1000 in December 2006 and 1500 in February 2007), but most counts in the last ten years are less than 100 with occasional records of up to 500 (maxima of 710 in January 2016, 800 in February 2018). At Minsterworth several hundred Lapwings were present on several occasions with a maximum of 740 in January 2016. It seems likely that Lapwings on inland wetlands downstream of Gloucester would be birds moving inland from the SPA to take advantage of favourable feeding conditions, usually around floodwater.
- Above Gloucester: Wintering Lapwings have continued in recent years to occur in considerable numbers (up to 3000 birds or more) in two areas of the Vales – the Coombe Hill / Ashleworth / Chelt group of sites, and around Longdon. Maximum winter counts in recent years are: at Coombe Hill 2440 in February 2015, at Ashleworth 2000 in February 2016 and 2017, and on the Chelt and Leigh Meadows 800 in December 2009). Flocks of similar size occur in the Longdon Marsh / Hill Court area (where the data do not go back as far) : Longdon Marsh maxima are 2750 in January 2018, 2200 in February 2017 and 1900 in January 2020, while Hill Court maximum counts are 1200 in January and February 2018, 2460 in January 2020. These flocks of Lapwings undoubtedly move round within each complex, and when floodwater is very high at Coombe Hill and Ashleworth it seems highly likely that the flock moves the short distance (only five or six kilometres) to Longdon, perhaps occasionally visiting Bow Farm (Ripple Lakes) or Bredon’s Hardwick. Maximum counts at Bow Farm (Ripple Lakes): 3000 in February 2013, 1500 in November 2018; maximum count at Bredon’s Hardwick 1400 in February 2016; at Kemerton Lake (KCT) rarely more than a hundred but 250 in November 2015, 265 in December 2016.
- Numbers of wintering Lapwings further up the Severn corridor are lower: at Clifton generally less than 100, maxima of 150 in December 2012 and 118 in December 2013; at Grimley generally less than 100 with maxima of 250 in February 2014 and 190 in February 2015; at Upton Warren numbers are larger, generally several hundred, with maxima of 1076 in January 2019 and 1000 in January and February 2016 and January 2018; but the Upton Warren numbers fall short of the Coombe Hill / Longdon concentrations.

- Along the Avon: Old records from the 1970s and 1980s speak of considerable numbers of Lapwings (and Golden Plover) wintering at sites like Upham Meadow or (when gravel extraction began in the 1980s) Bredon's Hardwick, but in recent years, no large numbers of either species have been recorded. On the other hand, increasing numbers have occurred in the SPA (particularly at Slimbridge); the obvious conclusion would be that these birds had moved to the estuary to take advantage of changed management practices at WWT and more favourable habitat. Closer inspection of the data however does not necessarily support this hypothesis; it is just as likely that these birds just moved to the Coombe Hill and Longdon area. Numbers of Lapwings at sites further up the Avon from Bredon's Hardwick are much smaller (though it should be remembered that in winter both Lapwings and Golden Plover use the extensive arable fields in south Worcestershire). Maxima: at Gwen Finch usually in single figures but 29 in January 2012; at John Bennett usually less than 100 but 450 in February 2013; at Lower Moor usually a few hundred but 1500 in February 2013 and 750 in January 2019.
- Thus one may think in terms of a resident winter Lapwing flock staying in the general area of Coombe Hill and Longdon, moving to Longdon in time of heavy flooding at Coombe Hill and Ashleworth (perhaps with occasional forays to other nearby sites like Bow Farm (Ripple Lakes), Bredon's Hardwick or Kemerton), but not going far. Smaller numbers occur at other sites along the Avon and Severn, with bigger numbers at Upton Warren, the latter perhaps comprise wintering birds coming from Staffordshire or Shropshire?

### Golden Plover

#### 5.468. UK status:

- GB: 42000 breeding pairs (2016), 410000 individuals in winter (2006/07). Europe: 436000 to 635,000 breeding pairs. Status in UK and Europe: Green. Global status: Least Concern.

#### 5.469. SPA status:

- Maximum monthly WeBS count for the species in the whole of the Severn SPA since 2013/14: 7019 in October 2016. Small migrant flocks coming into summer plumage occur in March.
- Kirk and Phillips (2013) comment: "*Golden Plovers have always tended to move to the low-lying ground adjacent to the Severn Estuary during severe weather, but in recent years numbers remaining in the area for the whole winter have risen considerably. This is particularly true of Slimbridge where formerly fewer than 100 birds were usually counted.*"
- As with Lapwing, Golden Plover now winters in increasing numbers at Slimbridge, some apparently coming down by day from feeding grounds on the Cotswolds, although this is difficult to prove in the absence of marked individuals; winter numbers regularly topping 2000 with a maximum of 5711 in January 2016. At Aylburton and Berkeley Shore maxima of 250, at Rodley up to 2000 in 2011, but rarely reaching 200 in recent years.

#### 5.470. Severn and Avon Vales:

- Downstream of Gloucester, most records come from the Rodley area – the estuary and foreshore at Upper and Lower Dumball and fields immediately behind the sea wall: counts of up to 2000 in 2011, but since then all counts have been below 1000 (maxima of 500 in February 2015 and 260 in January 2017). These birds may occasionally move inland to Wilmore, Walmore or Minsterworth Ham, but numbers are not high at any of these sites: once 130 at Wilmore in February 2018, Walmore maximum 30, Minsterworth only three. So Golden Plover even more than Lapwing, once they have reached the estuary stay close to it, only moving in small numbers to other damp riverside fields.

- Above Gloucester: Flocks of wintering Golden Plovers numbering hundreds if not thousands are regularly recorded from the top of the Cotswolds, and are thought to make regular visits to the SPA at Slimbridge. But few winter nowadays in the Gloucestershire sector of the Vales: the flocks of several hundred that used to occur at Upham Meadow in the 1980s and 1990s are no longer found there today. Records are usually in single figures in winter and they are more often recorded on northward passage in March. winter maxima: Coombe Hill 70 in November 2014, 50 in January 2014; Ashleworth 35 in January 2005.
- In Worcestershire, Golden Plover remain altogether more numerous in winter (often on arable fields). Along the Severn: at Clifton 90 in November 2018, at Ryall 500 in January 2012, at Grimley rarely more than 50 (maximum 74 in January 2018), while at Upton Warren too, numbers are small (maximum of 24 on 12 December 2018). Along the Avon: at Bredon's Hardwick 200 in December 2011, few records (each of less than 50 birds) at Kemerton (KCT), Gwen Finch and John Bennett, but the biggest totals are in the Lower Moor / Throckmorton area (probably the same birds interchanging): at Throckmorton 320 in January 2012, at Lower Moor 850 in January 2013 & 2014, 675 December 2014.
- The biggest numbers in Worcestershire occur round the floodwater at Longdon Marsh and at Hill Court Farm (250 in February 2014, 950 in January 2020). The Golden Plover are not permanently present around Longdon and it is tempting to think that this is the same flock as the one observed around Lower Moor (only about 15 kms away).
- As for Lapwing then, there seems to be a regular wintering flock of Golden Plover in the Vales, but more concentrated in south Worcestershire, and probably feeding on the arable fields there which are more extensive than in Gloucestershire. How this flock relates to the much larger numbers that winter on high ground in the Cotswolds is unknown.

### Snipe

#### 5.471. UK status:

- GB: 67000 breeding pairs (from 80000 pairs in 2009); 1.1 million individuals in winter (2004/05). Europe 630 thousand to 1.1 million pairs. Status in UK: Amber, rapid decline. Status in Europe: Least Concern. Global status: Least Concern.

#### 5.472. SPA status:

- Maximum monthly WeBS count for the species in the whole of the Severn SPA since 2013/14: 708 in February 2016.
- Kirk and Phillips (2013) refer to old records of large shooting bags of Snipe from damp arable land in the Severn Vale in the early twentieth century, though it was considered much less common on the Cotswolds; they add that three-figure counts do still occur in winter, but are unusual.
- Snipe still winters in the SPA in some numbers, though not in large flocks like Lapwing and Golden Plover and not on the open mudflats; rather on foreshore saltmarsh or in wet, thickly vegetated marshy ground, bordering the SPA behind the sea wall. Some counts at Slimbridge of over 200 occurred in the 2000s, counts of over 100 have been unusual there in recent years (but 157 in January 2017 and 169 in January 2018); some old counts of up to 250 on Awre Peninsula (and 115 in January 2019 on maize stubble), up to 39 on Berkeley Pill, in single figures at Aylburton Warth and Guscar.

#### 5.473. Severn and Avon Vales:

- Winters regularly in some numbers in the Vales, but (as in the SPA) not in large flocks and is usually secretive and often has to be flushed for the numbers present to be appreciated. The first post-breeding migrants may appear as early as June, and there is often a considerable passage (very noteworthy in wet Summers like 2007) before the winter numbers stabilize; there is again a marked passage from March into May.
- Downstream of Gloucester: At Rodley most records of Snipe (numbers occasionally reaching 50) are on the foreshore at Upper or Lower Dumball. Wilmore Common affords very few records of Snipe. Walmore, a marshy site well suited to this species, achieved several counts of over 100 in the 1970s and 1980s (with 250 in October 1974), but the only recent three figure counts were of 125 and 165 in the aftermath of the catastrophic 2007 summer floods; otherwise winter counts in the last ten years have only rarely passed 50. At Minsterworth (nothing like as well covered as Walmore) Snipe are generally recorded only in single figures in winter.
- At Ashleworth, Coombe Hill and on the Chelt meadows counts of over 50 are rare (even in the 1970s and 1980s): at Coombe Hill the only three figure record is of 100 in November 2004, numbers over 50 usually arise in August / September; at Ashleworth 200 in February 1973, 150 in January 2007 and February 2013, 145 in February 2015; at Cobney Meadows 66 in November 2008, 25 in December 2018.
- At Longdon Marsh and Hill Court there are very few records of Snipe, probably because observers tend to look at the floodwater from surrounding high ground and rarely venture to the edge of the floodwater where Snipe might be expected to congregate: counts of almost 100 in the wet autumn of 2012, with some December and January counts of up to 50 birds. Numbers at Bow Farm (Ripple Lakes) are generally in single figures with occasional counts of up to 70 (maxima 70 in December 2019, 75 in December 2012). At Clifton numbers do not exceed 20. At Ryall occasional quite large counts: 130 in December 2019, 47 in January 2018, 50 in December 2016. At Grimley generally recorded in single figures but a peak count of 70 on Camp Lane Pits in November 2016 with a maximum of 43 in February 2013 on the older workings to the north. At Upton Warren Snipe numbers rarely pass 50, but in early 2014 there were several records of over 100, maximum 130 in February.
- Along the Avon: numbers of this species at Avon sites were impressive: at Bredon's Hardwick a peak of 142 in October 2012; at Gwen Finch, many records of more than 100 Snipe (maxima of 118 in March 2013, 104 in January 2015, 147 in January 2017); at John Bennett 72 in December 2012, 59 in January 2017; at Kemerton (KCT) 41 in January 2013, 66 in December 2013, 74 in December 2014, 78 in January 2018, 109 in January 2018, at Lower Moor 82 in February 2012.
- In summary, Snipe are widespread but their movements are difficult to interpret because of their secretive habits. Little indication of any strong movements, other than arrival and departure.

### Black-tailed Godwit

#### 5.474. UK status:

- GB: 53 breeding pairs; passage migrant; 41000 individuals in winter. Europe: 86000-110000 breeding pairs. Status in UK: Red. Status in Europe: Vulnerable, nominate subspecies Red since 1996, Icelandic subspecies Amber. Global status: Near Threatened.

#### 5.475. SPA status:

- Not one of the named species on either the SPA or the SSSI citations but considered here in detail because of notable increase in number on the SPA in recent years.

- Icelandic subspecies, increasing as a winter visitor, some on passage.
- 1% international threshold: 1110. 1% national GB threshold: 390. 1% of SPA: 8.
- Maximum monthly WeBS count for the species in the Severn SPA since 2013/14: 1076 in October 2016.
- Kirk and Phillips (2013) comment that in Gloucestershire “*since 1980 there has been a marked and sustained increase, especially after 2000*” and “*The bulk of records are from Slimbridge, where habitat improvement may have played a part in the increase, but they are also regular elsewhere, especially the wet grasslands of the Severn Vale*”. Numbers of the Icelandic subspecies wintering at Slimbridge have increased considerably in recent years, with repeated counts of over 400 particularly in winters 2017/18 and 2018/19, but much smaller numbers in other areas of the SPA in Gloucestershire; very few records and only in single numbers at Aylburton and Guscar, Severn House Farm and Berkeley Shore.

#### 5.476. Severn and Avon Vales:

- The following notes refer only to winter records (from October to February), generally of birds in dull winter plumage; they omit records from March or April when the birds are coming into full nuptial plumage and (as noted under the account of Migratory Waders) fan out to satellite feeding areas around Slimbridge to put on weight before their flight to Iceland. Autumn records of returning birds from July to September are also omitted.
- Downstream of Gloucester, and hence nearer the SPA, most records come from Walmore, where there was an extraordinary event in early October 2012: for about a week up to 600 Black-tailed Godwits were recorded, probably representing a brief exodus of the whole Slimbridge wintering group at the time; this event does not seem to have been repeated in later years. There are few other winter records at Walmore, with one or two most years in November and December. At Rodley there is a single winter record of two at Lower Dumball in October 2016. At Minsterworth Ham most records relate to March migrants; the only winter record is of one on 11 January 2018. Similarly at Maisemore Ham, the only records are of spring migrants in March 2020, an exceptionally wet period.
- Upstream of Gloucester, the situation at Ashleworth, Coombe Hill and the Chelt Meadows is similar: the great majority of records of Black-tailed Godwits occur in March or April, with flocks of up to 150 in bright summer plumage feeding hard before departing on migration. winter records are few and numbers are low: at Ashleworth one in February 2012, two in February 2016, one in February 2018; at Coombe Hill singles in November, December and February in most years from 2006 onwards, with maxima of seven in October 2012 and eight (all in winter plumage) in February 2019. No records at all on the Chelt Meadows. At Longdon Marsh too, only ones and twos in winter: ones and twos in January 2014, February 2015 and February 2017, no records from Hill Court.
- At sites further north along the Severn, most records are in the spring and autumn migration periods (with just as many records in autumn as in spring, whereas further downstream spring records predominate; do they branch off to the northwest before going far up the Severn?). There are few observations in winter: at Bow Farm (Ripple Lakes) one in November 2018, three in December 2019; at Ryall none; at Clifton singletons in December 2012 and October 2013; at Holt near Grimley two in December 2012, two at Grimley in October 2018, one in November 2019; at Westwood Pool it is a ‘very rare passage migrant’ with only three records, all in July or September, up to 2017 (Dutton, 2017). At Upton Warren the species is regularly observed usually in single figure groups, but here too, most records are in the passage season and winter

records are scarce: seven in October 2014, singletons from October to December in 2016, 2017 and 2018.

- At sites along the Avon too, records are almost entirely from spring or autumn: the only winter records are singletons at Bredon's Hardwick in January 2014 and at Lower Moor in November 2017.
- The numbers of Black-tailed Godwits appearing in the Vales in winter are thus very modest; those nearer the SPA may well have travelled up from the estuary to take advantage of favourable feeding conditions, though it is hard to see why they would go as far as Clifton, Grimley or Upton Warren.

### Dunlin

#### 5.477. UK status:

- Three subspecies occur in UK: *C. a. schinzii* winters in west Africa, breeds in UK; *C. a. alpina* winters in UK and breeds in Siberia; *C. a. arctica* breeds in Greenland, comes through UK on passage.
- GB: 9600 breeding pairs; passage migrant; 350000 individuals in winter. Europe: 285000-400000 pairs. Status in UK: Amber (was Red from 2009-2014). European and Global status: Least Concern.

#### 5.478. SPA status:

- Dunlin is an SPA qualifying species, with the nominate subspecies *Calidris alpina alpina* specifically mentioned. It should however be remembered that two other subspecies occur on passage.
- Maximum monthly WeBS count for the species in the whole of the Severn SPA since 2013/14: 36,131 in January 2017. *C. a. alpina* subspecies winters from October to February/March, largest numbers in south of SPA.
- Kirk and Phillips (2013) note that wintering Dunlin are largely confined to the estuary, but that other sites have attracted "*good numbers in winter, though only rarely in recent years*".
- SPA winter maxima illustrate the decline in waders wintering in western GB: at Slimbridge a highest ever count of 7500 was registered in December 2000 (Kirk & Phillips, 2013); totals of four, five or six thousand occurred up to 2003, but only three counts of 3000 since then, all in 2014; maxima in recent years not exceeding 1500. At Aylburton/Guscar maximum of 2150 in 2009 and some four figure counts up to 2011; the only four figure counts since then were 2000 in February 2016 and 1230 in January 2018; maxima nowadays rarely reaching 500.

#### 5.479. Severn and Avon Vales:

- Kirk and Phillips (2013) mention large counts in the Vales: at Walmore 1600 in 1982 and 1600 in 1986; along the Avon at Twyning up to 700 and at Ashleworth and Coombe Hill up to 250. Such counts are a thing of the past, and present-day figures are of a totally different order. (The following notes refer only to winter records from October to February, not to the frequent passage records in spring and autumn which are covered under the account of Migratory Waders).
- At Rodley (Upper and Lower Dumball) most records are from the estuary rather than inland sites: maximum count of 270 in November 2011 but numbers barely reaching double figures since

then. At Wilmore only one record of eight in December 2011. At Walmore some Dunlin occur on passage, but most records are in winter between October and February, illustrating its proximity to the estuary; in contrast to the figures from the 1980s, no three-figure total has been recorded this century: the great majority of records are in single figures, with a maximum of 75 in February 2018; at Minsterworth Ham only three records, maximum three, in the last ten years.

- At floodplain sites upstream of Gloucester, the low number of winter records of Dunlin perhaps illustrates the greater distance from the estuary. At Coombe Hill most Dunlin records are in passage periods (with a good number of March records, perhaps departing *C. a. alpina*); the winter records are generally in single figures with a maximum of up to 33 in February 2015. At Ashleworth and in the Chelt Meadows only three records of one and two in the last ten years. At Longdon Marsh too only two records of winter singletons, one at Hill Court in December 2019 and January 2020.
- Further north along the Severn corridor in Worcestershire: at Bow Farm (Ripple Lakes), most records in passage periods, a few records in most winters in the last ten years, never more than four individuals. At Ryall no winter records. At Clifton many passage records but only very few winter records of one or two birds. At Grimley too, most Dunlin records in passage periods, a few winter records, mainly in single figures, maximum nine in January 2013. At Westwood Pool Dunlin is a 'scarce passage migrant and winter visitor' with 29 records (19 in winter) of 73 birds from 1966 to 2017 (Dutton 2017). Similarly at Upton Warren, nearly all records are in single figures, the great majority of them referring to passing spring and autumn migrants, with a winter maximum of eight in November 2018.
- Along the Avon the same picture emerges: a considerable number of records of Dunlin, nearly all in spring and autumn at Bredon's Hardwick, Kemerton Lake, Gwen Finch, John Bennett, Throckmorton Lagoons and especially Lower Moor, but the vast majority of records in spring and autumn; no records exceeding 15 individuals and only the odd singleton in the winter months.
- It is clear then that nowadays, the only Dunlin at inland sites are those near the SPA, and even they have dropped drastically in numbers; the flocks of hundreds found in former times around Ashleworth or the Avon Meadows have largely disappeared.

### Ruff

#### 5.480. UK status:

- GB: scarce breeder (13 females); passage migrant; 920 individuals in winter. European population 60000-90000 breeding pairs. Status in UK: Now Red (Amber since 1996). European and Global status: Least Concern.

#### 5.481. SPA status:

- Maximum monthly WeBS count for the species in the whole of the Severn SPA since 2013/14: 35 in September 2015, a figure that would no doubt have included some migrant birds; maximum January WeBS counts were six in 2014, two in 2015, nine in 2016, 28 in 2017 and 18 in 2018.
- Kirk and Phillips (2013) remark that since Swaine (1982) "*...the main change has been an increase in wintering numbers. Ruff now winter every year*".

5.482. At Slimbridge this species is clearly becoming more numerous in winter; its status mirrors (on a smaller scale) that of Black-tailed Godwit: whereas twenty or more years ago it was mainly considered as a passage migrant, it is now present throughout the winter, the first birds arriving as

early as July; counts of over 25 (maximum of 54 on 27 October 2017) have become frequent in the last ten years.. A similar development has not occurred at Aylburton: there are occasional winter records, maximum seven on 17 December 2010.

#### 5.483. Severn and Avon Vales:

- Kirk and Phillips (2013) note that when conditions are suitable Ruff appear at Severn Vale grasslands and mention a record of 55 at Walmore in April 1987; but this record clearly relates to spring passage, rather than wintering, and many recent February and March records are probably of early migrants, departing from wintering grounds at the time when they would have departed from their former sub-Saharan wintering areas.
- Downstream of Gloucester, Ruff appear occasionally in winter: at Rodley flocks have been recorded, mainly close to the estuary at Upper and Lower Dumball, the largest of 40 on a newly ploughed field and 25 on a grass field, both in October 2017. At Walmore, occasional October and November records, all in single figures.
- In floodplain sites above Gloucester, Ruff occasionally occur in winter. At Ashleworth there are records from 2002 and 2003 of single birds round floodwater in January. Similarly, at Coombe Hill (in addition to spring records in April/May and autumn records in August / September) there are a few records from October to January, but never of more than three individuals. At Cobney Meadows there is one December 2009 record of three with a Lapwing flock. At Longdon Marsh there are a few autumn and spring records, but none from November to January.
- Further up the Severn, there are very few genuine winter (November to January) records. Most records of Ruff at Bow Farm (Ripple Lakes), Clifton, Grimley and Westwood Pool are from April to May or from August to October (all in single figures): at Clifton one in January 2013, at Grimley singletons in November 2014 and 2017. At Upton Warren too, there are many records in spring and autumn (but never with more than single figure totals), continuing into October but then dying out, with no records at all from November to March.
- Along the Avon too, Ruff are recorded: never more than five individuals and mainly in spring and autumn, with a few October records but none from November to March which suggests that October records refer to late autumn migrants.
- Thus, while small numbers of Ruff do appear around the floodwater in the Vales in mid-winter (November to January), the majority of October records appear to involve small numbers (usually ones and twos, rarely five or six) of late autumn migrants; records in February and March, in larger flocks of 20 or 30 birds in recent years, appear to relate to early departures of the increasing number of Ruff that winter at Slimbridge (or like Black-tailed Godwits, to birds exploiting local feeding opportunities before departing on migration?).

#### Jack Snipe

#### 5.484. UK status:

- GB: does not breed; 110,000 individuals in winter (2004/05). Europe 13,000-24,000 pairs. Status in UK and Europe: Green. Global status: Least Concern. As noted by Balmer et al. (2013), because it is a very secretive bird, there is considerable uncertainty concerning population sizes, trends and distribution patterns.

#### 5.485. SPA status:

- Maximum monthly WeBS count for the species in the whole of the Severn SPA since 2013/14: 19 in December 2016. An elusive species, certainly overlooked, sometimes occurs on foreshore saltmarsh, more often on marshy ground inside the sea wall. Even so, 13 at Slimbridge in December 2004 were noted as a record count, only outdone by 16 in October 2010; Berkeley Pill, a favoured spot, had 15 in November 2014.

#### 5.486. Severn and Avon Vales:

- Kirk and Phillips (2013) comment that the status in Gloucestershire remains the same as at the time of Swaine (1982) with the majority of records coming from the Severn Vale. This is the one wader species where wintering numbers in the Vales are considerably higher in Worcestershire than in Gloucestershire.
- Jack Snipe often seem to have favourite fields or even corners of fields in larger sites, where they can almost always be found if the observer returns to the right place: e.g. at Coombe Hill the low marshy area in the Short Pool at SO873275; at Ashleworth the top field near the road at SO830267 or the back of the reserve at SO832266; at Hasfield Ham the former maize field at SO840265; at Ryall Pits the rough ground near the northern lake at SO865399. Knowing the exact place to look may govern whether or not an observer makes the record.
- At sites downstream of Gloucester, noted from September to March, there are not many records and numbers never reach double figures: at Rodley very few records, mostly of single birds; at Wilmore no records; at Walmore frequent records, generally in the last ten years of single birds (maxima up to seven in 2006 and 2009); at Minsterworth only two records in the last ten years, maximum of three birds; at Port Ham on Alney Island, occasional winter records of ones and twos.
- Floodplain sites above Gloucester: at Ashleworth, Coombe Hill and the Chelt Meadows there is only one record of more than ten in the last 15 years – 13 on 25 March 2006, and the vast majority of records in the last ten years at all three sites have been of one or two birds. At Longdon Marsh in Worcestershire there are four records of up to five birds in 2013 and 2015.
- Further north along the Severn: recorded regularly at Bow Farm (Ripple Lakes) usually in ones or twos, but one record of 11 in December 2015; at Ryall Pits, regular records in small numbers but 15 in February 2018, 11 in December 2015 and eight in January 2017; at Clifton only very few records of singletons; at Grimley regular records, usually singletons but maximum of five in November 2016. At Westwood Pool it is a rare passage migrant and winter visitor (only seven records totalling 14 birds from 1966 to 2017; the author comments that it could occur more often but he would have to enter the reed-bed to disturb the birds (Dutton 2017). Upton Warren seems to be the site with the biggest numbers, with several counts in double figures: maximum of 35 in February 2014, 11 in February 2013; scrub clearing parties often flush good numbers from thick vegetation (J. Belsey, pers. comm.). Jack Snipe also occur in numbers at two Worcestershire sites which have not previously featured in the present report: Castlemorton Common near the Malverns west of Longdon at SO785395 (frequent records of several birds, maximum of 13 in March 2014) and Abberton, a flooded field west of Worcester at SO994535 (frequent records with maxima of 23 in November 2014, 11 in January 2014, seven in January 2016).
- Along the Avon Kemerton Lake (KCT) attracts the largest numbers of Jack Snipe: 19 in December 2012, 18 in December 2013, 11 in December 2014, 15 in February 2015, 12 in December 2019; also recorded at Gwen Finch (maximum of seven in February 2012), John Bennett (maximum of seven in February 2018), singles at Lower Moor and Throckmorton.

### Counter interviews

5.487. The opinions of the counters interviewed have been incorporated into the text of the present account.

### Ringling recoveries

5.488. Ringling recoveries of these seven wader species relating to Gloucestershire and Worcestershire tend naturally to reflect broad general findings on wader movements shown in detail in the Ringling Atlas (Wernham *et al.* 2002).

5.489. These recoveries in fact give very limited help in interpreting the local movements between the SPA and the Vales of the seven wintering wader species, partly because few recoveries show bird movements within the same winter, partly because the data are so meagre.

5.490. In Worcestershire little ringling of these species has been done (some ringling of adults, probably with mist-nets, at Holt near Grimley and at Worcester); what little ringling there is was done a long time ago (pre-1980) and with metal rings only – hence no sightings of birds marked locally with colour rings. There are no recoveries of locally-ringed Lapwing, Redshank or Snipe chicks; it seems surprising that more wader chicks were not ringling in the past.

5.491. In Gloucestershire most of the wader ringling was done on the estuary (mainly using mist-nets from the 1960s to the 1980s) with little or no wader ringling inland; the results therefore tend to show the movements of birds from the estuary, rather than from the Vales. Again, little ringling of chicks.

5.492. Lapwing:

- The BTO Online ringling report mentions 11 recoveries of Lapwings ringling in Worcestershire, one in Worcestershire itself (ringling in Malvern in May 1939, found in Malvern Link in December 1941), but none found in Gloucestershire; it also mentions four recoveries in Worcestershire of Lapwings ringling outside the county (one in 1914, another in 1916!). None of those recovered outside the county are in the same winter, so they give no insight into movements between the Vales and the SPA. Many of the recoveries demonstrate birds ringling in Worcestershire in one winter, and recovered in a different area in a later winter: one each in Ireland, Finland, Hungary, Italy, Spain, Portugal, three in France. They also show the origins of birds wintering in Worcestershire: one from Worcestershire is back in Poland in March, birds within Worcestershire include one each from Derbyshire, Greater Manchester, Gwent and Staffordshire. The Gwent bird was ringling in May 1993 and was recovered at Upton Warren in July of that year, the Manchester bird was found near Upton on Severn in December (of 1916!).
- For Gloucestershire the BTO Online ringling report mentions 14 recoveries of Lapwings ringling in the county, four of them found in Gloucestershire itself (one from Lechlade to the Forest of Dean), but none in Worcestershire; the report mentions ten recoveries in Gloucestershire of Lapwings ringling outside the county. Again, some of these recoveries show birds ringling in Gloucestershire in one winter and found wintering somewhere else in a later year: one in Spain, two in Portugal, three in France. Others show the origins of birds wintering in the county: several birds had been ringling as nestlings - from Finland (one), north Germany (one), The Netherlands (four) plus one from Wiltshire; not all were recovered on the estuary; one was at Apperley, one near Gloucester. Some of the birds ringling in Gloucestershire were recovered in distant breeding areas: one in The Netherlands, one in Germany, one in Hungary.
- Thus these recoveries do not reveal any movements of Lapwings between the SPA and the Vales, but they do show the origins of some Vales birds wintering in Worcestershire and

Gloucestershire. Some recoveries of birds ringed as nestlings show exactly where they began life: a good proportion from central and northern Europe – The Netherlands, northern Germany, Finland and Poland; there is a proportion, especially in Worcestershire, of birds from northern England.

5.493. Golden Plover:

- The BTO Online ringing report records no recoveries of Golden Plover relating to Worcestershire. For Gloucestershire the report mentions no recoveries of Golden Plover ringed in Gloucestershire, and just two recoveries in Gloucestershire of Golden Plover ringed outside the county: one was ringed as a nestling in Iceland in 1932 and killed when it hit overhead wires later that year near Lydney; the other was ringed as an adult in The Netherlands in April 1991 and killed in December of that year by a bird of prey near Wotton under Edge.

5.494. Snipe:

- The BTO Online ringing report mentions 15 recoveries of Snipe ringed in Worcestershire: two in western Russia (in August and October), 13 within UK (seven of them in Worcestershire itself, none in Gloucestershire, one each in Carmarthen, Cheshire, Devon, Dorset, Lincolnshire, Oxfordshire, nearly all in midwinter); birds ringed in Cumbria and Shropshire have been recovered in Worcestershire in winter.
- For Gloucestershire the BTO Online ringing report mentions five recoveries of Snipe ringed in Gloucestershire (two in Gloucestershire itself, none in Worcestershire); two demonstrate very rapid movement: one ringed in the Cotswold Water Park in December 1962 was shot two weeks later at Newlyn (Cornwall), the other, ringed on the estuary in September 2007, was shot only two days later on the Atlantic coast of France. Three other ringed Snipe have been recovered in Gloucestershire: one was ringed as a nestling in Finland in June 1962 and shot near Cirencester in January 1963, one full grown bird ringed in Germany in July 1969 was recovered at Coombe Hill in October 1969. A third bird ringed in Essex was found near Rendcomb.

5.495. Black-tailed Godwit:

- The BTO Online ringing report mentions no recoveries of Black-tailed Godwits relating to Worcestershire. Gloucestershire recoveries of Black-tailed Godwits in the Severn Vale in spring are discussed at length under the account on Migratory Waders; they relate to 14 birds, colour-ringed in Devon, Hampshire and Kent in winter, then resighted in winter quarters at Slimbridge or in spring at Ashleworth, Coombe Hill or Bow Farm (Ripple Lakes). None of them throw any light on movements of Black-tailed Godwits between the SPA and the Vales in winter.

5.496. Dunlin:

- The BTO Online ringing report mentions no recoveries of Dunlin relating to Worcestershire.
- For Gloucestershire the BTO Online ringing report mentions 18 recoveries of Dunlin ringed in Gloucestershire and found elsewhere (none in Worcestershire), and ten recoveries in Gloucestershire of Dunlin ringed outside the county (none of them ringed as nestlings, as this is a tundra breeding species). The recoveries neatly illustrate the occurrence of three subspecies in the area. One breeding season recovery came from Iceland (presumably of the *C. a. arctica* subspecies); many were recovered in northern Europe in August and September on their way back southwards (one from Finland, three from Norway, three from Sweden, two from Denmark, one from Germany and one from The Netherlands (those on the estuary in winter will have been of the *C. a. alpina* subspecies but some in autumn may have been of *C. a. schinzii* on their way

further south); two ringed on the estuary and recovered in winter in Morocco will definitely have been of the *schinzii* subspecies). Two of the birds metal-ringed in UK were retrapped twice and offer additional insights into the birds' movements: one ringed near Rodley in April 1973 was caught a second time in Norfolk in August 1977 and a third time at Weston-super-Mare in February 1981, back on the SPA for the winter; a second bird, first marked in Norfolk in August 1971 was retrapped near Aylburton in December 1975, then again in Norfolk in September 1976. There are four other Dunlin shown moving from wintering areas on the Severn estuary to autumn stopover sites on The Wash in Norfolk.

- While these recoveries provide interesting confirmation of the movements undertaken by SPA Dunlin to breeding areas in the far north, of the sites visited en route and of the wintering areas of some birds on the SPA and in West Africa, they do not provide insights into movements between the SPA and the inland sites in the Vales; furthermore, most of them are quite old (almost exclusively from the 1970s and 1980s when wader ringers were active in Worcester and around the SPA), and it is known that there have been changes in the distribution of wintering waders in the last 20 to 30 years.

#### 5.497. Ruff:

- The BTO Online ringing report mentions no recoveries of Ruff relating to Worcestershire. The report mentions a single recovery relating to Gloucestershire: a female bird, colour ringed on passage in northern Norway in August 2019, has been seen repeatedly at Slimbridge from September 2019 to at least January 2020.

#### 5.498. Jack Snipe:

- The BTO Online ringing report mentions only one recovery of Jack Snipe relating to Worcestershire, a bird ringed in The Netherlands in November 1995 and killed by a raptor in January 2008. It refers to a single Gloucestershire recovery: a bird ringed in October 1969 near Cheltenham and shot in western Ireland in January 1970.

### Summary findings of fieldwork carried out in 2019/20

- 5.499. The project team made numerous observations of wintering waders in the wet winter of 2019/20. Despite the extensive and lengthy flood periods, rather few wintering waders were found: just one Dunlin at Hill Court on 9 January, the only records of wintering Black-tailed Godwits and Ruff were of migrants beginning to appear in mid-March. The most significant observations related to Lapwings and Golden Plover.
- 5.500. At Coombe Hill and Ashleworth in previous winters a flock of up to 2000 Lapwings has generally been resident (details above). In late 2019, maximum counts were of 543 Lapwings at Ashleworth on 12 December, with 412 on 14 December. At Coombe Hill there were few records of Lapwings in late 2019, the biggest count was of 200 on 14 December. In January and the first half of February a flock of roughly 2000 Lapwings was present in the Longdon area, moving back and forth over the short distance between Longdon Marsh and Hill Court; during this period flooding at Coombe Hill and Ashleworth was high and a maximum of 345 Lapwings was recorded. It appears very likely that the Lapwings (like Wigeon and other surface-feeding ducks) moved from Coombe Hill / Ashleworth to Longdon at times of very high flood.
- 5.501. As usual, Golden Plover numbers were low in Gloucestershire but impressive flocks, often numbering 500, sometimes 1000 birds, appeared at both Longdon Marsh and Hill Court. They were not there permanently and may perhaps have been the flock generally observed in south

Worcestershire on arable land by the Severn or in the Pershore/ Lower Moor area.

#### Synthesis of findings for wintering waders

- 5.502. BTO WeBS counts show that numbers of some species of wintering waders (and in particular Dunlin) have decreased in western Britain in the last 20 years, under the effect of climate change which has caused them to stop short at sites in eastern England. This of course affects the Severn estuary SPA.
- 5.503. For some wintering waders in the SPA, in particular around Slimbridge (probably as a result of changes in habitat management on the reserve), there has been a spectacular increase in numbers: Lapwing (up to 8000) Golden Plover (up to 5000), Black-tailed Godwit (up to 1000 of the Icelandic subspecies), and up to 50 Ruff.
- 5.504. It is not clear where the Lapwing and Golden Plover have come from. The Lapwings may have been attracted from the Severn Vales, but there is no evidence of this; they may have come from other sectors of the SPA. It seems likely that the Golden Plovers move down to the estuary from feeding areas on the top of the Cotswolds, but there is little solid evidence of this.
- 5.505. There has also been a decrease in numbers of waders wintering inland in the Severn and Avon Vales. Flocks of hundreds (even thousands) of Lapwings and Golden Plovers that occurred round Upham Meadow until the 1980s are no longer found there. Nor are the flocks of Dunlin (several hundred in number) found there or around winter floods any longer.
- 5.506. Ringing data unfortunately provide few insights into these changes in numbers or the reasons for them. Most wader ringing in the areas was done between the 1960s and 1980s, using mist nets to mark birds with metal rings at wetland sites in Worcestershire or on the estuary in Gloucestershire. Since the late 1980s almost no waders (other than Curlews) have been ringed in the area, and no colour-rings or GPS tags have been used. Rather surprisingly, almost no wader chicks of Lapwing, Snipe or Redshank have been ringed in the area in the last century.
- 5.507. Severn upstream of the SPA to Gloucester: the clearest signs of wintering waders moving away from the SPA occurs in sites near the estuary like Rodley, Wilmore, Minsterworth Ham and especially Walmore Common. Here there are clear signs of movement in winter by Black-tailed Godwits, Ruff and perhaps Lapwings and other waders, from the SPA to feed on damp fields near the river.
- 5.508. Floodplains sites upstream of Gloucester: Signs of movement between the SPA and the Ashleworth / Coombe Hill / Chelt Meadows / Longdon complex are hard to find. There is a wintering Lapwing flock which appears to remain within the area, moving around as flood levels change. Tiny numbers of Black-tailed Godwit, Dunlin and Ruff appear and must have come from the SPA, but they are very limited in numbers.
- 5.509. At deeper artificial sites (gravel pits and water impoundments) along the Severn there is no sign of any winter exchanges with the SPA.
- 5.510. Along the Avon there were wintering waders in some numbers thirty or more years ago, but they no longer seem to occur nowadays.
- 5.511. Lapwings winter in large numbers in the SPA and continue to winter in the Vales, with flocks of up

to 2000 found in most winters in the Coombe Hill / Ashleworth / Longdon area. At time of heavy flood in 2019/20 these Lapwings appeared to move to shallower flooding at Longdon Marsh (just as Wigeon and Pintail do). There is no evidence of any exchanges between the SPA and the Severn and Avon Vales. Lapwing numbers begin to build up very early after the breeding season (from June onwards, though numbers are lower than in the 1980s); birds coming from breeding areas further afield in central/northern Europe (Finland, Poland, Germany, Netherlands, Hungary) arrive later, departing in late February and early March. It seems probable that, again as for Wigeon, these birds arrive from their breeding areas and, once arrived in the Severn Vales, do not move very far; they do not necessarily return to the same wintering area in the Vales in following seasons, since some birds ringed in Worcestershire or the SPA in winter have been recovered elsewhere in following years, at locations in France, Spain or Portugal.

- 5.512. Golden Plover have occurred in increasing numbers in recent years on the SPA, probably birds which feed on the Cotswolds and move down to the SPA to rest by day. They appear only in very small numbers (single figures) in the Gloucestershire sector of the Vales but continue to occur in good numbers (up to 1000) in south Worcestershire, particularly at Longdon Marsh; these birds may come from areas of arable land in the vicinity, perhaps from the Lower Moor area along the Avon, where good numbers are also recorded. Most Golden Plover wintering in the Vales depart, like Lapwing, in mid-February; small flocks of obvious migrants (coming into summer plumage, and giving breeding calls) often pass through in mid-March.
- 5.513. Snipe, because of its secretive habits, is an enigma. It occurs both on the SPA and in the Vales, with rare maxima of up to 150 birds, whereas such concentrations used to be more frequent. There is no evidence, either for or against, of exchanges between the SPA and the Vales.
- 5.514. Black-tailed Godwits of the Icelandic subspecies are occurring in ever increasing numbers on the SPA, especially at Slimbridge. A tiny number (generally in single figures) of these godwits have always occurred in the Vales between November and February, usually of birds in winter plumage, which must have come from the estuary to feed on floodwater; such records continue but they are few in number. Larger numbers of Black-tailed Godwits, generally coming into summer plumage, appear from late February or March in the Vales; these birds, as noted under the account in the present report of Migratory Waders, are clearly birds from Slimbridge putting on weight before departing on migration to their Icelandic breeding places.
- 5.515. Dunlin occur in decreasing but still appreciable numbers on the SPA, but numbers in the Vales have decreased dramatically since the 1980s and records round the edge of floodwater nowadays rarely feature more than two or three birds. These birds presumably come from the SPA but their numbers are negligible.
- 5.516. Ruff (once only a very rare vagrant in winter, with its main wintering area in Africa) is increasing in number as a wintering species at Slimbridge (with flocks of up to 30 birds quite regular nowadays, perhaps another case of the influence of climate change). Like Black-tailed Godwits, they have in the past occasionally appeared in single figures round floodwater in the Vales, and they continue to do so, the birds involved almost certainly coming up from the SPA. The Ruff records in the Vales in late February or March in recent years no doubt arise from early northbound departures of birds that have wintered on the estuary.
- 5.517. Jack Snipe is even more of an enigma than its cousin the Common Snipe. It is even more secretive

and solitary and difficult to observe. It winters on saltmarsh foreshore in the SPA and in nearby fields just behind the seawall, where numbers rarely reach 15 birds. It is also found inland in the Vales, with numbers altogether larger in Worcestershire than in Gloucestershire, sometimes up to 35 birds.

- 5.518. Known and implied movements of Lapwing are illustrated on Map 17, those of Black-tailed Godwit on Maps 21-22 and those of Redshank on Map 23, in Appendix 1.

### Conclusions

- 5.519. Numbers of some wintering waders on the SPA, notably Lapwing, Golden Plover, Black-tailed Godwit and Ruff have increased considerably in the last twenty years, largely because of changes in management practices at WWT, or a genuine increase in population numbers in the case of the godwit.
- 5.520. Numbers of wintering waders at inland sites in the Severn and Avon Vales have decreased considerably in the last thirty years. Whether this decrease is caused by the birds being attracted to Slimbridge, by changes in habitat or greater disturbance of site, or by a decrease in overall numbers, is not at all clear.
- 5.521. There is very little evidence of any major movements of wintering waders between the SPA and the Severn Vales. Indeed, in the case of Lapwing it is suggested that such movements do not exist, and that the two groups remain separate, one on the estuary, one in the Ashleworth/ Longdon complex.
- 5.522. Practically no small wader ringing has been carried out either on the SPA or inland since the 1990s. Ringing and in particular use of colour rings (or even better, GPS tags) would give better information on these questions.

### ***Migratory Waders***

#### General ecology, phenology and movements of the species

- 5.523. As noted in the previous section, waders are in general birds of coasts and shorelines, particularly in their winter quarters. A few species found wintering or on passage in the SPA are also found breeding within its bounds and in areas around, including the Vales.
- 5.524. The UK acts as a wintering area for some waders which do not move too far to the south. For others it is a stopover on the long route from the Arctic to African winter quarters. The present section deals as a group with a number of migratory wader species which occur on the SPA and in the Severn Vales, often at the same time of year and under similar circumstances.
- 5.525. Among these are four waders listed as SPA qualifying species (Ringed Plover, Dunlin and Spotted Redshank) two other waders which contribute to the SPA assemblage (Grey Plover and Whimbrel) and another two waders listed under the SSSI notification (Turnstone and Knot), as well as other non-listed waders (Black-tailed Godwit and Ruff) plus a series of waders that might have been listed and which occur on migration both on the SPA and in the Severn and Avon Vales (Bar-tailed Godwit, Little Stint, Temminck's Stint, Sanderling, Greenshank, Green and Wood Sandpipers). Curlew and Redshank are not covered here as Curlew is the subject of a full species account, while Redshank is covered, with Lapwing and Snipe and relatively recent arrivals like Oystercatcher (*Haematopus*

*ostralegus*), Avocet and Little Ringed Plover (*Charadrius dubius*), under the group of breeding waders; Lapwing, Golden Plover Jack Snipe and Snipe, which are nowadays principally winter visitors to the SPA and Severn Vales, are covered above in a separate composite account on wintering waders.

- 5.526. It should be noted that, as explained in the Introduction, no detailed reference is made in this report to the importance of the Thames valley as a migration route for migratory waders. Whilst the importance of sites such as the Cotswold Water Park is highlighted in a later section, this is a subject deserving attention in its own right.

#### Overview of status in the UK as a whole

- 5.527. The brief summaries of the status of each wader species given below are taken from the BirdFacts<sup>33</sup> section of the BTO website. The figures given for the population size of each species refer to numbers in the UK, unless otherwise specified; figures for numbers on passage are not available for all species; where species are marked as “scarce breeder”, this normally means that a tiny number of pairs nest in the Scottish highlands, the nearest UK equivalent to their preferred tundra nesting sites. The Red, Amber or Green status<sup>34</sup> is generally for the UK (for some rare species a UK status is not given, so the European status is noted instead); it is notable how many of these species have a Red or Amber status.

#### Overview of status on the Severn Estuary SPA

- 5.528. Some of these migratory waders winter in the SPA, others winter far to the south and only occur in the SPA on northward passage in spring, then again on southward passage in autumn. For each species a brief note is given on the status of the species in the SPA (winter visitor or passage migrant; some species occur only in small numbers in the northern, Gloucestershire sector of the SPA, but are more numerous further south in sectors of the SPA like Bridgewater Bay or Newport Wetlands); the figures given are for the whole of the SPA: the 1% threshold for international importance, the 1% threshold for national importance in GB; the figure representing 1% of the Severn Estuary SPA population (both from Frost et al. 2020) ; and the highest monthly count of the species in the whole of the SPA between winter 2013/14 and winter 2018/19 (from BTO website). All figures are for numbers of individual birds, not pairs.

#### Overview of status on inland wetlands in Severn and Avon Vales

- 5.529. Very small numbers of the listed waders under consideration here may occur in winter in the Severn Vales, probably moving up from the estuary to take advantage of favourable feeding conditions around the edges of winter floodwater. Dunlin is the most frequent (nowadays rarely more than ten); other species which have occurred occasionally (usually one or two individuals) include Black-tailed Godwit, Ruff and even (rarely) Little Stint. The only species that winters regularly in ones and twos throughout the Vales is Green Sandpiper, whose habitat requirements are somewhat different from more estuarine waders: it prefers marshy sites, often with running streams and is regularly seen at Minsterworth Ham, along the Chelt in Leigh Meadows, and at Worcestershire gravel pits including Bow Farm (Ripple Lakes) and Clifton; rather larger numbers of Green Sandpipers occur as autumn migrants, from mid-June onwards.

<sup>33</sup> <https://www.bto.org/understanding-birds/birdfacts>

<sup>34</sup> [https://www.bto.org/sites/default/files/shared\\_documents/publications/birds-conservation-concern/birds-of-conservation-concern-4-leaflet.pdf](https://www.bto.org/sites/default/files/shared_documents/publications/birds-conservation-concern/birds-of-conservation-concern-4-leaflet.pdf)

- 5.530. The main importance of the Severn and Avon Vales for these species is, however, to provide stopover sites on spring and autumn passage. There are clear indications that, on spring migration (essentially early April to the first few days of June) when the birds are moving northwards, there is a small but steady movement of migratory waders from the SPA through the Severn and Avon Vales and across central England by the inland Severn-Trent-Humber or Severn-Wash routes. The same process is repeated in reverse in autumn (from late June until early September) when birds are returning southwards. At times the birds pass straight over the Severn and Avon Vales unobserved, at some height without stopping. In some conditions (adverse weather, favourable feeding or resting opportunities) however the migrant waders drop into the Severn and Avon wetlands, often only for a short stay. If there is a light spring flood in April or May, overflying waders may be attracted down for a refuelling stop. Equally, a short, sharp spring rain shower may force waders flying past at altitude down to rest until the bad weather passes. This occurs most often in spring, because water levels are higher in the Vales at this time; in autumn many of the shallow floodplain wetlands have dried out and offer little attraction to waterbirds; on the other hand the Worcestershire gravel pits still hold water in autumn and as a result attract more autumn migrants.
- 5.531. Observations of Arctic waders are often of birds in full breeding plumage late in spring (second half of May, first few days of June), presumably timing their migration to coincide with the melting of snow on the high tundra. Early returning birds in July are generally adults still in breeding plumage, now somewhat worn and ready to be moulted; breeding waders generally leave the breeding grounds ahead of their young, so the juveniles follow later in the season in altogether more dowdy plumage.
- 5.532. It should be added that the above remarks on migratory waders also apply to migratory terns, some of which also use this inland route: Arctic Terns regularly pass through in early May - at great speed often flying over, calling, but not stopping - and again on the way back in August or September. Small numbers of Black Terns pass through, pausing more often than the Arctic to feed on spring floodwater. Very rarely Sandwich and Little Terns have been observed: on 28 March 2016 there was a Sandwich Tern at Grimley, with several more at inland sites in central England on a south-easterly wind on 2 April 2016; on 9 April 2017 another Sandwich Tern was seen at Pershore and Lower Moor before it flew off high to the northeast; on 1 May 2017 a Little Tern was seen at Bow Farm (Ripple Lakes). The Common Tern on the other hand is a breeding visitor and has nested at Frampton Pools (tern rafts are provided in a corner of the sailing lake), Coombe Hill, Bredon's Hardwick and Kemerton Lake (KCT). In addition to these terns, Little Gull, a rare species in western England, is regularly noted on passage.
- 5.533. In the notes on individual species below, examples are given to illustrate these migratory movements. Weather conditions of course influence the occurrence of these birds at inland sites; in fine windless conditions, the migrants probably fly straight over without alighting; wind or rain showers may cause them to make a short stopover. Thus, in 2016 south-easterly winds on 10 May produced a variety of generally littoral waders, plus Black and Arctic Terns and heavy hirundine (swallows and martins) passage, but most had moved on by the next day. In 2018 wader passage was not very striking until the third week of May, probably because the fine weather allowed many migrants to pass straight over without stopping, though a record of three Wood Sandpipers in early May represented an unusually high number for Coombe Hill; then, after warm weather in the middle of the month, two days of drizzle and easterly winds on 24 and 25 May produced a short flush of waders, birds being brought down by the change in weather conditions; notable species including

Sanderling, Little Stint and Turnstone, but the weather conditions, and hence the occurrence of the birds, lasted only a couple of days.

#### Grey Plover

##### 5.534. UK status:

- Breeding: tundra, not UK. Passage migrant: 70000 individuals. winter: 34000 individuals. Conservation status: Amber.

##### 5.535. SPA status:

- One of the four species of wader named in the SPA Assemblage under the 2001 SPA Review.
- Mainly winter visitor, some passage migrants, more numerous in south of SPA.
- 1% international threshold: 2,000. 1% national GB threshold: 330 individuals. 1% of SPA: 3.
- Maximum monthly count in the Severn SPA since 2013/14: 604 in October 2016.

##### 5.536. Severn and Avon Vales:

- Essentially a littoral species, rarely seen far from the coast, yet it occurs regularly in very small numbers in the Vales (never more than two individuals), mainly in spring, often in full breeding plumage, clearly en route to the tundra, though there are occasional winter records, difficult to interpret, (singles at Grimley in January 2013 and November 2018, and at Lower Moor January 2013).
- spring: Recorded every year (though not at all sites in the same year), sometimes in late March, more often in May, at Coombe Hill, Bow Farm (Ripple Lakes), Clifton, Grimley and Upton Warren; one still in winter plumage was seen at Coombe Hill on 18 April 2008, probably the same bird at Bredon's Hardwick the next day.
- autumn: very few records: singles at Upton Warren on 13 October 2013, Clifton on 20 September 2014, and Coombe Hill on 4 October 2008.

#### Ringed Plover

##### 5.537. UK status:

- Three subspecies occur in UK: *Ch. h. hiaticula* is a resident breeder and winters. The two others are *Ch. h. tundrae* (winters) and *Ch. h. psammodymeus* (passage migrant).
- Breeding: 5500 pairs (European population 110000 -180000 pairs).
- Passage migrant. winter: 43000 individuals.
- Conservation status: Now RED (previously Amber).

##### 5.538. SPA status:

- One of the four SPA "Qualifying" wader species.
- Mainly passage migrant, only small numbers winter.

- 1% international threshold: 540. 1% national GB threshold: 420. 1% of SPA: 10.
- Maximum monthly count in the whole of the Severn SPA since 2013/14: 1,737 in August 2016.

5.539. Severn and Avon Vales:

5.540. With Dunlin, one of the more numerous of the smaller waders, often occurring in small flocks in May, probably birds of the two subspecies that do not breed in UK, on their way to breed in the high Arctic. Much less frequent on return autumn passage. Rarely more than ten birds together: maxima 23 at Upton Warren on 23 May 2017; 19 at Coombe Hill on 25 May 2018 and 17 on 15 May 2013; 14 at Clifton on 6 May 2014; 12 at Grimley on 18 April 2013 and 28 August 2015.

5.541. spring: Recorded from late March to the first few days of June at Walmore (where it is infrequent), Coombe Hill, Bow Farm (Ripple Lakes), Clifton, Grimley, Upton Warren, with little groups generally staying only a short time.

5.542. autumn: Occurs in smaller numbers from very late July, with most records in August and September, and one or two records into early October, more frequently at Worcestershire sites which hold water in autumn like Upton Warren, Grimley (twelve on 28 August 2015), Clifton (eight on 18 August 2014), Bow Farm (Ripple Lakes) (six on 10 August 2014). Most Gloucestershire sites are dry at this season though in wet autumns like 2007 and 2008 Ringed Plover occurred at Coombe Hill (ten on 22 September 2008).

5.543. Rob Prudden, who has been observing waders along the Avon for more than 30 years, confirms that Ringed Plover passes regularly along the Avon in spring and summer, but in small numbers (normally 10 or fewer), decreasing in recent years. Maximum counts are: Kemerton Lake (KCT) ten; Gwen Finch six on 15 September 1999; John Bennett never more than two or three; Lower Moor eight on 27 August 2000 and 14 May 2001, 11 on 2 May 2004; Throckmorton Lagoon seven in flight without stopping on 21 May 2010.

5.544. Of the non-SPA sites within the area and time period for which desk study and field data were obtained, a number of sites were host to numbers of this species meeting or exceeding the 1% SPA population threshold of 10 birds, including Coombe Hill on four dates between 2013 and 2017, all of them in the month of May, plus other records such as: Clifton Pits: 10 on 15 May 2013, 14 on 6 May 2014, 10 on 12 May 2014; at Upton Warren Flashes 23 on 23 May 2017, 13 on 13 May 2014; at Grimley 10-12 on 18-26 April 2013, 11 at Ripple on 26 April 2013. There are also two autumn records: Coombe Hill ten in Sep 2008, Grimley 12 on 28.08.15.

### Whimbrel

5.545. UK status:

- Breeding: 310 pairs (European population 154000-330000 pairs).
- Passage migrant. winter: 41 individuals.
- Conservation status: RED since 2009 (previously Amber).

5.546. SPA status:

- One of the four species of wader named in the SPA Assemblage under the 2001 SPA Review.

- Exclusively passage migrant, much more numerous in spring than autumn.
- 1% international threshold: 6,700. 1% national GB threshold: 221. 1% of SPA: 2.
- Maximum monthly count in the Severn SPA since 2013/14: 563 in May 2016.

#### 5.547. Severn and Avon Vales:

- Regular in flocks of up to ten or twenty in late April or early May, considered to be birds on their way to Iceland, feeding up as they go (and often chased away by local breeding Curlews). Much less numerous in autumn, when they return from Iceland directly down the Atlantic to African wintering grounds (Carneiro *et. al.* 2020).
- spring: Largest numbers at Walmore, close to the estuary, so flocks there had probably only just departed from the SPA – maximum 62 on 5 May 2013, many other records of 15 or more there. Only other site with numbers exceeding 15 is Coombe Hill with 23 on 4 May 2016. Extreme dates 10 April and 8 June, vast majority of records between 16 April and 15 May at Walmore, Ashleworth, Coombe Hill, Bow Farm (Ripple Lakes), Clifton, Grimley and Upton Warren, often stopping to roost at night.
- autumn: Numbers altogether lower in autumn (though at Clifton a remarkable record of 56 flying south on 28 July 2016, contradicting the normal autumn pattern). Sometimes seen and heard flying southwards over Severn Vale wetlands. Recorded (maximum six birds) between 7 July to 13 September at Upton Warren, Clifton, Bow Farm (Ripple Lakes) and Coombe Hill.

#### Black-tailed Godwit

5.548. UK and SPA status: covered under Wintering Waders section above.

5.549. Severn and Avon Vales: This species uses wetlands in the Vales rather differently from other waders. It does not simply make short stopovers while passing through. Instead, over a period of three to four weeks in March/April, Black-tailed-Godwits spread out from WWT Slimbridge to satellite sites in the Vales to take advantage of favourable feeding conditions and hence to build up weight before their long flight over the north Atlantic to Iceland, as detailed below. This is one of the best examples of birds using Functionally-Linked Land identified by the present study.

5.550. In line with the sharply increasing wintering numbers of the Icelandic subspecies at WWT Slimbridge, flocks of up to 150 birds in full summer plumage have regularly occurred in March and April in the last five years in the Severn Vales, notably at Coombe Hill (e.g. 100 on 27 March 2019) and Ashleworth, with a flock numbering over 200 in heavy flooding at Maisemore Ham in March 2020. Some of these birds had been colour-ringed on the Axe estuary in Devon or in Brittany, and the same colour-ringed birds had been observed both at Slimbridge and at Coombe Hill, Ashleworth or Bow Farm (Ripple Lakes). Black-tailed Godwits of the nominate subspecies are known from other sites (The Wash to Ouse Washes; Orwell / Stour / Blackwater complex; Morecambe Bay/ Ribble/ Mersey / Dee complex) to move around rapidly in search of optimal feeding conditions (Graham Appleton<sup>35</sup>, Richard Smith<sup>36</sup> pers. com.). The Severn Vale Icelandic godwits seem to be doing the same thing before their flight to Iceland where 'decent numbers only start building up from mid-April onwards' (Tómas Grétar Gunnarsson<sup>37</sup> pers. comm.). Godwits arrive at Severn Vale wetlands from

<sup>35</sup> Author of <https://wadertales.wordpress.com/>

<sup>36</sup> Author of <http://www.deeestuary.co.uk/index.html>

<sup>37</sup> Director - South Iceland Research Centre, University of Iceland

mid-March until mid-April early in the morning, and feed very vigorously from the moment of their arrival. In March 2020, godwits were observed leaving WWT Slimbridge early in the morning, and returning in the evening; the observers who noted this are convinced that the large flock at Maisemore were birds from Slimbridge, commuting upriver to take advantage of unusual flood conditions (M. McGill, A. Jayne, pers. com.). It seems clear that birds in March and April at Coombe Hill, Ashleworth and Bow Farm (Ripple Lakes) act in the same way, putting on weight over a period of several weeks (as waders normally do) before their departure for Iceland; this would also explain why godwits are observed over a period of several weeks in March and April in the Vales, rather than for a few hours like some other passing waders. Several observations of colour-ringed birds confirm this scenario:

- One bird (EX 68014) originally colour-ringed on the Axe estuary in March 2011, and re-sighted there several times in subsequent winters was observed at Slimbridge from 9 to 14 April 2018, then at Coombe Hill on 23 and 24 April, then at Bow Farm (Ripple Lakes) on 26 April 2018.
- A second bird (EX 68052) gives even stronger confirmation: originally colour-ringed on the Axe in November 2013, it has been recorded in later winters on the Axe and (in two different winters) in Brittany; this bird was noted at Ashleworth twice in late March 2017, then twice back at Slimbridge until 25 April 2017; and in a later year at Slimbridge on 6 March 2019 and at Ashleworth on 8 March 2019.

5.551. Spring: Apart from the extraordinary observations of up to 600 (probably the whole Slimbridge flock) at Walmore in October 2012, (see above), the maximum observed in the Vales in spring is 215 at Maisemore in April 2020, followed by an observation of 110 at Coombe Hill in April 2013; there has been a distinct increase in numbers in the Vales in the last ten years. The larger flocks occur mainly from mid-March to mid-April and are made up of birds in bright summer plumage; smaller numbers (perhaps non-breeders?) linger until the first few days of June. Numbers are generally larger at Ashleworth, Coombe Hill and Bow Farm (Ripple Lakes), smaller further north at Clifton, Grimley (but 49 on 20 April 2017) and Upton Warren (24 on 21 May 2017); godwits also occur along the Avon at Bredon's Hardwick and Lower Moor, and at Minsterworth Ham. Deep spring flooding (like that of March 2019 or 2020) may reduce the number of records, since they cannot feed in deep floodwater.

5.552. autumn: numbers are altogether lower than in spring, with counts barely reaching double figures in most cases. The first returning birds may occur as early as late June, sometimes still in nuptial plumage, undoubtedly breeding birds just returned from Iceland; birds in obvious juvenile plumage occur later, in August. As with other waders, numbers are greater in autumn in Worcestershire sites, since the Gloucestershire meadowland sites are often dry at this time of year. Recorded at Upton Warren (maximum of 19 on 12 July 2017), Grimley (maximum of ten on 29 July 2016), Clifton (20 on 8 September 2017), Bow Farm (Ripple Lakes), (three on 9 August 2019), only occasional records at this period at Coombe Hill; and along the Avon at Lower Moor (19 on 5 July 2014), John Bennett and Bredon's Hardwick.

#### Bar-tailed Godwit

5.553. UK status: Breeding: tundra, not UK; European population 1100-4000 pairs. Passage migrant. winter: 54000 individuals. Conservation Status: Amber since 1996.SPA status:

5.554. SPA status

- Not one of the species included in the SPA or SSSI assemblage but noted here as a typical migrant wader moving through the Vales.
- Mainly passage migrant, only small numbers in winter.
- 1% international threshold: 1500. 1% national GB threshold: 500. 1% of SPA: N/A.
- Maximum monthly count for the species in the Severn SPA since 2013/14: 169 in September 2016.

5.555. Severn and Avon Vales:

- A mainly coastal species, unfamiliar inland, but occurs most years in small numbers (generally singles, maximum in last ten years four) on passage through the Vales, much more frequently in spring than in autumn.
- spring. Most records are in late April or May (extreme dates 11 April and 10 June). Recorded from Walmore, Coombe Hill, Bow Farm (Ripple Lakes), Ryall Pits, Clifton, Grimley, Upton Warren
- autumn: Not by any means recorded every autumn. With two July records from Coombe Hill.

Turnstone

5.556. UK status:

- Breeding: scarce breeder in UK; European population 31000-64000 pairs.
- Passage migrant. winter: 43000 individuals. Status: Amber since 1996.

5.557. SPA status:

- One of the waders which makes up the SSSI assemblage.
- Mainly winter visitor in south of SPA, some passage birds.
- 1% international threshold: 1400. 1% national GB threshold: 400. 1% of SPA: 5.
- Maximum monthly count for the species in the Severn SPA since 2013/14: 659 in October 2015.

5.558. Severn and Avon Vales:

- Another mainly littoral species, unusual inland and not recorded every year, which occurs in small numbers (maximum count in last ten years four), usually in the second half of May, in the Vales.
- spring. Recorded at Coombe Hill, Bow Farm (Ripple Lakes), Clifton, Grimley, Upton Warren Extreme dates 3 May and 3 June.
- autumn: Less frequent on return passage: recorded at Upton Warren (four on 25 August 2013, one – most unusually – on 9 November 2013) and Bow Farm (Ripple Lakes) (two in September 2016).

### Knot

#### 5.559. UK status:

- Breeding: tundra, not UK; European population 15000-30000 pairs.
- Passage migrant. winter: 265000 individuals.
- Conservation status: Amber since 1996.

#### 5.560. SPA status:

- One of the waders which makes up the SSSI assemblage.
- Mainly a winter visitor to the south of the SPA, few passage migrants.
- 1% international threshold: 5300. 1% national GB threshold: 2600. 1% of SPA: 19.
- Maximum monthly count in the Severn SPA since 2013/14: 2649 in November 2016.

#### 5.561. Severn and Avon Vales:

- Another mainly littoral species, barely recorded on passage in recent years in the Vales, but there are some older winter records: one with a Dunlin flock at Ashleworth on 10 January 2001, one at Bredon's Hardwick on 5 October 2006, another on 19 November 2007. More recent winter observations: two at Coombe Hill on 16 February 2010; one at Walmore on 3 October 2012 was the first record there since 1969; one at Bow Farm (Ripple Lakes) from 22 to 26 January 2013.
- Passage birds: no recent spring records. Only recent autumn records are of a lame juvenile at Coombe Hill from 22 to 29 September 2008, and a juvenile at Upton Warren on 31 August 2012.

### Ruff

#### 5.562. UK status:

- Breeding: Scarce breeder; European population 60,000-90,000 pairs.
- Passage migrant. winter: 920 individuals.
- Conservation status: Now RED (Amber since 1996).

#### 5.563. SPA status:

- Not in the SPA or SSSI assemblages, but added to the list of qualifying species for the purposes of the present project, in view of its increasing presence on the SPA in winter and on passage through the Vales.
- Formerly mainly a passage migrant in small numbers, but winter numbers growing (see section on Wintering Waders).
- 1% international threshold: 20000. 1% national GB threshold: 9. 1% of SPA: 1.
- Maximum monthly count in the Severn SPA since 2013/14: 35 in September 2015.

## 5.564. Severn and Avon Vales:

- Is increasing in winter in Slimbridge; occasionally appears in Vale flooding in the winter (see section on Wintering Waders); regular in small numbers on spring passage, which now seems to occur in two waves, the first in February and March, which would appear to involve birds moving away from more northerly wintering grounds (on the SPA and elsewhere in southwest England or the near Continent), and the second much later in April and May, involving birds from traditional wintering grounds in southern Europe and Africa
- spring passage, first wave: At Wilmore five in February 2018. At Walmore 15 on 6 February 2018 the largest recent flock was of 21 in February 2018. At Minsterworth five in February 2016, two in March 2016. At Ashleworth: flocks of 18 in February 2017, 12 in February 2016, smaller groups in February 2015 and in 2019. At Coombe Hill in February and March, records in recent years have become much more numerous and quantities larger: 16 on 28 February 2015, 11 on 20 March 2016, 10 on 26 March 2017, 28 on 10 March 2018, seven on 18 February 2019. At Bredon's Hardwick two in March 2017. At Longdon Marsh two from 19 to 22 March 2016. At Bow Farm (Ripple Lakes) four in March 2017. Very few records further north in February and March: at Grimley one on 13 & 14 February 2012.
- spring passage second wave, mainly April and May with the odd record in early June (at Coombe Hill adult males in full breeding plumage on 9 June 2004 and 4 June 2016; latest date 11 June): Recorded at Coombe Hill, Bow Farm (Ripple Lakes) Clifton, Grimley, Upton Warren, and along the Avon at Lower Moor; often in quite small numbers, maximum no more than five. At Westwood Pool Ruff is a very rare passage migrant with only five records between 1966 and 2017, all in spring or autumn.
- autumn passage may begin in late June: at Coombe Hill, a white ruffed male on 18 & 20 June 2015, one on 23 June 2007, a male in full breeding plumage on 30 June 2018, a male in moult on 16 July 2011, then up to four until October or early November. At Longdon Marsh, single individuals in August 2012 and September 2014. At former gravel pit sites in Worcestershire, such as Grimley, Clifton, and Bow Farm (Ripple Lakes), Ruff is much more frequently recorded on return autumn passage than in spring, from July well into October with the odd straggler into November, but with numbers only in single figures. At Upton Warren there are many autumn records (never with more than single figure totals); the records continue from 1 July into October (six in 2013, two in 2014 and 2017), then die out, with no records at all from November to March. Along the Avon: at Bredon's Hardwick one in October 2012; at John Bennett one in July and September 2014, two in August 2015, one in October 2017 and July 2018; at Kemerton (KCT) one in August 2015: at Lower Moor one in 2016, three males in breeding plumage on 13 July 2017, up to five from 11 September to 29 October 2017).

Dunlin

5.565. UK status: covered under Wintering Waders section.

5.566. SPA status:

- One of the four SPA "Qualifying" wader species.
- *C. a. alpina* subspecies winter October to February/March, largest numbers in south of SPA. Other two subspecies occur on spring and autumn passage.
- 1% international threshold: 13300. 1% national GB threshold: 3400. 1% of SPA: 302.
- Maximum monthly count in the Severn SPA since 2013/14: 36.131 in January 2017.

## 5.567. Severn and Avon Vales:

- The most numerous migrant wader. Wintering Dunlin (generally the *C. a. alpina* subspecies) depart early from the SPA (most have left by March, some probably passing through the Vales). Records of Dunlin in the Severn and Avon Vales, often in fresh summer plumage in April, and even more so in May, are likely to be of the two migrant subspecies *C. a. schinzii* or *C. a. arctica*.
- spring: at Coombe Hill occurs in mid-March, often still in winter plumage (probably departing *alpina*) – maxima of 31 on 20 March 2016, seven on 8 March 2018; then a gap until mid-April when birds observed (many small groups in single figures) are probably from the other two subspecies: 10 on 27 April 2012, 13 on 22 April 2013, 12 on 10 May 2016, 12 on 12 May 2017; 12 in summer plumage on 8 May 2019. Dunlin is recorded at Worcestershire sites into early June: Longdon Marsh (three on 27 April 2012); Bow Farm (Ripple Lakes) (frequent records: ten on 20 March 2013, 12 on 27 March 2013, then, after the gap, maxima of 34 on 25 April 2013, 15 on 12 May 2013, 20 on 7 May 2014, three on 6 June 2012); Clifton (frequent records in small numbers, maxima of seven on 15 May 2013, 16 on 7 May 2014; 17 on 26 April 2015, 11 on 12 May 2017); Grimley (frequent records, maximum 11 on 16 May 2013), Upton Warren (frequent records, maxima eight on 15 May 2012, 22 on 15 May 2013, 18 on 11 May 2014; latest date four on 8 June). Along the Avon: at Lower Moor (maximum 15 on 19 May 2012), John Bennett; Kemerton Lake (KCT); Bredon's Hardwick.
- autumn: occurs in smaller numbers (rarely in double figures on return passage from July (when adults are often still in summer plumage) to September, with stragglers into October and even November. As with other wader species, there are more records in autumn from Worcestershire deep water sites than from Gloucestershire floodplain meadows, except in years of late summer or early autumn flooding. Some examples: At Upton Warren numerous records with 11 on 29 July 2013, six on 3 August 2016; at Grimley five on 21 July 2015, one on 22 July 2012, three on 29 July 2012, five on 2 September 2013; at Clifton two on 23 August 2013, eleven on 23 August 2015; at Bow Farm (Ripple Lakes) four on 29 July 2015, single on 29 September 2012; at Coombe Hill, rather few records: two on 30 June 2012, one on 10 July 2019, an adult on 13 July 2017, three on 26 July 2015, an immature on 20 August 2019, two on 28 August 2014, one on 27 September 2013, five on 25 September 2008, eight on 29 September 2012. Along the Avon at Lower Moor and Bredon's Hardwick.

Little Stint

## 5.568. UK status:

- Breeding: tundra, not UK; European population 500-5,000 pairs.
- Passage migrant: 770 individuals. winter: 8. Status: Green.

## 5.569. SPA status:

- Not one of the species included in the SPA or SSSI assemblage, but noted here as a typical migrant wader moving through the Vales.
- Occurs in very small numbers on passage, even smaller in winter. Kirk and Phillips (2013) suggest that “*total annual number passing through Gloucestershire in spring (April to June) have rarely been greater than five birds, with a notable maximum of ten birds in 2006*” and that autumn passage in September normally peaks at between five and twenty birds.
- 1% international threshold: 3000. 1% national GB threshold: not specified, very small. 1% of SPA: 1.

- Maximum monthly count in the Severn SPA since 2013/14: 18 in October 2017.

5.570. Severn and Avon Vales:

- A passage visitor to the Vales in very small numbers (maximum of five birds), not recorded every year, on passage both in spring and in autumn, when the number of records is larger; does occasionally occur in winter at edges of floodwater.
- spring. Usually recorded in small numbers in mid-May, birds often in bright summer plumage. At Coombe Hill two on 10 May 2016, singles on 9 May 2011, 12 May 2017, three on 19 May 2009. At Bow Farm (Ripple Lakes) one on 19 May 2017. At Clifton one on 15 May 2017. At Grimley singles on 20 May 2012, 12 May 2017; At Upton Warren one on 18 March 2015 (an early date). Along the Avon: at John Bennett one on 18 May 2017 at Lower Moor one on 26 May 2012.
- autumn. Many records in September and October, often of birds in juvenile plumage. At Upton Warren earliest date one on 31 August 2015, several September and early October records (maximum three). At Grimley singletons in September and up to 20 October. At Coombe Hill up to three from 5 September to late October, with a few November and December records (maximum of five on 17 November 2005). Along the Avon; singles at Lower Moor, mainly in September, earliest autumn record on 20 August 2016.

Temminck's Stint:

5.571. UK status:

- Breeding: scarce breeder; European population 10000-20000 pairs.
- Passage migrant; 104 individuals. winter: None.
- Conservation status: Not assessed, very rare in UK.

5.572. SPA status:

- Not one of the species included in the SPA or SSSI assemblage but noted here as a migrant wader moving through the Vales.
- Even rarer than Little Stint. Extremely scarce passage migrant. Kirk and Phillips (2013) do not mention any records for the Gloucestershire section of the Vales.
- 1% international threshold: Not specified. 1% national GB threshold: Not specified. 1% of SPA: N/A.
- Maximum monthly count in the Severn SPA since 2013/14: 3 in May 2017.

5.573. Severn and Avon Vales:

- A very rare species, not recorded every year by any means, but has occurred in passage in the Vales, generally in late May or early June.
- spring: At Coombe Hill one on 3 June 2012 (a very wet summer), two in summer plumage on 24 May 2015, three present on 25 May, just one on 26 May. At Grimley one on 6 and 25 May 2013.

- autumn: at Clifton a juvenile from 5 to 10 September 2014, then at Upton Warren a juvenile (same bird??) from 15 to 21 September when it was taken by a Sparrowhawk.

### Sanderling

#### 5.574. UK Status:

- Breeding: tundra, not UK; European population 25,000-50,000 pairs.
- Passage migrant: 40,000 individuals. winter: 21,000 individuals.
- Conservation status: Green.

#### 5.575. SPA status:

- Not one of the species included in the SPA or SSSI assemblage, but noted here as a typical migrant wader moving through the Vales. Rather surprisingly, Kirk and Phillips (2013) quote only a single Sanderling record from the Gloucestershire Vales, one at Tirley Knowle near Hasfield on 14 August 2010.
- winter visitor, especially to sandy shores in south of SPA; largely a passage migrant in north.
- 1% international threshold: 2,000. 1% national GB threshold: 200. 1% of SPA: N/A.
- Maximum monthly count in the Severn SPA since 2013/14: extraordinary figure of 2512 in November 2017, when maxima for other years do not reach one thousand.

#### 5.576. Severn and Avon Vales:

- Another essentially littoral species, recorded every year in small numbers (up to five) most years, which moves through the Vales in spring: one of the latest to pass through (generally late in May and often into June), no doubt because it nests in the extreme north. The small numbers recorded together may hide the fact that birds stay only briefly; records of only one or two over a period of several weeks normally refer not to a single bird staying for an extended period but to a constant turnover of individuals. Also recorded much less frequently in autumn; with the occasional winter record which are difficult to interpret: three at Throckmorton in February 2012, one at Camp Lane in January 2013.
- spring: At Coombe Hill: one on 22 April 2011, one in summer plumage on 10 May 2016, three on 25 May 2018. At Bow Farm (Ripple Lakes): four on 19 May and three on 4 June 2012; up to five from 11 to 29 May 2013; up to three from 6 to 23 May 2014; one or two from 7 to 31 May 2015; five on 11 May 2016; two on 16 & 17 May 2017; one on 17 May 2019. At Clifton: up to five from 12 to 18 May 2013, five on 26 May 2014; one or two from 8 to 27 May 2015; two on 11 May 2016; one on 29 May 2017. At Grimley: up to three from 17 to 19 May 2012, up to five from 18 May to 4 June 2014; one on 10 May 2016, two on 27 May 2018. At Upton Warren: one in summer plumage as late as 16 June 2012, two on 18 & 19 May 2016. Along the Avon: one at Bredon's Hardwick on 6 May 2013
- autumn: At Clifton two on 20 August 2016; one on 9 September 2017.

### Spotted Redshank

#### 5.577. UK status:

- Breeding: tundra, not UK; European population 10,000-32,000 pairs).
- Passage migrant; 420 individuals. winter: 68 individuals.
- Conservation status: Amber (Green from 1996-2001).

#### 5.578. SPA status:

- One of the four SPA “Qualifying” wader species.
- Scarce passage migrant, occasional winter record. Kirk and Phillips (2013) comment on Gloucestershire that “*there has been an increase in the number of winter records and a decrease in numbers on passage. There have been sightings very winter since 1995*”.
- 1% international threshold: 1000. 1% national GB threshold: not specified. 1% of SPA: 1.
- Maximum monthly count in the Severn SPA since 2013/14: 14 in October 2013.

#### 5.579. Severn and Avon Vales:

- Fairly unusual, and not recorded every year, but moves through the Vales in small numbers in spring, with rather more records in autumn. The occasional winter record in the Vales too: one at Bow Farm (Ripple Lakes) on 15 February 2013.
- spring: Kirk and Phillips refer to a record of six at Hasfield Ham on 6 May 2000, adding that ‘the total number of birds passing through the county at this time of year probably seldom exceeds ten in any year’. At Coombe Hill one on 15 May 2004, singles (both noted as being in black summer plumage) on 6 April 2005 and 3 May 2011. At Grimley one on 27 April and 3 May 2018.
- autumn: Kirk and Phillips (2013) also suggest that ‘the total number moving through Gloucestershire in an average autumn may be only ten to a dozen’. At Coombe Hill one on 11 August 2007 (a period of very heavy summer flooding), two on 3 September 2008 (also a flood episode). At Bow Farm (Ripple Lakes) one on 3 September 2016. At Grimley one from 17 to 24 August 2014. At Upton Warren one on 11 September 2016. Along the Avon: at John Bennett a juvenile briefly on 12 August 2018.

### Greenshank

#### 5.580. UK status:

- Breeding: 1100 pairs; European population 61000-95000 pairs).
- Passage migrant. winter: 920 individuals.
- Conservation status: Amber (previously Green).

#### 5.581. SPA status:

- Not one of the species included in the SPA or SSSI assemblage but noted here as a typical migrant wader moving through the Vales.

- Passage migrant, mainly in autumn; tiny numbers winter.
- 1% international threshold: 3,300. 1% national GB threshold: 8. 1% of SPA: N/A.
- Maximum monthly count in the Severn SPA since 2013/14: 37 in August 2016.

5.582. Severn and Avon Vales:

- Passes regularly through the Vales, both in spring and autumn.
- spring: Occurs every year at the usual suite of sites, mainly in May, but with some records from late March and April; usually in ones and twos, but with 13 at Upton Warren on 10 May 2016 and seven at Coombe Hill in the rush of Arctic waders on 25 May 2018.
- autumn: Numbers remain fairly low, generally one or two birds but five at Coombe Hill in late August 2009, eight at Grimley on 15 August 2016, eight at Clifton on 1 September 2013.
- Birds in early July are generally post-breeding adults, often still in nuptial plumage; then after a lull records from mid-August probably represent passage of birds of the year, records continue into September, with a few in October and even November.

Green Sandpiper

5.583. UK status:

- Breeding: scarce breeder UK; European population 130,000-200,000 pairs).
- Passage migrant. winter: no figures available.
- Conservation status: Amber (Green from 1996-2001).

5.584. SPA status:

- Not one of the species included in the SPA or SSSI assemblage but noted here as a typical migrant wader moving through the Vales.
- Passage migrant, mainly in autumn, small numbers winter.
- 1% international threshold: 20,000. 1% national GB threshold: 3. 1% of SPA: N/A
- Maximum monthly count in the Severn SPA since 2013/14: 29 in July 2014.

5.585. Severn and Avon Vales:

- Relatively small numbers of this generally solitary wader occur in spring, generally early on in April, perhaps departing winter visitors. This species is more numerous in autumn and is always the earliest to return, occurring from mid-June, with small flocks of up to 20 staying until late August or early September, perhaps moulting before moving on, though one mist-netted at Much Marcle on 6 September 2018 showed no sign of moult or arrested moult.
- spring: Rather limited numbers of records at the usual sites in spring, more frequent in March and April than in May, latest date 7 May 2013 at Coombe Hill. High numbers: eight at Bow Farm (Ripple Lakes) on 23 March 2013, eight at Clifton on 31 March 2017. Thus Green Sandpiper occurs much earlier in spring than other waders.

- autumn: One of the very first returning waders to appear after the breeding season (presumably failed breeders or one year old birds which did not breed), in most years by mid-June, with numbers increasing in July and early August, then tailing off in late August and September, with a few birds staying on to winter: maxima at Coombe Hill of 21 on 27 July 2009 at Clifton of 13 on 31 July 2015, 14 on 23 August 2015; at Grimley of 13 on 29 July 2012; at Upton Warren of 11 on 26 July 2016,

### Wood Sandpiper

#### 5.586. UK status:

- Breeding: 30 pairs; European population 275000-450000 pairs).
- Passage migrant. winter: not in UK.
- Conservation status: Amber (Green from 1996-2001).

#### 5.587. SPA status:

- Not one of the species included in the SPA or SSSI assemblage but noted here as a typical migrant wader moving through the Vales.
- On passage only, more frequent in autumn.
- 1% international threshold: 18000. 1% national GB threshold: Not specified. 1% of SPA: N/A
- Maximum monthly count in the Severn SPA since 2013/14: 4 in August 2015.

#### 5.588. Severn and Avon Vales:

- This close but much rarer relation of Green Sandpiper occurs every year in small numbers (no records of more than three birds) at all the usual sites on both spring passage (when most records have occurred in the first week of May) and in autumn.
- spring: Limited number of spring records, nearly all in May, a very small number of records in the first few days of June (one on 4 June 2012 at Upton Warren).
- autumn: A very small number of late June records (one at Upton Warren on 30 June 2017), rather more records in July, peak in August, few September.

### Common Sandpiper

#### 5.589. UK status:

- Breeding: 13000 pairs; European population 370000-700000 pairs).
- Passage migrant. winter: 52 individuals.
- Conservation status: Amber (Green from 1996-2007).

#### 5.590. SPA status:

- Not one of the species included in the SPA or SSSI assemblage but noted here as a typical migrant wader moving through the Vales.

- Passage migrant, most numerous in autumn; very occasionally winters.
- 1% international threshold: 12,000. 1% national GB threshold: Not specified. 1% of SPA: N/A.
- Maximum monthly count in the Severn SPA since 2013/14: 56 in August 2016.

#### 5.591. Severn and Avon Vales:

- A few pairs still breed along the Teme in Worcestershire (but not in the Severn and Avon Vales), in Wales and further north in England. A few occasionally winter, notably at Bow Farm (Ripple Lakes). Mainly a passage migrant, seen more often than other waders along the banks of the Severn and Avon. spring passage often concentrated in late April; autumn passage more spread out from July to September.
- spring: Main passage fairly concentrated into the last week of April, when Common Sandpipers often occur along the banks of the Severn and Avon. Maxima of 22 at Bow Farm (Ripple Lakes) on 29 April 2016, 14 on 24 April 2017, 12 on 27 April 2018; at Clifton 17 on 29 April 2016; along the Mill Avon at Severn Ham, Tewkesbury, six on 28 April 2018; at Coombe Hill five on 27 April 2013. March records generally refer to wintering birds, first migrants generally from 10 April, number of records decreasing as May progresses.
- autumn: This is the one wader for which the ringing recoveries (see below) demonstrate movement through the vales; two birds colour-ringed in Derbyshire in July 2017 were re-sighted at Upton Warren two weeks later. Passage less concentrated than in spring, occurrences more protracted: 12 At Bow Farm (Ripple Lakes) on 12 July 2012, seven at Clifton on 23 August 2015. First records often in the last days of June, many records through July and August, decreasing in September. October and November records often relate to wintering birds.

#### Favoured sites in the Severn and Avon Vales (all species)

- 5.592. The sites favoured by migratory waders in the Severn Vales are predictable, very much the same suite of wetlands used by other waterbirds. Perhaps the gravel pits along the Severn and the string of recently created wetlands along the Avon are worthy of special mention since they form a chain of potential stopover sites for these birds as they move from the SPA along the inland river systems towards the North Sea.
- 5.593. Between the SPA and Gloucester, Walmore Common is of special interest for this group of birds, especially if flooded in spring. It dries out in most years in summer, so is of much less importance in autumn.
- 5.594. Minsterworth Ham, like Walmore, may offer suitable habitat in spring, if flooded.
- 5.595. Upstream of Gloucester, the GWT reserves at Ashleworth and Coombe Hill attract considerable numbers of migrant waders in spring, perhaps more at Coombe Hill, where the scrapes offer feeding and resting opportunities. In the last few years, the scrapes have often dried out by late summer and so are less attractive in autumn.
- 5.596. The same is true of the Worcs WT reserve at Hill Court near Longdon; in spring its scrape attracts migrant waders, but it has generally dried out in autumn. The relatively new water control structures may perhaps improve the situation as regards surface water in autumn.
- 5.597. Along the Avon, the former gravel pits at Bredon's Hardwick and Kemerton (KCT), despite becoming

more overgrown and being fairly deep, continue to attract passing waders. The new fairly shallow wetlands created in the last twenty years at Gwen Finch and John Bennett attract migrant waders as the series of records of Arctic breeding birds shows. The Avon meadows at Pershore are perhaps rather too heavily used by local people and dogwalkers to attract large numbers of waders, but the number and variety of records at Lower Moor shows that the scrape there is widely used by these migrants.

- 5.598. Along the Severn north of Tewkesbury, the recently completed gravel workings at Bow Farm (Ripple Lakes), Clifton and Grimley are clearly major sites for these species, the more so as they do not dry out in autumn, so provide all year around habitat.
- 5.599. The Worcs WT reserve at Upton Warren, north of Droitwich is the final link in the chain of these wetlands, attracting a variety of waders on their spring and autumn migrations.

#### Counter interviews

- 5.600. Many of the counters interviewed have over a number of years provided information used in this compilation of migratory wader records. Passage waders are of special interest, eagerly awaited by the counters, who often judge a year as good or bad according to the number and variety of migrant waders noted.

#### Ringing recoveries

- 5.601. Very little ringing of migrant waders moving from the SPA through the Vales has been carried out (other than Curlew – see separate species account). The main ringing effort in the SPA was in the 1960s and 1970s, when waders were mist-netted at Aylburton Warth and Rodley on the right bank and at Saul Warth on the left bank, and has produced an appreciable number of recoveries, quoted on the BTO Online Ringing Report, which are summarised below. Very little ringing of waders has taken place in the Vales. Most recent recoveries relate to colour-ringed Black-tailed Godwits (see above), generally ringed in wintering grounds on the south coast of England or on the French Atlantic coast, or alternatively on the breeding areas in Iceland, which have been observed in the Vales; seven of 67 Black-tailed Godwits colour-ringed on the Axe estuary in Devon have been sighted at Slimbridge or in the Vales (P. Potts, pers. com.); the BTO Online Ringing Report also refers to older sightings of Black-tailed Godwits (from 1985 onwards), many from Farlington Marshes to Gloucestershire and beyond. The sightings at Coombe Hill, Ashleworth and Bow Farm (Ripple Lakes) clearly illustrate movements between Iceland, the Severn and Avon Vales, Slimbridge and the south coast and Brittany.
- 5.602. Ringed Plover:
- An adult ringed at Alvington on 13 August 1975 was killed by a cat in the Arctic Ocean north of Iceland (1794 miles away) on 6 June 1977.
  - An adult ringed at Alvington on 24 August 1975 was caught by another ringer in Morecambe Bay (Cumbria) on 14 May 1977.
  - Of three birds ringed at Saul Warth on 24 August 1979, one first-year bird was recovered at Jadida in Morocco in November 1980, one adult was recovered in Portsmouth Harbour in August 1980 and a second adult in the Somme (France) in August 1984.

- An adult ringed at Walney Island, (Cumbria) on 26 May 1978 was caught again at Saul Warth in 24 August 1979.
- In August 2019 two birds colour-ringed in northern Norway were re-sighted in the SPA, one at Oldbury, the other at Newport Wetlands.

5.603. The above recoveries do not illustrate Ringed Plovers moving through Severn Vales, but they show this species moving from the SPA to the far north (via Cumbria) to Iceland and northern Norway. They also indicate that Ringed Plovers may winter as far south as Morocco (via the English south coast and France).

5.604. Dunlin:

- An adult ringed at Saul on 21 October 1968 was caught by another ringer (nearly eleven years later!) on 7 August 1979 at Ottenby, Sweden.
- A full-grown Dunlin ringed at Aylburton on 24 August 1971 was found dead on 20 May 1979 in Iceland.
- An adult ringed near Rodley on 6 April 1973 was caught by another ringer on 3 August 1977 in Norfolk, then by a third ringer on 21 February 1981 near Weston in Somerset (within the SPA). The website refers to five more Dunlin recoveries which demonstrate movements between Gloucestershire and Norfolk (where the Wash Wader Ringing Group rings very large numbers of waders); four out of six occurrences in Norfolk are in August; occurrences in Gloucestershire are in September (two), October, December, February and April.
- A series of recoveries show seven Dunlin moving through northwest Europe (one from Sweden, three from Norway, one from Germany, one from Finland and one from Denmark) between July and September, and retrapped in the SPA in winter (two of them in the autumn of the year when they were ringed).

5.605. Once again, these recoveries do not illustrate movement through the Vales but they show that birds wintering in the SPA may move in the breeding season northwest to Iceland, or northeast to Scandinavia (and probably beyond). The recoveries quoted do not show movement south of the UK.

5.606. Common Sandpiper:

- Two first year birds ringed in Derbyshire in July 2017 were re-caught or re-sighted two weeks later at Upton Warren, and do illustrate autumn movement southward through the Severn Vale.
- Of three Common Sandpipers ringed in Gloucestershire, one ringed at Rodley in August 1966 was found dead in Norway in July 1969; one ringed at Stroud in April 1980 as a first year bird was recovered in May 1981 in Argyll and Bute, Scotland; one ringed at Frampton in August 1984 was recovered in Denmark in July 1985.

5.607. Green Sandpiper:

- A first year bird ringed near Rodley in August 1972 was shot in February 1973 near Seville in southern Spain.

5.608. Spotted Redshank:

- An adult ringed near Rodley on 22 July 1970 was shot five weeks later on the French Channel coast.

5.609. Greenshank:

- A full-grown bird ringed near Rodley on 2 September 1970 was recovered on 31 July 1976 near Braunschweig in Germany.

Summary findings of fieldwork carried out in 2019/20

5.610. The fieldwork period in 2019/20 fell outside the period when these waders are moving through the Vales, so this review of the sites for migratory waders is of necessity a desk study, with many contributions from the counters.

Synthesis of findings for migrant waders

- 5.611. There is no doubt whatsoever that these sites are important stopover and refuelling points for migrant waders, most of them red- or amber-listed, on their way from, or via the SPA to their northern breeding sites and back, even though they occur in small numbers.
- 5.612. In addition these inland routes are used by a number of other migrant waterbirds, notably several species of tern (both classed as Amber by BTO) and Little Gull (Near Threatened in Europe).
- 5.613. For Black-tailed Godwits of the Icelandic subspecies, whose wintering flock at Slimbridge has increased considerably to almost 1,000 individuals in the last few years, the Vale wetlands are important feeding areas, where they put on extra weight for their long migration in the critical period just before spring departure to Iceland.
- 5.614. Some of the sites are nature reserves – Coombe Hill and Ashleworth are GWT reserves, Hill Court and Upton Warren are Worcs WT reserves. Along the Avon Gwen Finch is a Worcs WT reserve, Kemerton Lake is a reserve of the Kemerton Conservation Trust, while Lower Moor and John Bennett are under conservation management. Even these sites are however under threat of disturbance from increasing disturbance of the countryside and require constant vigilance; Avon Meadows in Pershore is a community reserve, planned for wider human and canine use.
- 5.615. Many of the major sites have no recognised conservation status however: Bow Farm (Ripple Lakes), Clifton and Grimley in particular. In the discussions currently under way over their future it will be important to ensure that sufficiently large areas are protected from disturbance so that they remain available to these threatened wader species.
- 5.616. Movements of migrant waders are not mapped in Appendix 1 because all records are of implied movements only.

Conclusions

- 5.617. A wide variety of migrant waders, most of them nesting in the high Arctic, pass through (or over) these inland wetlands on their migrations from or via the Severn estuary SPA across central England. The numbers concerned may appear small at first sight, but many more pass over without stopping and need emergency refuges in case of adverse conditions.
- 5.618. Many of these waders are red- or amber-listed in the UK, some of them are on international red lists too, so that conservation of their migratory stopover or refuelling points are particularly important.

- 5.619. The inland wetlands are of particular importance for Icelandic Black-tailed Godwits which use them to put on weight before their northward migration in spring.

### ***Breeding waders***

#### General ecology, phenology and movements of these species

- 5.620. Waders (as noted above) are in general birds of coasts and shorelines and are generally summer visitors to their breeding sites, moving away in winter to coasts, shores and estuaries.
- 5.621. Intuitively, therefore, there should be a functional linkage between the wintering areas within or beyond the SPA and the breeding sites in the Vales. Evidence for this is most compelling in the case of Curlew (for which there is a separate account below). Considered here are the other wading birds that are found breeding on the SPA and/ or the Vale sites. Among these waders are one species listed as an SPA qualifying species (Redshank), one wader which, in addition to Curlew, is named as part of the SPA assemblage (Lapwing) and one wader listed under the SSSI notification (Snipe). Over much of their breeding range in western Europe, these four species have suffered sharp declines in numbers as a result of loss of habitat through drainage, intensification of agriculture and urbanization. Lapwing long ago showed a special adaptation by nesting in arable fields; but whereas arable crops used, until the late 20th century, to be sown in spring, the increasing practice of autumn sowing and winter growth means that crops have grown quite high by March when Lapwings begin laying; nesting Lapwings therefore are now found much less often on arable fields than in the past.
- 5.622. Three other breeding waders are also considered here. Oystercatcher originally bred on sand or pebble beaches, but in the last fifty years, beginning in Scotland, has begun to colonise inland sites, including arable fields. Avocet and Little Ringed Plover have both extended their breeding range from the continent to UK in the second half of the 20th century. Avocet first re-colonised the east coast marshes of England, flooded in the Second World War, in the 1940s after an absence of nearly 100 years (Cadbury and Olney, 1978), but has in the last few decades expanded its range over much more of the UK, with breeding in the Gloucestershire section of the SPA occurring for the first time in 2012 (Kirk and Philips, 2013) and within the current study area at Upton Warren in 2003. Little Ringed Plover, unlike the other species, is a summer visitor wintering mainly in Africa, and in the UK has been closely associated as a breeding bird with gravel and sand extraction quarries, as well as sparsely vegetated post-industrial landscapes.

#### Overview of status

- 5.623. This section provides an overview of the status of each species in the UK as a whole, on the Severn Estuary SPA and on inland wetlands in the Severn and Avon Vales. Notes on each are presented below, with species accounts following on.

#### Overview of breeding status in the UK as a whole

- 5.624. The status of these species has been studied in the BTO's surveys of "Breeding Waders of Wet Meadows", first carried out in 1981, repeated in 2002, with a third survey planned in 2020 but postponed because of the coronavirus pandemic. The status of Lapwing, Snipe and Redshank has for long been recognised as a cause for major concern, as is clear from the rapid overview below,

derived from the section of the BTO website entitled BirdFacts<sup>38</sup>.

#### Overview of breeding status on the Severn Estuary SPA

- 5.625. Most of these six wader species breed within, or immediately adjacent to, the SPA itself, and the current breeding status of each within the Gloucestershire sector of the SPA is reviewed below.

#### Overview of breeding status on inland wetlands in Severn and Avon Vales

- 5.626. Individuals of the six breeding species considered here (the seventh, Curlew, is considered in a full species account below) appear to be largely summer visitors to the Vales, although all but one of the species are also present on the estuary over winter, probably with different individuals involved. Little Ringed Plover is exclusively a summer visitor to the UK, wintering in Africa, the first individuals appearing in the Vales in late March or early April, the last ones (no doubt late southward migrants) generally being seen in September. Oystercatcher arrives in the Vales first in February, Redshank and Avocet in March; records of all three after August are unusual. The case is slightly different with Lapwing and Snipe (covered under the account for Wintering Waders above); both winter in considerable numbers in the Vales, but the wintering individuals come from northern and Central Europe, as shown by ringing recoveries. It is believed (as yet with little concrete evidence to prove it) that the Lapwing which still nest in the Vales (and the Snipe which used to) come from separate populations from those that winter. Therefore, for all species other than perhaps Oystercatcher and Avocet, any Functional Linkage for breeding waders between the SPA and inland sites is likely to be for birds on migration through the SPA rather than those wintering on it.
- 5.627. There have been two comprehensive reports on the breeding waders of the Vales in the last 25 years: in 1995 Quinn (1995) studied all the meadowland sites for the RSPB. A special report was prepared on the results in Gloucestershire and Worcestershire Vales of the 2002 BTO survey of Breeding Waders of Wet Meadows (Wilson and Smart 2003). Since then volunteer groups have continued to monitor the wader breeding populations of the Vales.
- 5.628. In overall terms, the success of nesting attempts by all wader species in recent years has been very poor, largely due to the combined effects of (i) habitat loss – this can be both permanent, in the case of drainage and arable reversion, and temporary due to crop rotations and/or hay, silage and haylage cuts being taken early in the season, (ii) Poor foraging resources for juveniles, particularly on intensively farmed fields where nesting habitat may be available but food is depleted, (iii) unseasonal flooding in spring and summer and (iv) increasing predation pressure. Predation can be a particular problem, even where birds continue to return to suitable habitat, because the critical numbers of nesting pairs that can successfully deter predators (e.g. by persistent mobbing until the predator gives up) are no longer present. For example, a single pair of Lapwing attempting to nest on Saul Warth in 2020 was faced with the constant attentions of a feeding flock of many tens of Carrion Crows (*Corvus corone*) and the territory was abandoned.

#### Lapwing

- 5.629. UK status:
- 98000 pairs in GB in 2016 (from 140000 pairs in 2009); 1.1 to 1.7 million pairs in Europe.

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<sup>38</sup> <https://www.bto.org/understanding-birds/birdfacts>

- Conservation status in UK : Red; rapid decline. Status in Europe: Vulnerable. Global status: Near Threatened.

#### 5.630. SPA status:

- Continues to breed in the SPA: on left bank at the WWT reserve at Slimbridge (Dumbles saltmarsh and wet fields inside the seawall), and occasionally on seasonally flooded fields very close to the SPA at Saul and Frampton Warths (although seldom successfully due to predation pressure largely from Corvids); on the right bank on saltmarsh at Aylburton Warth (perhaps five pairs) and on maize fields just inland of Guscar Rocks (two to three pairs) and in 2020 at Awre (one or two pairs).

#### 5.631. Severn and Avon Vales:

- General decrease; almost none left on arable fields, and few left on grassland sites either. A post-breeding influx occurs from as early as mid-June, presumably made up of birds that have either completed breeding or failed, elsewhere. These birds are easily distinguishable from breeding birds, since they associate in flocks and often remain in the breeding area for some considerable time. These flocks have decreased considerably in the last 20-30 years, such flocks were numbered in hundreds, if not thousands on the SPA: another indication of the decrease in breeding numbers.
- Lapwing nesting has been recorded in the last 10 years at the following sites, with numbers decreasing over the ten years:
- Grimley - several pairs nesting at Camp Lane, while gravel extraction occurred up to 2017.
- Upton Ham – one or two possibly nesting on arable fields alongside the Ham; none nesting on the Ham proper.
- Longdon Marsh – up to five nests on arable fields near Marsh Lane, very few left on grassland; no information on whether many or any broods have been successful.
- Worcs WT Hill Court Farm reserve – mixed success, usually up to five pairs.
- Bow Farm (Ripple Lakes) – up to a dozen pairs on the south lake island, generally with little or no success.
- Ashleworth – occasionally one or two pairs in some years on the GWT reserve, with success variable depending on the frequency and extent of spring and summer flooding; sometimes two or three pairs on neighbouring arable land (maize).
- At Coombe Hill (mainly on grassland on the GWT reserve, where there have been no more than five nests in the last five years; also on surrounding arable fields (barley or maize), – most successful on the Reserve but even here, generally fewer than 10 successfully fledged young.
- Cobney Meadows – one or two pairs may breed around the flight pond, or on the arable area between Cobney and Leigh Meadows.
- Walmore Common – 1 to 2 pairs, success unknown.
- Woodnorton Meadows - one or two pairs probably still nest on restored grassland.

- At Lower Moor small numbers (one or two pairs nest on the meadows, and others may still nest on arable along Lench Ditch).
- At John Bennett NR up to two pairs still nest on grassland.
- At Rectory Farm Meadows, opposite Upham Meadow, one or two pairs still nest on grassland, with three or four pairs on neighbouring arable.
- Quinn (1995) found one or two pairs of Lapwings nesting on arable fields north of Upham meadow, and they probably continue to do so.
- In fields alongside Bredon's Hardwick Pits, up to three pairs nesting on meadows between the pits and the Avon.
- At Mitton, two to three pairs on a meadow immediately adjoining Bredon's Hardwick.

### Snipe

#### 5.632. UK status:

- 67000 pairs in GB (from 80,000 pairs in 2009); 630 thousand to 1.1 million pairs in Europe.
- Conservation status in UK: Amber, rapid decline. Status in Europe: Least concern. Global status: Least Concern.

#### 5.633. SPA status:

- Does not nest within the SPA (may once have nested on inland wet fields). No confirmed records of displaying ("drumming") birds in the SPA other than on two occasions in 2008 and 2009 (Kirk and Philips, 2013).

#### 5.634. Severn and Avon Vales:

- No drumming Snipe have been recorded in the Severn or Avon Vales since 2003.
- The species (relatively numerous at several sites - at least Ashleworth, Coombe Hill and Walmore in the 1970s and 1980s) has totally disappeared as a breeding species from the Vales. Snipe are still recorded quite late into the spring, with frequent records in April and even into May, but these birds do not drum and do not stay on site. Some Snipe are recorded in June, which might lead observers to conclude that the species is present throughout the breeding season and that these are in fact breeding birds. Closer observation however indicates that birds in May are late passage migrants on their way east, while June birds are returning birds after the breeding season is over.

### Redshank

#### 5.635. UK status:

- Redshank: 22000 pairs in GB (from 25,000 pairs in 2009); 250000-470000 pairs in Europe.
- Conservation status in UK: Amber (decline). Status in Europe: Least concern. Global status: Least Concern.

#### 5.636. SPA status:

- Continues to breed in the SPA: within the WWT reserve at Slimbridge (inland fields like the 100-Acre) and occasionally at Saul and Frampton Warths (just outside the SPA); on the right bank on saltmarsh at Aylburton Warth (two to three pairs).

5.637. Severn and Avon Vales:

- Still recorded breeding at some sites but has disappeared from several previously favoured areas. Often, but not always, nesting on islands in water bodies.
- At Grimley one or two pairs still nest and raise young but may not continue to do so now that gravel extraction has ended.
- At Clifton nested when gravel extraction was under way, unclear whether they still do nowadays.
- At Upton Ham, two to three pairs appear to have been successful on grassland for the last two or three years.
- At Ryall probably no longer nesting, following development of willow carr; any birds here likely to have been from Upton Ham, just across the river.
- At Bow Farm (Ripple Lakes) two to three pairs continue to nest on the large island in the south lake, but rarely succeed in producing young.
- Longdon Marsh, although the terrain looks suitable in grassland along Longdon Brook, no recent records of nesting Redshank.
- At the Severn Ham at Tewkesbury, a site where Redshank bred years ago, no breeding attempts in recent years, probably because of increased use of the site by visitors and dog-walkers.
- At Ashleworth / Hasfield Hams Redshank used to breed until about ten years ago, mainly on the damper fields on the Hasfield side, but no recent breeding attempts, either on the Hasfield side or on the GWT reserve.
- At Coombe Hill up to three pairs have bred regularly and with some success for the last few years – nests found, either on islands in the scrapes or around the edges of the scrapes, and several fledged young seen. In dry Summers the scrapes may dry out by July, in which case parents often take their young to the Long Pool depression which holds water throughout the year.
- At Walmore one or two pairs used to nest on the Common, along the ditches or around the Common Pool, but no successful nesting known in the last few years.
- Redshank formerly nested at Asham Meadow, in grassland along the river, but have not done so for several years. They may perhaps have moved to the newly created wetlands at Gwen Finch or John Bennett.
- At Eckington Marsh scrapes were dug some years ago to attract nesting Redshanks and other waders; some initial success, uncertain whether the species still nests there. At Gwen Finch, Redshank probably nested in the years immediately after its creation, but have probably moved to John Bennett in recent years since the site became very overgrown.
- At John Bennett (very close to Asham and only created in the last few years) one or two pairs have nested since its creation.

- At Rectory Farm Meadows, on the opposite (left) bank of the river from Upham Meadow, at least one pair used to breed on the SSSI, but has not been found in recent years.
- Upham Meadow was listed by Quinn in 1995 as one of the major sites for Redshank with nine pairs; they continued to breed for the next twenty years, though in decreasing numbers, and for the last year or two have not been found. The reason for the decline here is not obvious, as land management practices have remained the same and there is very little disturbance.
- At Fleet Lane, just across the Avon from Upham Meadow, the habitat is very similar to that at Bredon's Hardwick and Upham; Redshanks probably nested here historically, but there are no definite recent records.
- In 1995, Quinn considered Bredon's Hardwick Pits to be the major breeding site in the Vales for Redshank, but there has been no evidence of breeding either on the pits or in surrounding meadows for some years.

### Avocet

#### 5.638. UK status:

- 1950 pairs in GB; 37000-54000 pairs in Europe.
- Conservation status in UK: Amber. Status in Europe: Least concern. Global status: Least Concern

#### 5.639. SPA status:

- Very recent coloniser (last ten years) at Slimbridge, where it nests in pools in the grounds, ten to twenty pairs, increasing.

#### 5.640. Severn and Avon Vales:

- A breeding colony has been established at Upton Warren since 2003, and most observations of Avocets elsewhere in the Vales (e.g. at Coombe Hill) are probably of birds moving from the SPA to the Upton Warren colony. Recognisable individuals have been seen moving between Upton Warren and Grimley, Clifton Pits and Lower Moor on the Avon. Given that the species has established a colony at Slimbridge in the last ten years, other sites in the Vales seem likely to be colonised: a pair attempted to nest on the island in the scrape at Coombe Hill in May 2016, laying eggs, which were abandoned after a few days, and after an absence of several years three pairs raised young there in 2020.

### Oystercatcher

#### 5.641. UK status:

- 96000 pairs in GB (from 110000 pairs in 2009); 293000-425000 pairs in Europe.
- Conservation status in UK; Amber (moderate increase on UK waterways). Conservation status in Europe: Vulnerable. Global status: Near Threatened.

#### 5.642. SPA status:

- Coloniser in the last 20 years at Slimbridge (where it nests in pools within the WWT grounds) and Frampton on Severn, notably nesting on wooded islands on Court Lake (not within the SPA)

and feeding in a wider area, and Aylburton (where it nests mainly in maize fields inland of Guscar, perhaps two pairs).

#### 5.643. Severn and Avon Vales:

- A fairly recent recruit to the Vales as a breeding species in the last twenty years. Breeding birds are noisy and obvious, often wandering with loud calls from their breeding site to neighbouring areas, where they are not actually nesting. Noted at a wide range of sites; generally prefers to nest on islands in water bodies; some pairs, perhaps nesting on arable, may have been overlooked (e.g. birds are recorded along the Severn at Upton Ham or at the Severn Ham at Tewkesbury, or along the Avon in the area of Upham Meadow, but no nests were located in these areas). Occasionally, extra birds occur alongside existing well-established pairs, suggesting that unattached individuals are also present.
- Upton Warren - two to three pairs nest regularly.
- Grimley - a pair generally nests on Camp Lane Pits.
- Clifton - at least one pair has nested for several years and has successfully brought off young.
- Upton Ham - does not nest on the Ham proper, but must nest in the vicinity, since birds are often seen flying over.
- Worcs WT Hill Court Reserve - pairs have been seen in the breeding season, but as yet there they do not seem to have bred successfully. No sign of nesting at Longdon Marsh north of Marsh Lane.
- Bow Farm (Ripple Lakes) - this species nests on islands in the lakes which are not affected by flooding. Generally up to three pairs have nested in recent years, generally with success (unlike other waders nesting in this site). A record of an adult and a juvenile as late as 25 August 2018 probably relates to migrants which had bred elsewhere making their way to the coast.
- Mythe Hook south of Bow Farm (Ripple Lakes) - a pair on a farm pond with an island in 2017 and 2018 probably attempted to nest, but no indication of whether they were successful.
- Severn Ham at Tewkesbury - many records of birds flying over, but they have definitely never nested there.
- GWT Ashleworth Ham Reserve - pairs have regularly been seen around the pool for several years, and successful breeding was recorded for the first time in 2020. No indications of nesting on the Hasfield side.
- Coombe Hill (on the GWT reserve) - pair has nested regularly with success for four or five years.
- Frampton pools – Oystercatchers have nested on the islands on Court lake for at least three years now.
- Throckmorton Outer Lagoon - a pair has nested, often with success since 2012.
- Lower Moor Leisure Park, on former gravel pits near Throckmorton - a pair has occasionally nested. Birds seen frequently at Lower Moor, Pershore Wetlands or Wick probably come from the Leisure Park or Throckmorton Lagoons.

- John Bennett Nature Reserve - up to six birds regularly recorded, sometimes in pairs, but as yet no proof of successful nesting. Similarly at Gwen Finch, birds occasionally seen, but nesting not proven.
- Kemerton Lake (KCT) - two or three pairs have nested on islands since at least 2012 but often fail because of predation by crows or gulls.
- Rectory Farm Meadows SSSI - do not nest, but farmers have reported nesting on arable fields (beans and maize) nearby.
- Upham Meadow - regularly seen flying over, sometimes landing to feed, but these are probably birds from Kemerton or Bredon's Hardwick, as there is no sign of nesting attempts. Same situation at Fleet Lane.
- Bredon's Hardwick Pits has for long been a regular breeding site, with birds breeding successfully on the islands in the lakes.

#### Little Ringed Plover

##### 5.644. UK status:

- 1250 pairs in UK; 70000-115000 pairs in Europe.
- Conservation status in UK: Green. Status in Europe; Least concern. Global status: Least Concern.

##### 5.645. SPA status:

- Opportunistic nester where it finds bare ground. Has nested in grounds of WWT (South Lake); nested in 2020 on foreshore at Sharpness.

##### 5.646. Severn and Avon Vales:

- The breeding stronghold for this species in the Vales is the sand and gravel pits in Worcestershire (Grimley, Clifton, Ryall, Bow Farm (Ripple Lakes)), especially where extraction is still in operation, with very few Gloucestershire Severn Vale breeding records. Recorded regularly on northward and return passage at Coombe Hill (up to half a dozen birds); most records in Gloucestershire are considered to relate to passing migrants.
- Upton Warren - several pairs nest regularly.
- Grimley - no longer nests on the northern Old Workings which have become overgrown, but one or two nest regularly on the new workings at Camp Lane Pits. Likely to be lost from this site now that gravel extraction has ceased.
- Clifton - nested regularly while sand and gravel extraction continued, and one or two pairs have continued to nest since extraction ended, with restoration of the lakes and edges in recent times. Larger numbers (up to 19) in July and August no doubt are of south-bound migrants.
- Ryall - certainly used to nest when gravel extraction continued; in recent years has become overgrown with the end of extraction; birds still occur but if the species still nests, numbers are small. May occur on passage from July onwards.

- Bow Farm (Ripple Lakes) - one or two pairs nests regularly on the island in the south lake, but generally with very poor fledging success.
- Worcs WT Hill Court Reserve - nested successfully around the scrape in 2016, and probably in other years too.
- Ashleworth - occurs on passage but no nesting records.
- Coombe Hill - most observations are considered to be of birds on passage, from late March and early April in spring, with return passage from mid- to late June onwards, often fledged birds of the year perhaps from Vale breeding sites until September. However, there have been recent nesting attempts: in 2017 (for the first time for many years, a very late pair successfully raised young, which did not hatch until 10 July when the scrape was almost dry, suggesting this was a replacement clutch. Breeding was again attempted in May 2018, but the eggs were lost.
- At Horsbere nested successfully in the early years immediately after its establishment around 2011, before the vegetation grew too dense. Has not nested for the last two to three years.
- At Kemerton Lake (KCT), the species has nested on the islands.
- At Bredon's Hardwick Pits the species has nested on the open gravel island in the pits.

#### Counter interviews

- 5.647. Most of the counters interviewed have over the years provided information and comments used in this compilation of records of breeding waders in the Vales. The fieldwork for this project in winter 2019/20 did not of course cover the wader breeding season.

#### Ringling recoveries

- 5.648. Relatively few breeding waders (apart from Curlew, treated in a separate account) have been ringed in the SPA. Those waders that have been ringed were mostly caught in the 1960s and 1970s in autumn and winter mist-netting sessions at Aylburton Warth, Rodley and Frampton / Saul; these recoveries are reviewed in the account of wintering waders, as are the many records of Lapwings and Snipe ringed abroad and recovered in the SPA and the Vales in winter. At WWT Slimbridge some nestlings of Oystercatcher and Avocet have been ringed since these species began to breed in the grounds there.
- 5.649. Few breeding waders have been ringed in the Vales. Some Lapwing and Snipe were ringed in Worcestershire in the 1970s and 1980s, but these were adults in autumn or winter rather than breeding birds; it is perhaps surprising that so few nestlings of breeding waders have been ringed in the Vales.
- 5.650. The following recoveries are derived from the BTO Online Ringing Report. Most relate to the SPA rather than to the Vales, but give a general idea of the movements of the species concerned.
- 5.651. Snipe:
- A nestling ringed at Kemerton in May 1933 was shot in Devon in December 1933.
- 5.652. Redshank:

- Two Redshanks colour-ringed on their winter quarters on the south coast of England have been resighted in the Vales in spring. The first, at least one year old, was ringed at Thorney Island (West Sussex) on 26 September 2014 (hence presumably on its wintering grounds) and was re-sighted at Coombe Hill on 20 March 2015; at such a date, this bird might have been a breeding bird returning early, or perhaps a migrant moving further north; it was not re-sighted during the breeding season in a well-watched site. The second was ringed at Farlington Marshes (Hampshire) as a juvenile on 29 October 2009, retrapped there and marked with colour rings on 16 September 2013, recorded there again on 1 September 2015, then recorded as a breeding bird at Bow Farm (Ripple Lakes) on 28 May 2016.
- An adult bird was ringed at Saul on 6 April 1973, caught by a ringer at Horsea Island in Portsmouth Harbour on 2 August 1980, then caught again at Saul on 23 March 1985; this appears to be another bird wintering on the south coast and returning to nest in the area of the SPA.
- A Redshank marked with a metal ring at Rumney Great Wharf in south Wales on 5 December 2002 was found dead in a Peregrine's nest on Worcester Cathedral in April 2005, suggesting that at least this bird had wintered in the SPA and could have been returning to a breeding site within the Vales.
- Of three Redshanks ringed in the SPA in the 1960s and 1970s one ringed in August was recovered ten years later in April in Northumberland; one ringed in January was found dead in Durham in May of the same year; and one ringed in November was found in September of the following year off the coast of Lincolnshire; one ringed in Norfolk in July was caught at Aylburton in November of the same year.

#### 5.653. Avocet:

- A nestling colour-ringed in 2016 near Hartlepool was seen at Upton Warren in September 2017, then back in Hartlepool in May 2018.
- A nestling colour-ringed at Beaulieu (Hampshire) in June 2014 was recorded at several other Hampshire and Devon sites, then at Slimbridge in August 2018.
- Another nestling ringed at Beaulieu in June 2015 was seen in Hampshire and at Newport Wetlands (adjacent to the Severn SPA) in February 2016, at Slimbridge in April 2017, then back in Hampshire.

#### 5.654. Oystercatcher:

- A nestling ringed at Slimbridge in May 2002 was resighted at Wellington Gravel Pits in Herefordshire nearly 15 years later in February 2017.
- Another nestling ringed at Slimbridge in June 2007 was caught by another ringer on Orkney in March 2011.
- Five adults ringed at Slimbridge in 1957 were recovered respectively in: Aberdeenshire (March 1961), Cumbria (January 1958), two in Lancashire (January 1958 and February 1961); and one in Iceland in August 1961.
- A nestling ringed in The Netherlands in June 1997 was killed by a bird of prey at Sharpness in March 2001.

### Summary findings of fieldwork carried out in 2019/20

5.655. The fieldwork period in 2019/20 fell outside the period when these waders are in the Vales, so most of the findings below relate to comments from counters or to findings from the literature.

### Synthesis of findings for breeding waders

5.656. The wetlands of the Severn Vale remain important, despite dramatic declines, for their breeding waders.

5.657. The four traditional breeding waders are:

5.658. Curlew (treated in a separate account), for which there is compelling evidence of Functional Linkage with the SPA.

5.659. Lapwing, for which there is no direct evidence of Functional Linkage for breeding birds. Large numbers of Lapwings winter in the Vales but these birds appear mainly to be immigrants from central and northern Europe which arrive from late summer into autumn. Those Lapwings that breed in the Vales may winter in the SPA, but there is no evidence either way for this.

5.660. The few remaining pairs nest mainly on wet meadow sites like Coombe Hill, Ashleworth. Hill Court or Mitton, or on former gravel pits with islands like Bow Farm (Ripple Lakes). Where these birds spend the winter is uncertain and may not be the SPA itself.

5.661. Redshank, for which there is very limited circumstantial evidence (a single record) of Functional Linkage between the Vales and the SPA. The other available ringing recoveries of Redshank suggest that at least some birds breeding in the Vales winter on the south coast of England.

5.662. This species has also suffered a steep decline and its situation is precarious. It has disappeared from former breeding sites in some large hay meadows like the Severn Ham in Tewkesbury, Upham Meadow, Rectory Farm at Bredon's Norton and Asham. The considerable public use of footpaths at Tewkesbury and Asham probably account for the disappearance at those sites, but agricultural practices remain exactly the same at Upham and Rectory Farm which are both largely undisturbed SSSIs and the reason for the species' disappearance there is not clear. Miraculously they have survived at the heavily used site of Upton Ham, but for how long? The main sites where they now nest are Coombe Hill, Bow Farm (Ripple Lakes), Grimley and John Bennett.

5.663. Snipe has now completely disappeared as a breeding species. Given that until the late 20th century drumming Snipe were numerous at least at Walmore, Coombe Hill and Ashleworth, there could have been a Functional Linkage in the past but until or unless birds re-occupy such areas this will never be proven.

5.664. Some new breeding waders have moved in:

5.665. Oystercatcher is a highly adaptive species which now nests in a number of sites, particularly where there are islands (Coombe Hill, Bow Farm (Ripple Lakes), Clifton, Grimley, Upton Warren, Bredon's Hardwick, Lower Moor); it will also breed in arable (Bredon's Norton).

5.666. Little Ringed Plover has now bred in the Vales for several decades, particularly in still operational gravel pits, but it is less attracted to such sites when the works end and the sites become overgrown. The current preferred sites are mainly in Worcestershire (Bow Farm (Ripple Lakes), Ryall, Clifton,

Grimley). Has also nested in Gloucestershire at Coombe Hill and Horsbere.

- 5.667. Avocets, in addition to their Slimbridge colony, now well-established, have for some years nested at Upton Warren and in recent years have tried at Coombe Hill, so a further spread may be anticipated.
- 5.668. The individuals of all these six wader species that nest in the Vales are almost entirely summer visitors to the Vales, appearing from February onwards to take up territory, and moving out very rapidly once the breeding season is over (either because their nest has failed, or after fledging of the chicks). Many of them have left by July, and records of most of them (except Little Ringed Plover where individuals from further north move south until September) are scarce after August.
- 5.669. Known and implied movements of Lapwing are illustrated on Map 17 and those of Redshank on Map 23, in Appendix 1.

### Conclusions

- 5.670. More information is needed on the wintering places of nesting waders from the Vales. This might be gained from ringing, but GPS tagging is now more likely to yield results of sufficient detail to allow for further assessment of Functional Linkage.

## **Curlew**

### General ecology, phenology and movements of the species

- 5.671. The Eurasian Curlew is the largest wader, familiar in literature and folklore as a symbol of wildness and beauty. It has experienced a major decrease in numbers in the last twenty or more years across northwest Europe, and as a result has been called “the most pressing biggest bird conservation priority in UK” and has been included on the IUCN global Red List as “near-threatened”. The UK holds about 25% of the world population of breeding pairs (nesting predominantly on high ground in Scotland, the north of England, Wales and Northern Ireland) but with surviving breeding populations in the English lowlands. In addition, a further 25% of the world population, which nests in continental northwest Europe, winters in UK and Ireland in winter (Brown *et al.* 2015).
- 5.672. The Eurasian Curlew breeds in upper middle latitudes in Eurasia, as far north as the subarctic, from France to China. Characteristically an upland breeding bird in Britain, it experienced a marked range expansion in the early 20th century (slowing down in the 1950s) especially in southern and eastern England. Directly after the breeding season, Curlew shifts to mainly marine habitat, especially mudflats and sands extensively exposed at low tide. It is omnivorous, though principally taking invertebrates; seasonal variations in diet partly reflect seasonal variations in habitat. Within the Palearctic, it is mostly migratory, wintering from the Atlantic coasts of Europe through the Mediterranean basin to the western coast of India (Cramp & Simmons 1983).
- 5.673. Curlew was a quarry species in the UK until the 1981 Wildlife and Countryside Act. It remains on the list of species that may be hunted in France, though a moratorium has been in force there for several years. Some ringing recoveries used to come from wildfowlers, but nowadays come more often from catches by other ringers using cannon- or mist-nets, from observation of colour marked birds, or (increasingly) from birds marked with GPS tags.

### Overview of status in the UK as a whole

- 5.674. To qualify as internationally important, a site must regularly hold 7600 Curlews (a decrease from the former figure of 8400, illustrating the species' drop in numbers). There is only one site in the UK that meets this criterion – Morecambe Bay.
- 5.675. To qualify as nationally important in Great Britain, a site must regularly hold 1200 Curlews. There are 27 sites in the UK that meet this criterion. These are Forth Estuary, Humber Estuary, Inner Firth of Clyde, Inner Moray and Beaulieu Firths, Lavan Sands, Lindisfarne, Lough Foyle, Mersey Estuary, North Norfolk Coast, Severn Estuary, Severn Estuary (English counties), Solway Estuary, Solway Estuary (English counties), St Bees Head to Mawbray, Stour Estuary, Strangford Lough, Swale Estuary, Thames Estuary and The Wash<sup>39</sup>.

### Overview of status on the Severn Estuary SPA

- 5.676. The five year mean peak for Curlew on the Severn Estuary (2014/15 to 2018/19) is 3398 so the 1% population threshold for importance of a site within the SPA is 34 birds.
- 5.677. Curlew is a “winter visitor” in considerable numbers to the SPA, if “winter” is understood to begin in June and end in April: the first returning adults after the breeding season arrive on the estuary by June, stay to moult on the estuary as numbers build up from July to September, then feed on mudflats or on wet fields just inland from October to February; in February the first departures to the breeding grounds take place (for birds nesting in nearby southerly latitudes), these departures continue until April, when birds nesting in the far north of Europe are the last to leave. From late April to early June the only Curlews present on the SPA are a small number of non-breeding adults and one-year-olds, not yet sexually mature.
- 5.678. In the entirety of the Severn Estuary SPA (which extends from just above Slimbridge to Bridgewater Bay on the east side of the estuary and to Cardiff on the west), monthly maxima in WeBS counts on the whole of the SPA were: 3546 in 2013/14, 3696 in 2014/15, 4203 in 2015/16, 2998 in 2016/17, 3411 in 2017/18 and 2680 in 2018/19.
- 5.679. This status of the Curlew on the SPA is relatively well-known since, in addition to regular WeBS counts at key sites (within Gloucestershire these include the New Grounds Slimbridge and the Aylburton Warth / Guscar Rocks complex, as highlighted in the previous study (Phase 4) in this series), a number of Curlew colour-ringing and GPS tagging projects have been carried out there in recent years.
- 5.680. During the 1960s and 1970s adult wintering Curlews were caught and marked with metal rings within the SPA in Gloucestershire, using mist nets (generally at night), at Aylburton Warth (NGR ST6199, 4km south-west of Lydney, Forest of Dean District) and Gravel Farm, Rodley (NGR SO721122, 2km south east of Westbury on Severn), and at Saul/ Frampton Warths. (approx. central NGR SO741075). The total number of birds ringed is not known, but it was small – probably less than 100 individuals. Some birds were recorded in later winters in other parts of UK, with one in France, and half a dozen birds were recovered within a few miles of their ringing site on the SPA; there were no recoveries demonstrating movement between the SPA and the Severn Vales. In the opposite direction, six Curlews ringed as chicks on their breeding grounds were recovered in these 1960s and 1970s operations in Gloucestershire (nearly all within the SPA in winter), some by mist-

<sup>39</sup> As listed at <https://app.bto.org/webs-reporting/>

netting, some by shooting: three from Finland, two from The Netherlands, one from Yorkshire.

- 5.681. More recently, from 2010 to 2013, a cannon-netting team led by Dave Coker and Steve Dodd was successful in catching Curlews in three out of four annual autumn cannon-netting attempts at Wibdon Warth (NGR ST574966, between Chepstow and Lydney) and colour-ringed 160 full-grown Curlews. In a remarkable follow-up operation, many volunteers, with J.D. Sanders prominent among them, have monitored these colour-ringed birds and shown how remarkably faithful the Curlews are to their chosen wintering area, returning year after year not just to the same general area, but often to a preferred high tide roost or a preferred feeding area, whether mudflat or wet pasture alongside the estuary (Sanders & Rees 2018, Robinson *et al.* 2020). In the ten years since ringing began at Wibdon, only one colour-marked bird has ever been observed in winter away from the Severn estuary, a bird seen in the Wibdon area in autumn 2016, which appeared in Cornwall in December but was back at Wibdon by March 2017.
- 5.682. In addition, the BTO/WWT study carried out on the Usk estuary in winter 2015/16 marked a further 41 Curlews with colour rings, some of them also with GPS tags (Scragg *et al.* 2016). The resulting observations of colour-rings at Newport Wetlands (though observations were less intensive than those of Wibdon birds), mirrored those from Gloucestershire, showing very high winter site fidelity. The GPS tagging also showed that the Usk Curlews had a very small home range.
- 5.683. A further illustration of this extreme site fidelity is the total absence of records of colour-ringed birds moving between these two wintering areas within the SPA. There has been just one sighting in April in Gloucestershire of an Usk-ringed bird (J.D. Sanders pers. comm), clearly a bird from the Usk on its way to some more northerly wintering ground.
- 5.684. The colour-ringing at Wibdon and the Usk also produced a series of re-sightings in summer, so that the breeding areas of some birds wintering on these parts of the SPA is well known. Some birds from Wibdon moved to breeding grounds only 40 or 50 kilometres upstream in the Severn Vales; some moved to other parts of England (one each in Oxfordshire and Suffolk, two on the Yorkshire Moors); at least three breed in The Netherlands and two in neighbouring areas of the Lower Rhine in Germany; and a strong contingent (not a surprise since this was the finding in recoveries of metal-ringed birds in the 1960s and 1970s) moved to Finland and Sweden. Once again, the Usk birds showed similar results, with recoveries in breeding grounds in eastern Poland and Finland. These colour-ringed birds demonstrated that Curlews are just as site-faithful to breeding as to wintering areas: year after year, the same individuals, recognisable by their individually marked sequence of colour rings, were found, for several years running, back in precisely the same breeding place.
- 5.685. There are two wintering flocks of Curlews in the Gloucestershire section of the SPA. The one, usually numbering of the order of 300 to 400 birds, winters in the area around the New Grounds and as far upriver as Rodley, moving a little way inland to feed on wet fields in the midst of winter; the other, in the lower basin between Lydney or Sharpness and the motorway bridges, is rather larger, and has generally numbered up to 1000 individuals. There is some interchange between the flocks (demonstrated by observations of colour-marked individuals) but it is not on a large scale.

#### Overview of status on inland wetlands in Severn and Avon Vales

- 5.686. Although the same individual Curlews may be involved, the status of Curlews in the Severn and Avon Vales is very different from that of Curlews in the SPA. In the Vales, the Curlew is almost exclusively a breeding summer visitor: the one exception to this rule is at Upton Warren where a

small and dwindling flock of up to a dozen or twenty birds winters from July to March/April; there were up to a hundred 20 years ago (J. Belsey pers. com.). Elsewhere, the first birds return to take up their territories in large hay fields from February onwards; in this early period they are often confronted by floodwaters and may sit at the edge of floods waiting for them to drop and reveal their nesting fields. Early in the season (February/March) they gather around pools at evening roosts (notably at Coombe Hill and Bredon's Hardwick Pits). They usually lay their eggs in April, chicks hatch in late May or early June, the young fledge in late June or July, and both adults and young have left by August; if nests fail or are predated, the adults may leave the area even earlier. Records of Curlews in the Vales between mid-August and late January are extremely few and far between. There is very high site fidelity to breeding sites, demonstrated by the observation of colour-ringed birds from the estuary.

- 5.687. Once again, the breeding Curlews of the Severn Vales have been well studied in recent years. From 2015 onwards a group of volunteers from the Gloucestershire Naturalists' Society began increasingly intensive studies aimed first at identifying and later at protecting breeding Curlews sites in the Vales, and were instrumental in establishing the Curlew Forum, following a workshop hosted by WWT at Slimbridge on World Wetlands Day (2 February 2017); the Worcester Curlew Group has been established and in 2019 WWT launched its Severn Vale Curlew Project, which included raising Curlew chicks from eggs rescued from eggs that would otherwise have been destroyed on East Anglian airfields ("head-starting") (Colwell *et al.* 2020).
- 5.688. These studies indicate that some 30-35 pairs of Curlews regularly attempt to nest in traditional hay meadows along the Severn and Avon north of Gloucester. Productivity is low, as nests are lost to habitat change, predation and early hay cutting. Much attention has been devoted to liaison with landowners and farmers, the vast majority of whom are strongly positive in their outlook to Curlews on their land and keen to develop ways of maintaining both breeding Curlews and agricultural productivity.
- 5.689. It is likely that small numbers of migrating Curlews on their way to breeding grounds further north make brief refuelling stopovers in the Severn and Avon Vales from late February to early April. It is not clear exactly how many birds act in this way - probably rather few, because GPS-tagged birds in other studies show that, once under way, Curlews move very rapidly; thus a Curlew marked by the Highland Ringing Group took only a couple of days to travel from the Moray Firth to Sweden (Bob Swann pers. com.).
- 5.690. Favoured sites for Curlew in the Severn and Avon Vales:
- There are few Curlew breeding sites south of Gloucester, though Curlews have nested on the Dumbles at Slimbridge in 2019 and 2020 for the first time in living memory.
  - Historically (fifty years ago) Curlews bred at Elmore Back and Walmore Common, and there have been breeding attempts at Walmore in the last few years. It is hoped that the birds head-started at Slimbridge may in the future re-colonise these sites and the area around Slimbridge.
  - From Gloucester north along the Severn to Tewkesbury, Curlews breed in riverside hay meadows, with strongpoints at Coombe Hill, Hasfield Ham and the Severn Ham. Coombe Hill is also important as a roost before the breeding season proper begins, and immediately after the breeding season, just before the birds depart for the estuary.

- Along the Severn north of Tewkesbury, Curlews continue to nest at a number of sites, notably Longdon Marsh and Upton Ham. But more riverside hay meadows have been converted into arable in Worcestershire than in Gloucestershire.
- The area with the highest number of breeding Curlews is in the hay meadows along the Avon from Tewkesbury to Eckington, with Fleet Lane on the Worcestershire (left) bank and Upham Meadow on the Gloucestershire (right) bank particularly important.
- Further up the Avon, breeding Curlews are still found at Asham, Lower Moor and Fladbury.

#### Counter interviews

- 5.691. Most of the work was carried out in the winter period, when Curlews are largely absent from the Severn Vales, so counters had few direct observations to offer, but agreed that Curlew is essentially absent from the Vales from August until January. Many of them had taken part in the surveys of breeding Curlews in the Vales over the last five years.

#### Ringling recoveries

- 5.692. There are two recoveries of metal-ringed birds in the Upton Warren wintering flock. One was a fledged juvenile ringed at a sugar beet lagoon at Walcot near Wellington (Shropshire) on 09/08/80 and recovered on 27/02/97; the second was ringed near Aberystwyth on 24/01/16 and recovered on 30/09/17. These Upton Warren recoveries hence show no indication whatsoever of movement between from the SPA.
- 5.693. There have been very few attempts to ring Curlews on their breeding grounds in the Vales. The BTO database holds a single recovery of a Worcestershire-ringed Curlew. Mist-netting of adult Curlews at evening pre-breeding season roosts in March has given good results in Montgomeryshire and Suffolk (A.V. Cross, S. Franks, pers. com.). Attempts of this kind in the Severn and Avon Vales have been made since 2018, as yet with little success because of spring flooding: a single spring adult has so far been colour-marked in the Vales. A very small number of chicks have been ringed when the opportunity arises; two were marked with metal rings in Gloucestershire in 2008, two with colour rings in south Worcestershire in 2018 and two more in Gloucestershire in 2019, and there may have been more, though overall numbers are very small indeed. In 2019 the 50 chicks “head-started” at Slimbridge were marked with individually numbered colour rings and released in the SPA at Slimbridge.
- 5.694. Three Curlews colour-marked on the SPA between 2010 and 2013 have been re-sighted in the Vales and demonstrate very clearly the links between the SPA and the Severn and Avon Vales. Detailed notes of their movements are provided below.
- 5.695. The first bird, particularly well documented, was ringed as a male at Wibdon on 26/09/2010 and has been re-sighted every winter since then in the immediate area of Wibdon, either at Guscar Rocks, Aylburton Warth or across the estuary near Oldbury (MS observations, J.D. Sanders pers. com.). This individual, recognisable by its colour rings (blue on the left tibia, two red rings on the right tibia) has also been seen on its breeding area almost every summer since ringing: either early in the season at pre-breeding roosts at Coombe Hill, on its presumed breeding field at Hasfield Ham or in post-breeding roosts at Coombe Hill. In many years this individual is back on the SPA near Wibdon by June or July; if its breeding effort fails it returns relatively early to the estuary. This bird then spends the period from July to September moulting on the estuary, feeds from October to January

on the estuary or in adjacent wet fields (often near Oldbury), returns to the Severn Vales in February where it joins evening roosts at Coombe Hill until mid- or late March, commuting the four or five miles to its preferred breeding field at Hasfield Ham where it remains (with occasional visits to the reserve pool at the GWT Ashleworth Ham for a wash and brush-up), until its chicks fledge or the nesting attempt fails.

- 5.696. The second individual, almost as well documented, was a female ringed (white on the left tibia, blue over yellow on the right tibia) at Wibdon on 27/09/2011. It too has been re-sighted in the Wibdon area every winter since 2011/12. It normally joins other Curlews at the moulting area from July to September, then moves a few miles upstream for the winter to **wet fields** near Blueboys Farm, Rodley (NGR SO742110, referred to as Area 15401\_7 in Phase 4). In summer it has been observed most years at Upham Meadow, where it clearly breeds. In 2019 it surprised observers by moving from Upham Meadow first to Fleet Lane, then to Coombe Hill where it was seen from 05/04/2019 to 24/06/2019 with a mate, and was presumed to have attempted to breed, almost certainly unsuccessfully; it was back on the estuary on 02/07/2019. Thus the pattern for this individual is similar to that of the preceding bird: moulting on the SPA, wintering on inland fields by the estuary, breeding normally at Upham, though with a move in one year to Coombe Hill.
- 5.697. Movements of the third colour-ringed bird from Wibdon follow the same pattern, though the number of observations is smaller. It was ringed as a female at Wibdon (blue on left tibia, yellow over red on right tibia) on 26/09/2010 and was observed on the estuary every winter from 2010/11 until 2015/16; it has not been seen on the estuary since January 2016 (despite intensive observation) and, given the known site fidelity of these birds, is presumed to be dead. It was observed twice in April 2014 at Bow Farm (Ripple Lakes) Lake, then (in the following breeding season) once in March 2015 at Queenhill Rough, a traditional breeding site immediately across the Severn from Bow Farm (Ripple Lakes); it was seen again at Bow Farm (Ripple Lakes) twice in May of the same year. This female thus nests at Queenhill, flying across the river to drink and preen at Bow Farm (Ripple Lakes), and winters in the Wibdon area of the SPA; hence another confirmation of a Curlew moving between the SPA in winter and the Severn and Avon Vales in the breeding season.
- 5.698. It seems highly likely that the other 30 to 35 pairs which attempt most years to nest in the Severn Vales make similar movements between the SPA in winter and the Vales in the breeding season.
- 5.699. There are as yet few recoveries of birds ringed as chicks in the vales. Young Curlews are thought to spend their first year at a coastal site and to return to breed only when they are at least two years old. Of the two chicks colour-ringed in Worcestershire in June 2018, one was observed on the Camel estuary in Cornwall in April and May 2019, and was then re-sighted in March 2020 on the Solent. Of the head-started birds released at Slimbridge in 2019, most joined the wild Curlews wintering in the Slimbridge area, but a few were observed further down the Severn estuary, at Guscar and Oldbury, the furthest at Newport Wetlands. One bird was observed in winter 2019 on the Exe estuary. Plans are in hand for further monitoring of these birds to register their return to Slimbridge and to other breeding sites in the area.

#### Summary findings of fieldwork carried out in 2019/20

- 5.700. As noted above, most of the fieldwork was carried out in the period when most Curlews are still in the SPA, but the last two months of fieldwork in February and March did produce a number of early records of Curlews, often on their territories submerged by deep flooding. The first two observed on floodwater at Elmore Marsh on 17 February were perhaps passing migrants. Birds were at Wilmore

(up to nine in late February and early March, perhaps birds from the estuary, still wintering) and Walmore (three on 25 February). Other early records were at Upton (two birds, first on 23 February), Longdon Marsh (three in heavy flooding on 27<sup>th</sup> February), Severn Ham (first on 8 March). At Ashleworth heavy flooding meant the normal breeding areas were under deep water for a long period, so that Curlews could not alight and sat some way off on the flood-bank, still just emerging from the flood. Similar conditions occurred at Upham Meadow, where in late February, up to 30 Curlews gathered by day on the Avon flood-bank; this must have represented the majority of local breeding Curlews.

#### Synthesis of findings for Curlew

5.701. The following synthesis summarises the evidence for Curlew movements between the SPA and upstream sites in the Severn and Avon Vales, as well as between sites.

5.702. Severn upstream of the SPA to Gloucester:

- Small numbers of Curlew winter north of the SPA, mainly near Blueboys Farm, Rodley, where they feed on wet fields. These sites fall within the area covered under Phase 4 of the work on high tide roosts;
- Curlews are rarely found wintering upstream of the area covered by Phase 4;
- Curlews have recently reappeared as attempted breeders at Walmore and may perhaps spread further in future as head-started birds from Slimbridge return to their release area

5.703. Severn upstream of Gloucester:

- A small group of Curlews still winters at Upton Warren; this flock appears from ringing recoveries to originate in sites further to the north in Wales or perhaps Staffordshire or Shropshire;
- Elsewhere in the Severn Vale, Curlews are almost entirely absent in winter;
- About 15 pairs of Curlews nest in hay meadows along the Severn between Gloucester and Worcester. Remarkably, this population seems to have remained stable for the last 40 years, probably because there has been little change in farming methods, at least in Gloucestershire.
- There are very strong indications through colour ringing that Curlews nesting in the Severn Vale winter in the SPA.

5.704. Along the Avon:

- Some 20 pairs of Curlews nest in hay meadows along the Avon north of Tewkesbury. This population too remains fairly stable.
- In the Avon too there are very strong indications that nesting Curlews winter in the SPA.

5.705. Known and implied movements of Curlew are illustrated on Maps 18-20 in Appendix 1.

#### Conclusions

5.706. The current nesting population of 30-35 pairs of Curlews in the Severn and Avon Vales is a major component of the lowland English breeding population (estimated not to number more than 300 pairs south of Birmingham).

- 5.707. There is very strong evidence of movements of these birds between the SPA and the Vales.
- 5.708. Conservation of this breeding population depends on maintaining current farming practices, and hence on close cooperation with the farming community and (hopefully in the future) on payments to farmers who encourage nesting Curlews on their land.
- 5.709. Campaigns to alert the public to the importance of this population are also needed, especially in heavily used sites like Upton or Tewkesbury Hams.
- 5.710. The current projects on monitoring and conservation of breeding Curlews, carried out by WWT and volunteer groups in the Severn Vales, should continue for the next five years, since these projects are helping to provide a blueprint for conservation of breeding Curlews elsewhere in lowland England.
- 5.711. As part of this monitoring, ringing on the breeding grounds should continue, involving colour-ringing (and, if possible, GPS-tagging) of both breeding adults and chicks.
- 5.712. Observation of colour-ringed birds in winter throughout the SPA is a vital contribution to this monitoring and should continue.
- 5.713. Additional Curlews should be cannon-netted in the SPA so that studies of survival can continue. Any Curlews caught should be marked with colour-rings and where possible with GPS tags.

#### **Evidence of movement of non-SPA species not so far covered**

- 5.714. Proven movements of non-SPA listed Interest Species that have not so far been covered are restricted to three records, as follows:
- A Long-billed Dowitcher (*Limnodromus scolopaceus*), a vagrant from North America, has been recorded moving between WWT Slimbridge and Walmore Common;
  - A Ferruginous x Pochard hybrid (*Aythya nyroca* x *A. ferina*) and a Ring-necked Duck (*Aythya collaris*), another North American vagrant, have been noted moving between WWT Slimbridge and Frampton Pools.

## 6.0 Site descriptions and evaluation

### Overview

- 6.1. The following site accounts give an overview of current site conditions (i.e. why the sites do or do not have significant interest for wetland birds), as well as historic conditions (i.e. how the sites have changed for better or for worse) if relevant, as well as an assessment of importance in terms of the criteria set out below:

### ***National and International Importance***

- 6.2. Criteria for assessment of site importance that are used are derived from the following (as given in Frost *et. al.* 2020, but with additional comment as foot noted):
- To qualify as internationally important under criteria set by the Ramsar Convention and the EU Birds Directive, a site must regularly hold 1% of the estimated global population of a species, or of a discrete wintering population of a species.
  - To qualify as nationally important, a site must regularly hold 1% or more of the estimated British numbers of one species or subspecies of waterbird<sup>40</sup>. The assessment of this is done on the basis of 5 year mean peak numbers, the latest of which covers the period 2014-19.

### ***Potential importance to the Severn Estuary SPA***

- 6.3. Known and implied movements of individual birds of individual species (therefore indicating likely Functional Linkage) between the SPA and the sites under consideration is presented in Section 4 above. For many species, the evidence for linkage is not compelling or is absent. For some species (notably Wigeon), there is evidence that implies a lack of linkage, whereas for others (notably Pintail) the origins of large numbers that periodically appear remains under question.
- 6.4. In this section, the potential importance of sites under consideration is assessed against numbers of birds currently found within the SPA. In the absence of evidence to the contrary, this provides a measure of importance if sites are subsequently proven beyond doubt to be Functionally Linked to the SPA (see Recommendations section of this report for how this could be achieved). The criteria chosen for this assessment, as previously outlined in Section 3 of this report, were:
- Numbers (monthly maxima) of at least one Interest Species met or exceeded the equivalent of 1% of the SPA population for that species (as indicated by the most recent 5 year rolling Mean Peak estimates provided in the latest Wetland Birds in the UK Report) at least once in the last 10 years.
- and/or:
- The sites provided breeding habitat for SPA Interest Species within the last 10 years.
- 6.5. A more detailed evaluation of potential value to the SPA is also provided, using the calculations outlined in Section 4, sub-section *Site description and evaluation* of this report.

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<sup>40</sup> e.g. the NW European wintering population of a species if distinct and separate wintering populations are known to occur. This applies, for instance, to Pintail.

## 15014 Horsbere Brook Flood Alleviation Area

### **Location and size**

- 6.6. The approximate centre of this site is at SO866188. The WeBS counting area is approximately 5.1ha in extent. There is also an area of higher ground in the northern sector, with some rushes, which also attract Snipe.

### **History**

- 6.7. This site was created from farmland in 2011 by the Environment Agency as a flood relief project for Longlevens, following flooding in 2007. Prior to this it was not a wetland. The site is managed by Gloucester City Council, whose wardens manage the site, with the support of a volunteer group "Friends of Horsbere". In its early years, the site was open with little aquatic vegetation, but vegetation has developed over much of the water surface, with extensive Typha beds now growing.

### **Water levels and flooding**

- 6.8. This flood alleviation area is a large basin intended to act as a receptor area for flood waters that otherwise would threaten houses in areas adjacent to the Horsbere Brook. In normal flow conditions, the base of the excavated area remains wet, as is evidenced by the thick growth of emergent plants. During high flows, the basin will fill to a capacity of some 17000 cubic metres and at the point of overflowing would be up to 3-4m deep (estimated).

### Water and flood conditions in winter 2019/20

- 6.9. Winter 2019/20, although it was extremely wet, appears not to have provoked any overflow from the Horsbere Brook into the storage area. The massive summer flooding in 2007 was caused by very local heavy rainfall, which caused the Brook to break its banks. Flooding in the Severn Vale in winter 2019/20 was caused not by local rainfall in the Horsbere catchment, but mainly by rain higher in the Severn catchment in North Wales and the Midlands.

### **Site coverage**

- 6.10. The site has been counted under the WeBS scheme since 2016 but formal counts have been restricted to the winter season. However, there are other count data available.

### Accuracy of the counts

- 6.11. There is full access to this site but in times of low water level it is likely that skulking species such as Snipe and Teal could be under-counted.

### **Current importance of the site to SPA species and other notable wetland birds**

- 6.12. Winter (November-March): Small numbers of wintering ducks occur: Wigeon (frequent, maximum 12; Gadwall (occasional, maximum two); Teal (frequent, maximum 14); Shoveler (occasional, maximum four) Snipe may occur in considerable numbers (up to 50), sometimes preferring the higher *Juncus* area, with the occasional Jack Snipe.
- 6.13. Spring (April-June): In the early years, Little Ringed Plover nested, but they have not done so for the last three or four years. Mallard, Little Grebe, Coot, Moorhen and Water Rail all appear to breed in the thicker vegetation. The occasional migrant wader (mainly Common Sandpiper) occurs in

spring.

- 6.14. Autumn (July-October): Among migrant waders, Common Sandpiper is regular in very small numbers, with occasional records of the odd Black-tailed Godwit and Greenshank.

***Bird movement between the site and the SPA***

- 6.15. There have been no definite recorded bird movements between this site and the SPA; it does, however, attract small numbers of migrant waders, mainly in autumn but with a few in spring, which must be travelling to and from the SPA.

***Connectivity between this and other non-SPA sites***

- 6.16. There has been no definite recorded bird movement between this site and any other non-SPA site within the study area.

***Current condition of the site***

- 6.17. In normal flow conditions, the site provides a valuable additional area of emergent vegetation and shallow open water that is generally lacking in this part of the catchment. It remains wet in autumn, when most other Gloucestershire Vale wetlands have dried out.

***Disturbance issues***

- 6.18. It is likely that dog walkers and casual visitors do cause disturbance, because access is possible (albeit not specifically authorised) all the way around the basin. The wetland area is however fenced off, so there is little indication that disturbance is a particular problem here.

***Opportunities for enhancement***

- 6.19. Given that the site serves a specific function in terms of flood relief, and that it is likely to be maintained in its current condition for the foreseeable future, no specific opportunities for enhancement have been identified.

***Site evaluation against the 1% SPA population criterion***

- 6.20. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Horsbere Brook is of only moderate or low importance to a small number of species. However, it is considered likely that numbers of Snipe could regularly reach or exceed the 1% SPA population threshold (which is only 5 birds) and go un-noticed.

**Table 5.1 – Summary of site evaluation for Horsbere Brook Flood Alleviation Area against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	<1%	<1%	<1%
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	none	none	none
Shoveler	<1%	<1%	<1%	Black-tailed Godwit	<1%	<1%	<1%
Gadwall	<1%	<1%	low	Turnstone	none	none	none
Wigeon	<1%	<1%	<1%	Knot	none	none	none
Mallard	mod	mod	low	Ruff	none	none	none
Pintail	<1%	<1%	<1%	Dunlin	<1%	<1%	<1%
Teal	<1%	<1%	<1%	Snipe	<1%	mod	<1%
Pochard	<1%	low	<1%	Redshank	<1%	<1%	<1%
Tufted Duck	<1%	<1%	<1%	Spotted Redshank	none	none	none
Lapwing	<1%	<1%	<1%				

## 15037 Alney Island

### **Location and size**

- 6.21. The approximate centre of this site is at SO820188 and it covers an area of 58ha. Alney Island is an area of floodplain between the two arms of the Severn immediately west of Gloucester, which re-join at the southern end of the site at Lower Parting (SO186188). It is contiguous with Maisemore Ham, which forms the northern and larger part of the island from Upper Parting (SO 822216) southwards. Just across the Severn from Lower Parting are Over and Minsterworth Ham, covered in a separate site description.

### **History**

- 6.22. Alney Island is separated from Maisemore Ham by the A40 trunk road and the main railway line to South Wales, which cross the Severn near Telford's Bridge at Over.
- 6.23. Alney Island has always been closely associated with the city of Gloucester and widely used by its citizens. For many years (into the late 20th century) it was the site of the annual autumn Barton Fair.
- 6.24. Old pictures show the site as a meadow crossed by a road leading to Westgate Bridge, the western entry to the city. The city's main electricity substation is on the island at Castlemeads, and the railway lines which used to supply it with coal, coming from the nearby docks, are still visible; the

substation had to be closed in summer 2007, when it was in danger of being overwhelmed by floodwater, and was almost closed again by heavy flooding in February 2014.

- 6.25. The site is now crossed by the city's western bypass, opened in 2003, and is criss-crossed by a series of major footpaths including the Severn Way. There is also a rugby pitch.
- 6.26. At the end of the 20th century it was decided to develop the site as an amenity for local people, and a Local Nature Reserve was established, managed by the City Council, with a staff of wardens. Parts of the site had always been known for their wildlife interest, in particular the botany of some of the low-lying pools, and the hay meadow on the eastern side which has spectacular stands of Corky-fruited Water Dropwort (*Oenanthe pimpinelloides*). The botany has been well studied, and a description of the flora is being prepared for publication by the Gloucestershire Naturalists' Society (Mark and Clare Kitchen, pers. comm.). The pool at Port Ham has a large mass of Reedmace (*Typha* spp.) and on the eastern side of the site there is an area of permanent water at Castlemeads. There are one or two stands of taller trees, generally on the higher ground, with some willow pollards. Parts of the site are grazed by cattle of the Gloucester breed.
- 6.27. The Ecoscope report does not mention Alney Island.

### ***Water levels and flooding***

- 6.28. The whole site is liable to flooding if the Severn is high, mainly in winter, and in many ways protects the city from flooding; in late summer the pools and ditches tend to dry out, though the pool at Port Ham (SO812180) usually remains damp throughout the summer.

### Water and flood conditions in winter 2019/20

- 6.29. Winter 2019/20 being a particularly wet winter, the site was affected by regular flood episodes from September until March. As a result, rather more attention than usual was perhaps paid to the waterbirds occurring there.

### ***Site Coverage***

- 6.30. The Alney Island WeBS site has only recently been established (largely because of the present study), so there is no long history of WeBS counts here. Local observers have however surveyed the site for some time, noting regular occurrences of surface-feeding ducks in time of flood at Port Ham and Castlemeads.

### Accuracy of the counts

- 6.31. The counts are accurate as long as flooding is not too deep. At times of high flooding, the whole area is inaccessible, and counts may be underestimates because three of the most frequent species (Teal, Gadwall and Shoveler) all tend to skulk in thick vegetation, where they are difficult to see.

### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.32. Winter (November-March): The major interest of the site is for ducks, especially Teal, Gadwall and Shoveler, all of which are attracted to the shallow water-bodies with variable amounts of Willow scrub in and around them. Gadwall have regularly been recorded in small groups in winter, with a maximum of 11 in January 2020. Of species contributing to the SPA assemblage; Mallard are generally present in winter but in no great numbers (maximum 34 in March 2014); Pintail have not

been recorded; Teal is the most frequently recorded duck at Alney Island, no doubt because the rather overgrown waters meet its feeding requirements – winter counts have often been over 50 in the last ten years, and there were counts of 150 and 200 in January 2000; Shoveler have regularly been observed in small numbers in the past, but counts in January and February 2020 were rather higher with peaks of 42 in January; Wigeon is rarely recorded at Alney Island in winter, just one record of a single bird in January 2020. There is one March record of three Tufted Ducks, but no winter records of Pochard. Among waders Snipe (one of the species mentioned in the SSSI listings for the Severn Estuary and Upper Severn) is a frequent winter visitor, with numbers occasionally in double figures. Peak counts are of 40 (January 2013), 30 (December 2002 and March 2008). There are occasional records of one or two Jack Snipe. Up to three or four Green Sandpipers are recorded in winter. Water Rails are frequently recorded.

- 6.33. Spring (April-June): Of SPA qualifying species, up to three Shelduck were recorded from 2005 to 2010 but not since, usually from March to May, and it is not inconceivable that they might try to nest. Of species contributing to the SPA assemblage, Mallard are present through the summer and no doubt nest; the occasional wintering Teal stay into April. Tufted Ducks are occasionally noted in summer and breeding has occurred: a female with three ducklings was found in August 2008. Wader records are few and far between but up to two or three Common Sandpipers are regularly recorded on northward passage in April and May. Water Rail no doubt breed in ditches and areas of thicker vegetation, as they are frequently reported. Little Egrets are frequently recorded in summer, though they do not breed.
- 6.34. Autumn (July-October): The site generally dries out in this period, except for the Pool at Port Ham, where the odd Teal has been recorded in September. Green Sandpipers occur, as at many other inland sites, from June to August, usually a maximum of three to four birds. Of other migrant waders, Common Sandpipers are recorded on return passage in autumn, but few other waders are seen.

#### ***Bird movement between the site and the SPA***

- 6.35. There is no direct evidence (e.g. from ringing) of movements between the SPA and Alney Island. It seems likely that such exchanges do occur, given that the site is only a short distance from Minsterworth Ham, where birds from the SPA seem to come to feed at night, particularly in the case of Teal, which are known (from observations by wildfowlers) to leave the estuary in numbers in the evenings. It appears likely that, as long as there is enough water for them, this species, once arrived, might stay on site for some time. Gadwall seem to wander throughout the Vales in winter, and birds observed there in winter may well have come from the SPA.

#### ***Connectivity between this and other non-SPA sites***

- 6.36. It is very likely that there are links between Alney Island and other sites nearby, notably Minsterworth and Maisemore Hams, though there is no empirical evidence for such movements.

#### ***Current condition of the site***

- 6.37. The site is under regular management by staff of the Gloucester City Council. The site is grazed by Gloucester cattle to maintain optimum sward condition to maximise botanical interest, while hay making is timed to maintain the Water-Dropwort.

***Disturbance issues***

- 6.38. Given that it is essentially an amenity site for public recreation, there is naturally considerable disturbance in this area from visitors, particularly dog-walkers; a cycle path also crosses the site. However, the wetland areas remain in a fairly undisturbed state, and in time of flood the whole area is largely inaccessible to people so is undisturbed.

***Opportunities for enhancement***

- 6.39. It has been indicated by the managers of the site that creation of scrapes for the benefit of wading birds is highly desirable (Ian Elphick, pers. comm<sup>41</sup>).

***Site evaluation against the 1% SPA population criterion***

- 6.40. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Alney Island is of only moderate or low importance to a small number of dabbling ducks and Snipe. However, there is poor coverage of this site and it was only adopted as a WeBS site in January 2020. It is considered likely that the importance of the site in winter for Shoveler, Gadwall, Mallard and particularly Teal will become apparent in the course of time. Continuing caution will need to be exercised for this site because there is a large area of reedbed habitat where an accurate count of all species is only possible if the birds flush during the count. On all survey visits in 2019/20 it appeared that large numbers of Teal were present in this area. These were heard but could not be counted.
- 6.41. The usual caveats for Snipe under-counting apply particularly to this site, where much larger numbers than can reasonably be counted from publicly accessible areas are likely to be present in winter.

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<sup>41</sup> Countryside Management Officer, Gloucester City Council

**Table 5.2– Summary of site evaluation for Alney Island against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	none	none	none	Curlew	none	none	none
Shoveler	<1%	low	low	Black-tailed Godwit	none	none	none
Gadwall	<1%	low	low	Turnstone	none	none	none
Wigeon	<1%	<1%	<1%	Knot	none	none	none
Mallard	<1%	low	<1%	Ruff	none	none	none
Pintail	none	none	none	Dunlin	none	none	none
Teal	<1%	mod	<1%	Snipe	<1%	low	<1%
Pochard	none	none	none	Redshank	none	none	none
Tufted Duck	none	none	none	Spotted Redshank	none	none	none
Lapwing	<1%	<1%	<1%				

## 15101 Witcombe Reservoir

### **Location and size**

- 6.42. The approximate centre of this site is at SO904149. The three reservoirs that make up this site cover approximately 15ha.

### **Water levels and flooding**

- 6.43. The water levels of the three reservoirs are relatively constant during winter but are likely to experience drawdown in dry springs and summer.

### Water and flood conditions in winter 2019/20

- 6.44. The reservoirs were at capacity throughout winter 2019/20.

### **Site coverage**

- 6.45. This has been a WeBS counted site since 1974, with counts largely uninterrupted, but mainly only during the winter months.

### Accuracy of the counts

- 6.46. Access to the Reservoir is good, although the south-eastern end of the largest waterbody is not easily viewable from the public footpath, so there may be a minor under-count of wetland birds.

### **History**

- 6.47. The first two reservoirs were constructed in 1863, with the third completed by 1870<sup>42</sup>. Whether or not banks were reinforced at that time or if this was a later development is not clear, but it is likely that the site has been in its current conditions for many years.

### **Current importance of the site to SPA species and other notable wetland birds**

- 6.48. Winter (November-March): small numbers of dabbling and diving ducks listed as Interest Species occur on the Reservoir in winter, including Shoveler, Gadwall, Wigeon, Mallard, Teal, Tufted Duck and Pochard. Snipe have been recorded too, but in only one month in one year. Numbers concerned are low for all species and occurrence seems to be intermittent.
- 6.49. Very low numbers of Lapwing and a single Golden Plover have been recorded in winter. Also present are Great Crested Grebe, Mute Swan and feral geese.
- 6.50. Spring (April-June): Interest species noted on spring passage at Witcombe have included Dunlin and Redshank. Tufted Duck are present during this period and it is likely that they breed here.
- 6.51. Shelduck have only been recorded on three occasions in the last 10 years, with two of the dates given likely to be sufficiently close together that the records refer to the same two birds.
- 6.52. Autumn (July-October): Interest species noted on autumn passage have included Dunlin, Snipe and Redshank.

### **Bird movement between the site and the SPA**

- 6.53. There have been no definite recorded bird movements between this site and the SPA.

### **Connectivity between this and other non-SPA sites**

- 6.54. There has been no definite recorded bird movement between this site and any other non-SPA site within the study area.

### **Current condition of the site**

- 6.55. The banks of the largest and southernmost of the reservoirs are, with the exception of the embankment at the north end, semi-natural in character, with extensive tree cover to the water's edge and small areas of emergent vegetation. The other two reservoirs are largely devoid of vegetation, although there is a thin strip of emergent plants around the reservoir located at the north-west side of the site.

### **Disturbance issues**

- 6.56. The best bankside habitat for wetland birds and other wildlife appears to be relatively undisturbed, although the site is a trout fishery and the locations of regularly used fishing platforms and other access points were not obvious from the single site visit made during 2019/20.

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<sup>42</sup> <https://www.british-history.ac.uk/vch/glos/vol4/pp262-269>

**Opportunities for enhancement**

6.57. Given its operational requirements to supply drinking water, enhancement of the site for wetland birds may be severely limited. However, there may be opportunities to provide (for instance) floating rafts of emergent vegetation for the benefit of nesting birds.

**Site evaluation against the 1% SPA population criterion**

6.58. The assessment of this site’s importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Witcombe Reservoir is of high importance to Mallard in autumn and Tufted Duck in all seasons.

6.59. All other SPA Interest species, if present, are represented by numbers not meeting or exceeding the 1% threshold.

Table 5.3 – Summary of site evaluation for Witcombe Reservoir against the 1% SPA population threshold

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	<1%	<1%	<1%
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	none	none	none
Shoveler	<1%	low	<1%	Black-tailed Godwit	none	none	none
Gadwall	<1%	low	<1%	Turnstone	none	none	none
Wigeon	<1%	<1%	<1%	Knot	none	none	none
Mallard	high	mod	low	Ruff	none	none	none
Pintail	none	none	none	Dunlin	<1%	<1%	<1%
Teal	<1%	<1%	<1%	Snipe	<1%	<1%	<1%
Pochard	low	low	<1%	Redshank	<1%	<1%	<1%
Tufted Duck	high	high	high	Spotted Redshank	none	none	none
Lapwing	<1%	<1%	<1%				

## 15201 Frampton Pools

### **Location and size**

- 6.60. The approximate centre of this site is at SO753072 and it covers approximately 57ha.
- 6.61. Frampton Pools comprise a varied series of water bodies, divided between what are now referred to as Court Lake and Townfield Lake. These are former gravel pits, with Court Lake partly surrounded by woodland and Townfield Lake fringed by Willow and small areas of open ground, with arable land and horse paddocks surrounding the lake. These lakes are on the edge of Frampton-on-Severn and belong to Frampton Court Estate, which lets out sailing (Townfield) and fishing (both lakes). The site is around 1.5km from the Severn estuary, about three kilometres north-east of the Slimbridge centre of the Wetlands and Wildfowl Trust but much closer (less than 1km) to the peripheral areas of the Reserve.

### **History**

- 6.62. Frampton Court is an estate of about 610ha, encompassing areas of estuary foreshore (WeBS counting area 15414 Frampton Realignment), farmland and the lakes. Gravel was extracted between Frampton Court and the A38 from about the 1950s until the 1980s. Since then the remaining pools, known as Court Lake and Townfield Lake, have become a popular bird-watching location, visited mainly by local birdwatchers but it is certainly known about further afield. WeBS counts have been carried out there from public footpaths through the grounds, with an almost unbroken run of mainly winter counts since 1960. Gravel was also excavated near the A38 at Cullimore's Gravel Pit (WeBS site 15202 at SO767066, counts from 1961 to 1964), now filled in and abandoned as a WeBS site.
- 6.63. The pools were declared an SSSI under the 1949 National Parks and Access to the Countryside Act in 1974 and re-notified under the 1981 Wildlife and Countryside Act in 1984. The citation includes the following text: *"A good example of open water habitat in the Severn Vale. The site comprises a number of lakes formed as a result of gravel extraction. Particular features of interest are the developing fauna and flora of the disused gravel pits. The site is of local importance for wintering wildfowl. Most of the site consists of nutrient rich (eutrophic) standing water, surrounded by broadleaved woodland, scrub and other marginal vegetation. The water contains a diverse range of aquatic plants and invertebrates and is stocked with coarse fish. Dragonflies are particularly abundant....The lakes are frequented in winter by large numbers of Mallard *Anas platyrhynchos*, Teal *A. crecca*, Shoveler *A. clypeata*, Pochard *Aythya ferina*, Tufted Duck *A. fuligula* and Pintail *Anas acuta*. Rarer species such as Smew *Mergus albellus* and Scaup *Aythya marila* may also be seen. Tufted Duck and Mallard also breed on the site, as do Great Crested Grebe *Podiceps cristatus*...."*
- 6.64. The northern part of the site is bordered by the B4071 Perry Way which links the main A38 trunk road to the village of Frampton on Severn; this northern sector faces the main house and, to the east, rather shallower waters (which used to be called the "Blue Pool") are attractive to surface-feeding ducks. The southern part of the SSSI includes the Sailing Club Lake, which is rather more open, and is often more attractive nowadays to diving ducks. The proximity to the WWT centre at Slimbridge means that there are likely to be considerable and regular exchanges of birds between Slimbridge and Frampton Pools.

### **Water levels and flooding**

- 6.65. Environment Agency flood maps<sup>43</sup> show that the Pools lie between the floodplains of the Severn and the River Frome, a tributary of the main river that flows from the Cotswolds through Stroud and on to Whitminster, just under 1km to the north of the Pools and discharging to the Severn at Framilode. The pools are fed from ground water that must percolate relatively freely between these floodplains, as well as accepting surface water runoff from higher ground to the east. Nevertheless, levels generally remain stable, with little fluctuation. However, the effect of drainage from the lakes is felt elsewhere. In periods of prolonged and heavy rainfall high water levels elsewhere in the parish, particularly at an area known as “The Narls” (centred at SO743072) can occur, with excess water from the lakes diverted to ditches feeding, ultimately, to the Severn. These flow in culverts under the Gloucester and Sharpness Canal to washlands adjacent to the estuary and then on to Frampton Pill, which forms the boundary between the SPA and the non-SPA river floodplain.
- 6.66. During drought conditions the lakes do drop in level, creating small areas of exposed mud and gravel, largely within Court Lake, where the lake topography is more variable. In these conditions, almost exclusively in summer, blooms of blue-green algae can cause problems, although there are aerators in Court Lake installed by the fishing syndicate to re-oxygenate water if necessary.

#### Water and flood conditions in winter 2019/20

- 6.67. Winter 2019/20 was typical for this site, with little flooding of note occurring adjacent to the lakes, which remained stable. This is likely to be a reflection of the efficiency of the drainage for these lakes, as described above.

### **Site coverage**

- 6.68. The site is well watched both as a WeBS counting site and by recreational birdwatchers. Notable amongst these is Mr. Nick Goatman, who visits the Pools daily. Site coverage is therefore extremely good.

#### Accuracy of the counts

- 6.69. The counts have been carried out by the same group of observers over a long period, and are considered to be accurate.
- 6.70. There are few impediments to counting at the Pools, although at Court Lake, the observer needs to walk the length of the lake to get a full count whilst at Townfield Lake, an area known as the Blue Pool is only fully viewable by leaving public rights of way, so the permission of the Estate to do this is required (and has been historically granted to the current WeBS counter).
- 6.71. Counts can vary considerably according to whether or not sailing is taking place on Townfield Lake and if fishing on Court Lake is being done from boat(s), as occasionally is practiced. Such sources of disturbance will influence the species assemblage and number of water birds present.

### **Current importance of site to SPA species**

- 6.72. Winter (November-March): Of qualifying ducks for the SPA, Shelduck only occur in very small numbers (recent maximum three), undoubtedly birds from the estuary. On the other hand the habitat

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<sup>43</sup> <https://flood-map-for-planning.service.gov.uk/confirm-location?easting=374937&northing=208515&placeOrPostcode=gl2%207hg>

is very suitable for Gadwall, where counts occasionally exceed 100 (recent maxima of 184 in November 2011, 170 in November 2015, 112 in December 2017).

- 6.73. Few of the other surface-feeding ducks which contribute to the SPA or SSSI assemblages occur in any numbers at Frampton Pools, basically because the habitat is not really suitable and there are many other more favourable sites in the immediate vicinity near the estuary: Wigeon counts do not exceed 100, while Pintail are unusual (maximum recent count of three); Teal and Shoveler which both favour overgrown, secluded sites fare rather better: for both species, numbers have once or twice topped 100, though counts of up to 50 are the norm.
- 6.74. The deeper waters do however attract good numbers of diving ducks, not just those which make up the SPA and SSSI assemblages like Pochard and Tufted Duck, but also small numbers of rarer species, including Scaup and Smew (maximum for each four), Ring-necked Duck (one in 1988), Lesser Scaup (one in 2008), Red-breasted Merganser, Goosander, Goldeneye (old records of up to ten), Common Scoter and even Velvet Scoter (one in 1989) and Long-tailed Duck; nowadays these rarer species occur more frequently in the Cotswold Water Park.
- 6.75. Numbers of Pochard are larger, though there has been a decrease: there were counts of 300 or more from the 1950s to the 1970s (maximum of 750 in January 1979, Kirk and Phillips, 2013), but counts have not reached 30 since 2010; this may be partly because Pochard concentrate in larger numbers at Slimbridge, especially on the Rushy Pen; but a much more important reason for lower numbers is thought to be the development of new habitat at the Cotswold Water Park where Pochard occur in hundreds if not thousands. At Frampton winter counts of Tufted Duck regularly exceed 150 with maxima of 253 in February 2017, 277 in February 2011; but for this species too, the Cotswold Water Park has become a very important site with four figure totals since the 1970s (Kirk and Phillips, 2013).
- 6.76. Frampton Pools are not an important site for wintering waders, given that the pools are to a large extent steep-sided and that more suitable habitat is available to them on the estuary. Flocks of Lapwings, generally of less than 100 birds but with very occasional flocks in three figures (maximum of 220 in January 2006) occasionally come in from the estuary. Snipe also winter in small numbers, although counts are difficult to carry out with any accuracy because of the skulking nature of this species but also because roosting sites are probably restricted to the small reedbed at the back of Court Lake (at NGR SO756075) which is relatively distant from any vantage point available to observers. Feeding areas during all but the driest conditions are available within fields around the Pools, including a capped landfill site to the south east side. The extent of use of these areas by Snipe is, however, unknown.
- 6.77. Whooper Swans occasionally occur at the pools, usually in ones and twos, sometimes birds coming in to roost, after grazing in the surrounding area.
- 6.78. In the winter there is often a roost (in the trees on the islands) of Cormorants, which may be joined by herons and egrets of up to three species - Little, Great and Cattle.
- 6.79. Spring (April-June): The first breeding record of Gadwall in Gloucestershire away from Slimbridge occurred here in 1956 (Kirk and Phillips, 2013) and they may well continue to nest, though there are few definite records of breeding and relatively few summer records. Mallard of course also breed. Breeding of Tufted Duck was first confirmed at Frampton in 1959, and several pairs continue

to breed there (Kirk and Phillips, 2013). In the early days of its spread from Slimbridge in the 1960s, Ruddy Duck occurred and bred from 1962.

- 6.80. Small numbers of migrant waders are noted in spring, often overflying birds like Whimbrel coming from the estuary. At this time, passage of Common Sandpiper is often notable.
- 6.81. Autumn (July-October): The build-up in wintering ducks usually begins in late summer. Some migrant waders occur, particularly Green Sandpiper and the occasional Greenshank.

#### ***Bird movement between the site and the SPA***

- 6.82. With the proximity of the SPA to Frampton Pools there are clearly regular exchanges, particularly of Pochard and Tufted Duck moving from the pools at Slimbridge to those at Frampton; flocks are often seen flying back and forth.
- 6.83. There are relatively few ringing recoveries from Slimbridge to Frampton, largely because there is no duck shooting on Frampton Pools. There are five recoveries of Mallard from Slimbridge to Frampton Pools, three of Gadwall, one each of Pintail, Tufted Duck and Pochard.
- 6.84. Some shooting used to take place in the 1980s at nearby Nastfield Farm, and there are a number of ringing recoveries from Slimbridge: one each of Wigeon, Teal and Gadwall, six Mallard, five Pintail, and two Shoveler.

#### ***Connectivity between this and other non-SPA sites***

- 6.85. There are no known documented examples of connectivity between this site and others under consideration within this study.

#### ***Current condition of the site***

- 6.86. The SSSI condition assessment states that the site is in “unfavourable” condition, with 20.68ha considered subject to “no change” and the rest “declining”<sup>44</sup>. This assessment is not in relation to the ornithological value of the site, which is not mentioned.
- 6.87. Notwithstanding the assessment criteria for the SSSI, the site remains host to large numbers of wintering wildfowl, although a general decline in numbers has been noted (N. Goatman, pers. com.).

#### ***Disturbance issues***

- 6.88. As noted above, fishing on Court Lake and sailing on Townfield Lake are the main sources of disturbance and are clearly tolerated by wintering birds, which do have alternative waterbodies to evacuate to if necessary – either from one lake to another or across to WWT Slimbridge. The nearest winter flooded area is at the Hundred Acre, less than 900m to the south west of Townfield Lake.
- 6.89. Unauthorised swimming does occasionally take place in the lakes, but this is normally in the summer when temperatures are high and waterbird numbers are low.

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44

<https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1001493&ReportTitle=Frampton%20Pools%20SSSI>

- 6.90. Occasional wildlife management takes place on the lakes, with limited culling of Cormorants practiced under licence (2-3 birds annually) and, until 2020, oiling of feral goose eggs to reduce numbers of these species and thereby reduce nutrient inputs to the water that threaten the favourable status of the SSSI. Such management is not considered likely to represent a serious disturbance threat to Interest Species because it takes place on very few occasions per year.

### **Opportunities for enhancement**

- 6.91. Given that the site is used by anglers and sailing enthusiasts, there seems to be little room for enhancement of the lakes for the specific benefit of wintering wildfowl and waders of the SPA. The area at the east side of Court Lake (centred at SO756075) which is very sheltered and reed-fringed, is often host, in winter, to dabbling ducks and the shyer species such as Bittern (*Botaurus stellaris*).

### **Site evaluation against the 1% SPA population criterion**

- 6.92. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Frampton Pools is of high importance to wintering Shoveler, Gadwall, Mallard (Mainly at Court Lake), Pochard and Tufted Duck (mainly at Townfield [sailing] Lake). The latter species is also present in significant numbers in spring and autumn.
- 6.93. All other SPA Interest species, if present, are represented by numbers not meeting or exceeding the 1% threshold.

**Table 5.4 – Summary of site evaluation for Frampton Pools against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	<1%	low	low	Golden Plover	<1%	low	<1%
European White-fronted Goose	<1%	low	<1%	Grey Plover	none	none	none
Bewick's Swan	<1%	low	<1%	Ringed Plover	none	none	none
Whooper Swan	low	low	<1%	Whimbrel	low	<1%	low
Shelduck	<1%	<1%	<1%	Curlew	<1%	low	low
Shoveler	low	high	low	Black-tailed Godwit	<1%	low	<1%
Gadwall	mod	high	mod	Turnstone	none	none	none
Wigeon	<1%	low	<1%	Knot	none	none	none
Mallard	mod	high	low	Ruff	low	<1%	<1%
Pintail	<1%	<1%	<1%	Dunlin	none	none	none
Teal	low	low	<1%	Snipe	low	low	<1%
Pochard	low	high	low	Redshank	<1%	<1%	<1%
Tufted Duck	high	high	high	Spotted Redshank	low	<1%	<1%

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Lapwing	<1%	low	<1%				
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## 15301 Walmore Common

### **Location and size**

- 6.94. The approximate centre of this site is at SO797164. The WeBS counting area covers approximately 112ha.
- 6.95. Walmore Common is a low-lying area on the right bank of the Severn south of Gloucester between Minsterworth and Westbury-on-Severn, whose drainage ditches back flood when the Severn is high.

### **History**

- 6.96. Walmore Common lies immediately north of the huge S-bend in the Severn, where the river alters its character from that of a tidal estuary to that of a major floodplain river. A glance at the map and the topography suggests that at some time in recent geological history the Severn may have flowed direct from Westbury to Minsterworth right through what is now Walmore Common, avoiding the long S-meander.
- 6.97. Historically the Common was much larger, extending right back to the Forest of Dean. During the Second World War, the Common was used as a practice bombing range, where the dambuster bombs were trialled; one of the bombing observation towers survives on the hill at Gamage Court at SO746156, another formerly on the ridge of high ground at Chaxhill, south of the SSSI, has been demolished. This ridge offers several vantage points for observation of the site. Walmore Hill Junior School is situated on this ridge, and for several years WWT Slimbridge has worked closely with teachers and schoolchildren to inform them about the importance of the site and its birds, in particular the swans, which form part of the school's logo.
- 6.98. The current SSSI and WeBS counting site is composed partly of common land, administered by Trustees responsible to the Crown and partly of privately owned farmland. The citation for the SSSI of 57.78 hectares (notified under the old Act in 1966 and re-notified in 1984) mentions under reasons for notification that it is a "*low-lying area in the Severn Vale subject to annual flooding*" and that the site "*overlies the only significant area of peat in the county*", and further comments that "*in winter the site is an important refuge and feeding area for wildfowl*" which include "*large numbers of Bewick's Swan, Wigeon, Gadwall and Shoveler*"; the citation also gives details of items of botanical interest. Because of its importance for Bewick's Swans, Walmore is also listed as a wetland of international importance under the Ramsar Convention and as an SPA in its own right (European Site Code: UK9007051, document dated 21 February 2019). In fact the SSSI citation is somewhat out of date since, while the ducks are still numerous, Bewick's no longer occur "*in large numbers*".
- 6.99. Quinn (1995) found only two pairs of breeding Lapwing at Walmore Common and suggested there was an urgent need to review management, especially in relation to water levels. The 1999 Ecoscope report covered Walmore Common and rated its overall suitability for wetland restoration as "High". It noted that the Bewick's Swans preferred "*to graze on enriched grassland swards of the private common to the nutrient poor and tussocky habitat of the registered common. Retention of some improved swards is therefore required*". The BTO survey in 2002 found only one pair of Lapwings (Wilson and Smart 2003).

- 6.100. The SSSI is split into two parts, the southern and larger section being liable to considerable flooding, the northern part at the end of Ley Lane in SO7316 being of botanical interest and surrounded by houses. On the high ground overlooking the Common at Chaxhill at SO738146, but with land holdings extending onto the lower ground adjoining the Common, is the Severn and Wye Smokery, which smokes locally-sourced fish products and is closely involved with efforts to regulate salmon and eel fishing on the Severn and Wye. There are thus conflicting interests involved: householders and some farmers generally want lower water levels, while conservation interests look for higher levels. In the last ten years a Walmore Common Management Group has been constituted (under the auspices of Natural England and the Farming and Wildlife Advisory Group, FWAG), to allow these varied interests to meet and seek solutions. The Group has helped to address some problems (such as grazing and hay cutting on the Common and funding for water control measures) but the basic difference in approaches persists. The Group's discussions have led to the financing of various projects to improve conservation of the SSSI (such as instillation of a tilting weir on the main ditch and of fish passes for eels), and to the development of several agri-environmental agreements with farmers.
- 6.101. In early 2020 a proposal has arisen to develop an "Ecovillage" around Grange Court in SO7216. If such a development were to occur, it would clearly have a heavy impact on the SSSI.

### ***Water levels and flooding***

- 6.102. There are two major drains at Walmore. The low-level drain runs through the centre of the site, and joins the Severn at SO754164. When this drain is unable to discharge into the Severn, the water backs up on the SSSI; a tilting weir has been installed on this drain at SO751151, allowing control of water levels on the SSSI. There are a series of side drains which branch off this main low-level drain. Floodwater, at its highest level, may cover the whole of the SSSI and also some surrounding fields, but always remains shallow and attractive to ducks.
- 6.103. There are two pools on the SSSI. One (usually known as "the Common Pool") at SO747152 is a depression in the peat underlay, which appears to have become larger in recent years. The other is a flight pond on the agricultural land at SO743152, where wildfowling occasionally occurs.
- 6.104. Since the Common drains directly into the tidal reaches of the Severn, water flows off much more rapidly than on other floodplain marshes further upstream. As soon as the Severn level begins to drop on the main river, flooding at Walmore drops.

### Water and flood conditions in winter 2019/20

- 6.105. Winter 2019/20 was very wet, and there was extensive flooding from late September on and off throughout the winter period, rather more flooding than in most winters.

### ***Site coverage***

- 6.106. Walmore Common has been a WeBS counting site since 1976, with counts mainly done in winter months. However, there are a large number of other records for this site. Data available is therefore considered to be representative of the site's value.

### Accuracy of the counts

- 6.107. WeBS counts have been carried out for many years by an extremely experienced local observer, Andy Jayne, who generally approaches the site from the Lower Ley side, and surveys the site from

the high ground by Gamage Court, before visiting the lower sectors. The high ground by the A48 at Chaxhill offers several vantage points from which a rapid idea can be obtained of whether floodwater and any number of birds are present. The owners of the farm at Chaxhill House kindly give permission to observers to drive down the track from their house across the SSSI from SO740146 to SO740154; excellent view of birds may be obtained from this track without disturbing the birds, using the vehicle as a hide. The most difficult species to count is always Teal, which (even when there is no surface flooding) congregates along the ditches and can only be seen if flushed.

***Current importance of the site to SPA species and other notable wetland birds***

- 6.108. Winter (November-March): The number of Bewick's Swans at Walmore was the motive for international recognition of Walmore under the Ramsar Convention in December 1991 because internationally important numbers were regularly recorded there in the 1980s. The current international 1% threshold for Bewick's is 220, and it is a very long time since such numbers were recorded at Walmore; in the last ten years numbers of Bewick's have rarely reached double figures, and the last time they exceeded a hundred was in January 2003 (counts of 139 and 144). One of the reasons for the decline at Walmore is undoubtedly the lower numbers now reaching Slimbridge; another reason may be the change in grazing conditions at Walmore; they generally fed on grassland improved for agriculture rather than the natural vegetation of the Common; this grassland was reseeded each year (providing fresh grazing for the following winter) until the mid-2000s, but this practice was discontinued, so that the lack of fresh grazing may also have contributed to the decrease.
- 6.109. Whooper Swans are regular winter visitors to Walmore, with a maximum of six birds recorded every year for the last ten years. The small flock which normally winters in the Severn Vale generally occurs at Walmore in the course of the winter, sometimes making a prolonged stay.
- 6.110. Shelduck and Gadwall (both estuary SPA qualifying species) are regular winter visitors: Shelduck has generally occurred in single figures over the last ten years but with occasional counts of up to 50; Gadwall numbers are also generally in single figures, but larger concentrations of up to 38 (well above the 1% figure of only two for the estuary) have quite often been recorded in the last ten years. Other surface-feeding ducks which occur in much larger numbers at Walmore and form part of the estuary SPA assemblage are Wigeon, Teal, Pintail and Shoveler: recent peak numbers of Wigeon (with a 1% qualifying figure of 79) are: 700 in November 2019 and February 2018, 950 on February 2017, 2000 in December 2015, 1400 in February 2014. Recent peak numbers of Teal (1% SPA population of 50) are: 580 in November 2019, 570 in January 2018, 1200 in December 2015, 1100 in February 2013. Pintail peaks (1% of just eight birds): 300 in February 2018, 100 in February 2017, 290 in January 2016. Shoveler peaks (1% figure of five): 54 in November 2019, 50 in December 2017, 64 in January 2016, 100 in December 2012. Diving ducks only rarely occur at Walmore since the water is generally very shallow.
- 6.111. Numbers of Lapwing (qualifying species, 1% figure of 114) are often considerable in winter: 800 in February 2018, 710 in February 2016, 500 in December 2011.
- 6.112. Spring (April-June): All four of the traditional Vale breeding waders (all of them mentioned in the SPA assemblage) have nested at Walmore. Lapwing still does so in very small numbers - up to three pairs in the last few years; one or two pairs of Redshanks have nested until the last two or three years. Curlew had disappeared for some years as a breeding species, but may have returned

in the last couple of years. Drumming Snipe were regularly recorded until the 1980s, but there has been no sign of drumming in recent years. Whimbrel (listed in the SPA assemblage with a 1% figure of just two) occur regularly on northward passage in April or May at Walmore (as they do throughout the estuary and the Vales), with peak counts of 27 in May 2017, 62 (a record count) in May 2013, 31 in April 2012.

- 6.113. Autumn (July-October): By the end of the summer, there is little surface water left, with just a little water left at the bottom of the ditches, so numbers of waterbirds are very limited, unless there is early rain in September or October (as occurred in 2019/20).

#### ***Bird movement between the site and the SPA***

- 6.114. The Walmore Bewick's Swans definitely came from Slimbridge on the SPA, as shown by multiple observations of colour-rings and face patterns over a long period; in general they used to come to graze by day, returning to Slimbridge to roost, but if floodwater was extensive, they would occasionally stay to roost at Walmore. The Whooper Swans on the other hand use a suite of grazing sites in the area – Walmore, Wilmore, Minsterworth, sometimes the Ashleworth complex - and were often found to roost at Walmore. Only rarely have they been noted moving to Slimbridge to roost.
- 6.115. Numbers of Shelduck, Wigeon, Gadwall, Pintail, Shoveler and some Teal appear to move the short distance from the SPA to feed at Walmore by night; in times of extensive flooding they often stay all day on the shallow floods without returning to the SPA.
- 6.116. Passing flocks of Whimbrel in spring will certainly have moved up the estuary, stopping off to feed on grassland sites like Walmore before moving on to the northwest, probably going to Iceland.

#### ***Connectivity between this and other non-SPA sites***

- 6.117. There is much apparent movement between Walmore and Wilmore (only 2km away) and also to Minsterworth. When flooded, Walmore represents a large, rather undisturbed refuge for birds from these sites.

#### ***Current condition of the site***

- 6.118. As noted above there is considerable activity around the management of the site, with a series of initiatives involving cooperation and finance of capital works. The site is therefore in good condition to support wetland birds, albeit with some amount of compromise between potentially conflicting interests.

#### ***Disturbance issues***

- 6.119. There are some footpaths around the edges of the site, but they are not heavily used, and in any case are flooded and impassable as soon as any floodwater appears.

#### ***Opportunities for enhancement***

- 6.120. Certain small but important areas were omitted from the SSSI and might with advantage be added. In particular: the low-lying marshy fields at the northeast corner below the lookout point above Gamage Court, which belonged to the late Noel Baker, and the fields between the drain on the southeast boundary and the hedge, a narrow strip omitted at the time of designation.

6.121. While there have been many attempts to improve the conservation values of the site and some undoubted progress, it will be difficult for the site to achieve its full conservation potential unless a major conservation body undertakes management of the area as a whole, which would inevitably involve land acquisition and considerable investment.

**Site evaluation against the 1% SPA population criterion**

6.122. The assessment of this site’s importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Walmore Common is of high importance to wintering Whooper Swan, Gadwall, Mallard, Teal and Snipe.

6.123. The low level of importance for Bewick’s Swan is a reflection, under these criteria, of the intermittent number of visits by individuals of this species, which has been counted on site in only 12 months of the last 10 years. This contrasts with Whooper Swan which has been counted on site in 29 months in the last 10 years.

6.124. It is perhaps surprising that the site should not be assessed as having high importance for Wigeon and Pintail, but their numbers do not (quite) reach the levels required under the criteria applied.

6.125. All other SPA Interest species, if present, are represented by numbers not meeting or exceeding the 1% threshold.

Table 5.5 – Summary of site evaluation for Walmore Common against the 1% SPA population threshold

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	<1%	<1%	<1%
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	<1%	low	<1%	Ringed Plover	<1%	<1%	<1%
Whooper Swan	low	high	low	Whimbrel	<1%	<1%	low
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	low	mod	low	Black-tailed Godwit	low	low	low
Gadwall	low	high	low	Turnstone	none	none	none
Wigeon	low	mod	<1%	Knot	<1%	<1%	<1%
Mallard	low	high	low	Ruff	low	low	<1%
Pintail	<1%	mod	<1%	Dunlin	<1%	<1%	<1%
Teal	low	high	low	Snipe	mod	high	low
Pochard	<1%	low	<1%	Redshank	<1%	<1%	<1%
Tufted Duck	<1%	<1%	low	Spotted Redshank	none	none	none
Lapwing	low	low	<1%				

## 15302 River Frome – Wheatenhurst

### **Location and size**

- 6.126. The approximate centre of this site is at SO763084. It covers an area of low-lying land of some 35ha in extent. It is located between the village of Whitminster and Saul Junction. It is defined by the old Stroudwater Navigation and the River Frome, although it was noted that the southern boundary between these two watercourses appeared to be arbitrary and may benefit, if adopted by a WeBS volunteer, from being expanded across the entirety of the floodplain as far as Fromebridge.

### **History**

- 6.127. This site has no recorded history of relevance to the current study, although clearly it has been heavily drained in the last 50 years or so. Its wildlife interest would undoubtedly have been far greater before the river was embanked. The site has been part of a catchment-wide initiative to open up the river to fish migration that is being led by the Severn Rivers Trust<sup>45</sup>. To date, it would appear that the majority of work on the Frome has been on reaches upstream of the M5 crossing, most notably at Bonds Mill in Stonehouse.
- 6.128. There is also an initiative to create wetland habitat in compensation for loss of wetlands along the Stroudwater navigation due to restoration works.

### **Water levels and flooding**

- 6.129. The River Frome is heavily modified in this area for flood protection of adjacent farmland. At the time of writing, most of the official WeBS counting area was under arable production or was improved sheep-grazed pasture, protected from flooding by a high bank on either side of the river. During high flows, the river is contained within these banks in all but the most exceptional circumstances.

### Water and flood conditions in winter 2019/20

- 6.130. This site was only visited on three occasions in winter 2019/20, in January and February. On two of these visits, the area at the downstream end of the WeBS counting area, closer to Wheatenhurst Bridge (approximate centre at NGR SO760086) was flooded, but virtually no birds apart from 5 Mallard on one count and a few Mute Swans and Moorhens (*Gallinula chloropus*) on the other counts were present.

### **Site coverage**

- 6.131. This site is not currently counted under the WeBS scheme and there are few records of significance attributable to this area.

### Accuracy of the counts

- 6.132. The few counts that were done in winter 2019/20 were unconstrained, with counts carried out from the canal towpath, although fields on the south side of the River nearest to Wheatenhurst Bridge were to some extent obscured by trees. The counts carried out were considered therefore to be

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<sup>45</sup> <https://severnriverstrust.com/wp-content/uploads/2016/05/Appendix-2-River-Frome-Restoration-Vision-and-work-to-date-Oct-2015.pdf>

accurate.

### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.133. Winter (November-March): There is poor coverage of this site for the winter period but recent observations have indicated that a small number of wintering Curlew (up to 20) regularly feed in the fields within this area. In flood, it has the potential to provide a relatively large area suitable for dabbling ducks in particular.
- 6.134. Spring (April-June): There are no spring records for this site. It is likely that small numbers of wetland birds may nest but this needs to be determined.
- 6.135. Autumn (July-October): There are no autumn records for this site.

### ***Bird movement between the site and the SPA***

- 6.136. There have been no definite recorded bird movements between this site and the SPA.

### ***Connectivity between this and other non-SPA sites***

- 6.137. There has been no definite recorded bird movement between this site and any other non-SPA site within the study area.

### ***Current condition of the site***

- 6.138. As noted above, this site is predominantly intensively farmed land. The river corridor is very narrow and of limited intrinsic interest.

### ***Disturbance issues***

- 6.139. The towpath presents potential for a source of disturbance and dog walkers were noted walking an unofficial circuit around fields nearest to Wheathurst Bridge. The field upstream of Sandpits Bridge (NGR SO765083) appeared to be undisturbed but lacked wetland bird interest.

### ***Opportunities for enhancement***

- 6.140. Part of the river floodplain within this WeBS counting area is subject to a major wetland enhancement program managed by Gloucestershire Wildlife Trust on behalf of project partners involved in the Stroudwater Navigation restoration. Targets for this work include increasing botanical species richness and appear to be of likely major benefit to wetland birds, particularly nesting and passage waders and wildfowl (Anna Tarbet, pers. comm.)<sup>46</sup>. Under this program, the wildlife value of the site is bound to increase exponentially, from a basis of very little interest.

### ***Site evaluation against the 1% SPA population criterion***

- 6.141. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that the River Frome at Wheathurst is of only low importance to wintering Gadwall. This assessment does not, however, take account of records just outside of the WeBS counting area, which includes a number of counts

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<sup>46</sup> Anna is the Canal Environment Manager, Cotswold Canals Connected, Gloucestershire Wildlife Trust

in excess of the 1% criterion for Shoveler, Lapwing, Whimbrel, Curlew and Snipe. For instance, fields to the east side of Prestwick Terrace in Whitminster (approximate centre at NGR SO776075) appear to be of likely considerable importance to autumn flocks of Curlew and spring flocks of Whimbrel. As noted above, however, Curlew have now (winter 2020) been recorded feeding in small numbers within the WeBS counting area so the assessment for this species may already be out of date.

**Table 5.6 – Summary of site evaluation for the River Frome at Wheatenhurst against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	none	none	none	Curlew	none	none	none
Shoveler	none	none	none	Black-tailed Godwit	none	none	none
Gadwall	<1%	low	<1%	Turnstone	none	none	none
Wigeon	none	none	none	Knot	none	none	none
Mallard	<1%	<1%	<1%	Ruff	none	none	none
Pintail	none	none	none	Dunlin	none	none	none
Teal	<1%	<1%	<1%	Snipe	<1%	<1%	<1%
Pochard	none	none	none	Redshank	none	none	none
Tufted Duck	none	none	none	Spotted Redshank	none	none	none
Lapwing	none	none	none				

### 15303 Minsterworth & Corn Ham

#### **Location and size**

- 6.142. The approximate centre of this site is at SO740153 and it covers an area of approximately 340ha, although the eastern side is seldom visited due to the near-complete lack of birds within this part of the site.
- 6.143. Minsterworth and Corn Hams make up large area of farmland, enclosed in a sharp elbow bend of the Severn below Gloucester. The adjoining mainly arable land and local farm ponds are also of significance to the waterbirds.

#### **History**

- 6.144. Minsterworth and Corn Hams comprise a large area of low-lying riverside farmland, below the ridge of higher land which carries the main railway line and the A48 trunk road southwest out of

Gloucester towards south Wales. Just northeast of the Hams is an area of arable land which produces agricultural crops sold in the popular Over Farm Market near the bridge over the Severn. In this area of agricultural land lies Linton Farm and its farm pond at SO803187 where there is a duck shoot; ducks are fed here and the grain attracts not only wild ducks but sometimes flocks of up to 30 or 40 Swans, mainly Mute but often some Whoopers.

- 6.145. The area of the Hams is low-lying and rather isolated; there are practically no buildings because of the flood risk: one abandoned building is Highlay House at SO794155, on slightly higher ground near the Severn bank, surrounded by old orchards; another, nearer the ridge of high ground to the north, is Clarks Cottage at SO798175; even Moorcroft Farm itself at SO796178 is affected by the highest floods. Many fields have been ploughed in the past, but some are now reverting to grassland with sheep and cattle grazing. Because of the ploughing they are (unlike many other Severnside flood meadows) of limited botanical interest, and indeed few of the meadows are managed as hay meadows with a late hay cut and aftermath grazing. There are still extensive areas of arable land on the Hams, including maize and some game crops for the local pheasant shoot. Many of the ditches are bordered by hedges with old willow pollards.
- 6.146. There is little open water, though some small pools exist at the extreme southern end near the Severn at about SO804162. Opposite the Hams on the Hempsted side of the river is the former Gloucester Landfill Site, which in its heyday around 2010 attracted large numbers of feeding gulls from the estuary; these gulls would often fly across the river to rest on the Hams, especially at times when a falconer was employed to disturb them; when the falconer went home, the gulls returned to feed on the Landfill Site. However, now that food waste is no longer deposited at the Landfill Site, numbers of gulls have dropped dramatically, though they do occur as soon as there is light flooding; gulls often seem to be the first birds to exploit conditions of light flooding, well ahead of ducks. Local opinion blames the Landfill Site (which now emerges on the opposite bank as a considerable hill) for diverting water to the Minsterworth bank of the Severn and causing flooding for longer periods over the Hams.
- 6.147. There is little marshy, wet land permanently attractive to waterbirds on the Hams, as exists for example at Walmore, and waterbirds generally only arrive when there is some surface flooding. The area is not listed as an SSSI or under any other conservation designation. Coverage for WeBS has been intermittent, as in dry conditions few waterbirds are found. For the same reason, coverage by local ornithologists outside WeBS count dates is limited, with only a small number of observers visiting the site at all regularly.
- 6.148. Quinn in 1995 reviewed the area and commented on the diversity of land-use (unimproved pasture, spring cereals, silage, and was surprised that no waders were seen. Ecoscope (1999) reviewed the site in relation to re-creation of wetlands in the Severn Vale, judging the overall suitability for wetland creation to be low, but high in the case of reedbeds and MG13 wet grassland, medium for wintering waterfowl and breeding waders. The 2002 BTO survey of Breeding Waders of Wet Meadows found no breeding waders (Wilson and Smart 2003).

### ***Water levels and flooding***

- 6.149. The drainage ditches which bring water from the Highnam area to the outfalls to the Severn near Highlay House generally run from northeast to southwest, and are very deep indeed, so they do not easily overflow. Flooding occurs when these drains cannot discharge into the Severn, generally

when the Severn level is high. At times of moderate flooding, the low-lying fields are covered by a shallow sheet of water around SO797168, which attracts ducks and other waterbirds. In times of very high flooding however (as occurred in winter 2019/20) the whole of the low-lying ground is submerged under a sheet of water, which extends right up to the access road below Highcross Farm at about SO791171, and the whole area is practically inaccessible.

#### Water and flood conditions in winter 2019/20

- 6.150. Floodwater began to accumulate in large amounts by 30<sup>th</sup> October and persisted into November. Between mid and late December only light flooding was noted, despite very high Severn levels.
- 6.151. Only moderate flooding was noted by mid February but only a week later the site was completely covered.
- 6.152. These observations illustrate how changeable the site conditions frequently are at Minsterworth. Bird numbers fluctuated considerably in response throughout the winter period.

#### **Site coverage**

- 6.153. Because of the history of poor coverage of this site, special efforts were made to obtain better coverage in 2019/20.

#### Accuracy of the counts

- 6.154. Although the site is fairly large the principal areas can be covered (unless there is very heavy flooding) from public footpaths. From the bottom of the slope below Highcross Farm at SO791171, one footpath leads southward through Corn Ham to the Severn bank at SO801151; from here a short walk northwards along the Severn bank footpath to SO804159 leads to the southern end of the other footpath which goes back through Minsterworth Ham, and past the main wet area in time of flooding. Care must be taken here not to disturb any ducks on the floodwater.
- 6.155. In times of high flood, it is very difficult to survey the site, which can only be achieved from the higher Severn bank, and even this may be difficult to access, because floodwater may cover the land between the minor road through Minsterworth village and the bank itself.

#### **Current importance of the site to SPA species and other notable wetland birds**

- 6.156. Winter (November-March): If there is shallow flooding, the site can hold good numbers of ducks. Shelduck maxima: 70 in March 2014, 23 in January 2016. Wigeon maxima: 1500 in January 2013, 600 in December 2013, 800 in December 2016, 450 in December 2018, 550 in November 2019. Teal maxima: 1300 in December 2013, 570 in January 2016, 450 in January 2018. Pintail maxima: 100 in January 2013, 210 in January 2016, 280 in November 2020. It is thought that the ducks move up from the SPA, only a few kilometres away, to feed, mainly at night; they may stay by day in times of extensive flooding if left undisturbed. In time of flooding Lapwing numbers may reach several hundred (550 in January 2014, 740 in January 2016). One or two Green Sandpipers are regularly recorded in the ditches in winter.
- 6.157. Whooper Swans have frequently occurred in recent years, often feeding on arable fields below the A48 just outside the Ham proper at SO800185, and roosting either at Linton Farm Pool or on another farm pond at Highnam at SO777184: a family party of three on bright green arable treated with chicken manure in January 2011; a family party of three (also frequently seen at Walmore that

winter) on the same field, this time sown with oil-seed rape, in January 2018; six adults (also seen many times at Walmore) in November and December 2018; a pair several times on shallow floodwater on the Ham proper in October and November 2019; and in January 2020 a group of five for most of the month at an unfamiliar site behind Over Farm Market, about three kilometres from the Ham, on flooded fields in the lower reaches of the River Leadon just before its confluence with the Severn at SO813202.

- 6.158. Bewick's Swans are less frequent: in March 2014 at a time of high flooding a group of ten spent some time two kilometres from the Ham at the edge of flooded arable land near Over Market in SO8018; several were colour-ringed, so clearly were from Slimbridge.
- 6.159. Spring (April-June): When the floods drop in spring, and in the absence of pools of open water, numbers of waterbirds decrease. Curlews are recorded in display flight and nesting attempts are likely but remain as yet unproven.
- 6.160. Autumn (July-October): In autumn the site becomes very dry and has little attraction for water birds.

#### ***Bird movement between the site and the SPA***

- 6.161. As noted elsewhere in this report, wildfowlers at Frampton report considerable numbers of ducks (Wigeon and Teal in particular) leaving the SPA at evening flight, apparently going to feed inland of the estuary. It seems likely that these ducks are going to feed by night at sites like Minsterworth Ham; they return to the estuary in the early morning, unless their feeding site remains undisturbed, in which case they might well remain there all day. On occasions in winter 2019/20 when the floodwater held some Wigeon, they seemed reluctant to leave, and if flushed simply circled and landed on another area of floodwater. The Shelduck also seem likely to have come from the SPA, the nearest area of saline water. The summer Curlew must also come from the SPA.

#### ***Connectivity between this and other non-SPA sites***

- 6.162. It is certain that Whooper Swans move freely between the cluster of right bank sites within easy reach of one another at Minsterworth, Walmore and Wilmore, and that they also use other quite small local sites like the Linton and Highnam farm ponds or the flooded fields along the Leadon. Whooper Swans, as small recognisable groups (especially if cygnets are present), can be tracked with some ease, but this is more difficult with ducks which congregate in larger flocks. Even so, it seems likely that there is considerable interchange of ducks between Minsterworth and Walmore.

#### ***Current condition of the site***

- 6.163. The principal current activity on the site is mixed farming. The botany (though not studied in detail) is not thought to be of major value. The main value of the site is therefore as a relatively undisturbed area which attracts waterbirds in time of flooding.

#### ***Disturbance issues***

- 6.164. Disturbance is, for once, a minor issue. There is a footpath along the Severn bank (the Gloucestershire Way) but it is much less heavily used than the Severn Way on the opposite bank. The two footpaths through the centre of the Hams are used only by local people from the village Minsterworth, and even then, use is not heavy.

**Opportunities for enhancement**

6.165. The area is large and secluded and is repeatedly mentioned in conservation circles as suitable for wetland re-creation; it would undoubtedly attract any waterbirds moving along the Severn between the SPA and inland wetlands. For this to proceed, some arrangement with the farmer and land-owners would be needed - possibly land purchase by a major conservation body. Creation of pools of open water would be needed, and some adaptation of the current very deep drainage ditches which carry water direct to the Severn, with little opportunity for wetting the surface. Any such works would be a very large undertaking. At the moment, at least 3 landowners are in Higher Level Stewardship schemes intended to benefit wintering wetland birds, including the low-lying fields described above. The emphasis of the management works is apparently for wet grassland rather than the creation and maintenance of shallow semi-permanent wetlands.

**Site evaluation against the 1% SPA population criterion**

6.166. The assessment of this site’s importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment suggests that under these criteria, the site is of only moderate or low importance to the listed species. As with many of the other sites, and perhaps more so for this one in particular, this is more a reflection of the intermittent value of the site than an indication that its value is limited. It is also a product of the relatively low number of counts achieved at this site, as reflected in the scoring of Reliability of the assessment as “low” for most species (see table in Appendix 3). Of particular concern is that this result does not adequately convey the site’s value for Whooper Swan and the surface-feeding ducks, for which there is a high likelihood of Functional Linkage to the SPA.

Table 5.7 – Summary of site evaluation for Minsterworth and Corn Ham against the 1% SPA population threshold

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	<1%	<1%	<1%
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	<1%	low	<1%	Ringed Plover	none	none	none
Whooper Swan	low	low	<1%	Whimbrel	none	none	none
Shelduck	<1%	low	<1%	Curlew	<1%	<1%	<1%
Shoveler	<1%	low	low	Black-tailed Godwit	<1%	low	<1%
Gadwall	<1%	mod	low	Turnstone	none	none	none
Wigeon	<1%	mod	<1%	Knot	none	none	none
Mallard	low	low	<1%	Ruff	<1%	low	<1%
Pintail	<1%	low	<1%	Dunlin	<1%	<1%	<1%
Teal	<1%	low	<1%	Snipe	<1%	low	<1%
Pochard	<1%	low	<1%	Redshank	none	none	none

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Tufted Duck	<1%	low	<1%		Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%					

**15304 Wilmore, near Rodley (Rodley and Wilmer Common)*****Location and size***

- 6.167. The approximate centre of this site is at SO740129. The WeBS counting area is 23.4ha, but this does not cover the entirety of the area that floods and includes a small area that is no longer counted.
- 6.168. Wilmore Common (formerly and wrongly written as “Wilmer Common”) is on the right bank of the Severn near Rodley, and only about two kilometres from the river. It should not be confused with the similarly named, much larger and adjacent Walmore Common. It is a small area of floodable grassland along a brook below Boxbush Farm. The brook eventually discharges into the tidal Severn at Lower Dumball (covered in Phase 4 of this present project).

***History***

- 6.169. The site was formerly part of the manor of Wilmore (whose name survives only in Wilmore Cottages in SO7411). It comprises a small meadow with a brook flowing between higher arable land on either side (with a solar farm to the north). When the Severn level is high, the brook backs up, flooding the meadow. The site is directly on the flight line between Slimbridge and Walmore, which may be the reason why it attracts waterbirds.
- 6.170. Quinn (1995) covered Upper Dumball (where he found no breeding waders) but did not cover Wilmore. Ecoscope (1999) covered Walmore, but did not mention Wilmore, nor did the 2002 BTO breeding wader study (Wilson and Smart 2002).
- 6.171. This is a rather secluded out-of-the-way site which has received little attention either from conservation bodies or from local ornithologists.

***Water levels and flooding***

- 6.172. Flooding occurs when the Severn is high and the brook cannot discharge into the Severn, so backs up. Flooding has occasionally been prolonged when there is an obstruction in the course of the brook or a jammed flap, which holds water in for longer.

**Water and flood conditions in winter 2019/20**

- 6.173. Wet winter with frequent flooding. No floodwater on 14 October, but extensive by 28 October, gone down by 8 November but had returned by 15 November. Fair amount of floodwater on 12 January and on 13 February, heavy flooding on 18, 23 and 27 February.

***Site coverage***

- 6.174. The site has been covered under WeBS (site 15304) since 1990.

**Accuracy of the counts**

- 6.175. The counts are made from a public footpath with hedges on the southern side of the meadows, which allows observers excellent views of the birds without disturbance.

**Current importance of the site to SPA species and other notable wetland birds**

- 6.176. Winter (November-March): Wilmore was clearly one of the satellite grazing sites used by Bewick's Swans from Slimbridge, particularly in the 1980s and 1990s when numbers of Bewick's at Slimbridge were much higher than at present. In recent years (as at other sites) numbers of Bewick's at Wilmore have decreased, with records of 20 in December 2013 and six in January 2017. Whooper Swans from the small wintering flock in the Walmore / Minsterworth area occasionally occur (maximum five).
- 6.177. Ducks from SPA qualifying species which occur at Wilmore include Shelduck and Gadwall, while species contributing to the SPA assemblage include Wigeon, Mallard Teal, Pintail and Shoveler. Numbers involved are:
- Shelduck: generally recorded in single figures but numbers in recent years sometimes reached 40, with one record of 88 in February 2016.
  - Gadwall: in general few records, but a series of records of up to 53 in February 2020 must have comprised most of the Gadwall in the area around the SPA.
  - Wigeon: large concentrations rarely captured by WeBS counts but numbers have exceeded 1000 (December 2017 and 2018), with many records of 500.
  - Mallard: numbers often almost reaching 100, with an unusual record of 165 in August 165.
  - Teal: numbers in time of flood may reach three figures, maximum of 520 in December 2017.
  - Pintail: few records, maximum 15.
  - Shoveler: regularly recorded in recent years, usually in single figures, maximum 27 in December 2017.
- 6.178. Amongst waders, Lapwings are regular winter visitors with numbers occasionally reaching 500. Snipe are also regular in numbers. Snipe, and also Jack Snipe, occur usually in single figures.
- 6.179. Spring (April-June): Rather few records from the breeding season. It is possible that Shelduck and Lapwing might breed (and there is one April 2017 record of displaying Lapwings), but breeding has never been proven for either species.
- 6.180. Autumn (July-October): In autumn the site dries out and attracts few waterbirds.

**Bird movement between the site and the SPA**

- 6.181. There is clearly movement of Bewick's Swans between the SPA and Wilmore. It seems certain that some of the ducks which move out of the SPA in the evenings (Wigeon and Teal in particular but other species too) come to feed at Wilmore when floodwater is present. The site is only two kilometres from Upper and Lower Dumball (covered in Phase 4), and it is highly likely that Lapwings move back and forth between these sites and Wilmore.

**Connectivity between this and other non-SPA sites**

- 6.182. Both Bewick's and Whooper Swans have been observed moving between Walmore and Wilmore, and it is likely that the ducks also make these movements, perhaps to Minsterworth Ham as well.

***Current condition of the site***

- 6.183. The site does not enjoy any conservation recognition; it is not known whether any agri-environmental agreements are in place. With the recurrence of flooding, it seems unlikely that the site could be ploughed up but sward condition, frequency and timing of grazing and/or hay cuts could have a significant influence on the likelihood of SPA species breeding success.

***Disturbance issues***

- 6.184. A public bridleway (often used for exercising horses) and footpath runs alongside the southern edge of the site; another footpath runs along the northern side. The number of users of the footpath is currently small, and disturbance is not an issue. The fields are privately owned and rarely entered.

***Opportunities for enhancement***

- 6.185. While quite small, this site clearly has considerable conservation value and is worthy of greater attention by conservation bodies. There is an existing Environmental Stewardship scheme with Boxbush Farm covering the majority of this site for Wintering birds.

***Site evaluation against the 1% SPA population criterion***

- 6.186. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that under these criteria, the site is of only moderate or low importance to the listed species. As with many of the other sites, this is more a reflection of the intermittent value of the site than an indication that its value is limited.

**Table 5.8 – Summary of site evaluation for Wilmore Common against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	<1%	low	<1%
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	<1%	low	<1%	Ringed Plover	none	none	none
Whooper Swan	<1%	low	<1%	Whimbrel	none	none	none
Shelduck	<1%	low	<1%	Curlew	<1%	<1%	<1%
Shoveler	<1%	low	<1%	Black-tailed Godwit	none	none	none
Gadwall	<1%	low	<1%	Turnstone	none	none	none
Wigeon	<1%	low	<1%	Knot	none	none	none
Mallard	low	low	<1%	Ruff	<1%	low	<1%
Pintail	<1%	low	<1%	Dunlin	<1%	<1%	<1%
Teal	<1%	low	<1%	Snipe	<1%	low	<1%
Pochard	none	none	none	Redshank	none	none	none
Tufted Duck	none	none	none	Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%				

## 15311 Elmore Marsh

### **Location and size**

- 6.187. The approximate centre of this site is at SO785160. Elmore Marsh is a considerable area of low-lying marshy ground reclaimed from the Severn on its left bank, seven kilometres below Gloucester. It lies immediately downstream of Minsterworth and Corn Hams, and immediately upstream of Walmore Common, but on the opposite bank to both. The WeBS counting area is 88.5ha in extent, although this does not cover the entirety of the area which could encompass an area of floodplain three times this size. Partly as a result of the present study, a new and additional WeBS site of Elmore Back (15382) has very recently been established to cover the areas not currently counted.

### **History**

- 6.188. A fascinating history of the reclamation of this once extensive saltmarsh, surrounded on three sides by a major bend in the Severn, with higher ground on the fourth (southern) side, is given by Allen and Fulford (1990). They indicate that the major reclamation occurred in late Romano-British times; in Saxon and mediaeval times the land was cultivated in strips using ridge and furrow ploughing methods (still shown in aerial photographs from the 1940s). Reclamation of the last 35 hectares of tidal mudflat at the southwestern corner of the site did not take place until as late as 1960-61, after which much of the area reclaimed earlier was under-drained, and most of the traces of ridge and furrow lost by ploughing.

- 6.189. In the 1950s the area still attracted many wintering and breeding waterbirds, but the final reclamation dramatically reduced the value of the site for these species.
- 6.190. The BTO Breeding Birds of Wet Meadows survey in 1982 found two pairs of breeding Lapwings; Quinn (1995) found no breeding waders in 1995 and commented that crops were 4% improved pasture, 37% silage, 9% spring-sown crops and 47% autumn sown crops; the repeat BTO survey in 2002 which covered a slightly larger area, found two pairs of Lapwings at Elmore Back-Weir Green with four more just outside. Elmore Marsh is an obvious candidate for wetland re-creation but Ecoscope (1999), speaking of the “*Severn from Elmore Back to Longney*”, rated its overall suitability as low, noting that the best option might be recreation of reedbeds. There are in fact at present extensive reedbeds along the drainage ditches outside the current Elmore Marsh WeBS area but included in the new Elmore Back site, although as noted above, all ditches in the area are subject to periodic very heavy management (total clearance of both banks) for drainage purposes.

### ***Water levels and flooding***

- 6.191. 5.189. The area inland of the Severn floodbank is drained by a series of ditches which discharge into the Severn through a number of outfalls. When the Severn level is high, these ditches back up, causing shallow flooding on the reclaimed area. In the “Elmore Back” of the new WeBS site, these ditches are quite deep, and are bordered by a series of reedbeds which are periodically cleared by the Lower Severn Internal Drainage Board (IDB).

### Water and flood conditions in winter 2019/20

- 6.192. Only a relatively small number of visits were made to this site by the project team. There was extensive (and probably unusually high) flooding for the site in February 2020.

### ***Site coverage***

- 6.193. Elmore Marsh is a long-standing WeBS site but there was no coverage between 1961 (when only a few Mallard were recorded) and 2016 when counts resumed. Few other visits to the site have been made by other birdwatchers.
- 6.194. The WeBS site of “Elmore Marsh” includes Groundless Pool at SO791162 (immediately across the Severn from Minsterworth Ham, and currently used by the owners for swimming and scuba diving); but this WeBS site covers only the eastern third of the area, omitting the low, wet central and western parts often known as ‘Elmore Back’ on either side of the minor road leading from Farleys End at SO773153 to Elmore Back at SO767165, and included in the new WeBS site. Much of this land belongs to the Elmore Court Estate, who currently farm it.

### Accuracy of the counts

- 6.195. The current WeBS site covers only about a third of the reclaimed area, including a permanent pool called Groundless Pool (situated at SO790161). The formerly important low-lying area between Elmore Court and Elmore Back, now included in the additional WeBS site, is liable to flooding. It may be, therefore, that the number of birds recorded in recent WeBS counts is an underestimate (though probably not by a very great deal, as Elmore Back itself rarely floods nowadays).

**Current importance of the site to SPA species and other notable wetland birds**

- 6.196. Winter (November-March): WeBS counts have recorded very small numbers of ducks at Elmore Marsh; records given as “Groundless Pool” in December 2008, 2010 and 2012 refer to birds from Minsterworth across the river. At Elmore there are odd records of up to half a dozen Shelduck (with up to 15 on floodwater at Elmore Back in flooding in February 2020), but none in WeBS counts. Wigeon are rarely recorded, only a few records in single figures. Teal occasionally produce single figure records in WeBS counts. Shoveler: one record of three February 2020. Mallard: usually the only duck in WeBS counts, up to 50 at times. Diving ducks: few and far between. A Scaup once on Groundless Pool in February 2011, the very occasional Tufted Duck, no records of Pochard.
- 6.197. Waders: Lapwings: one WeBS record of 150 in February 2017, but otherwise in single figures. Snipe: there is one winter record of 100 from 1960, up to ten were found in the 1990s and 2000s, but WeBS counts have rarely produced more than the odd individual, and no Jack Snipe. Frequent winter records of one or two Green Sandpipers.
- 6.198. Bewick’s Swans were recorded in single figures until 1960 (before they became regular visitors to Slimbridge) but have not been recorded since then. There are no records of Whoopers at Elmore.
- 6.199. Spring (April-June): In the 1950s, before agricultural change took place, multiple nests of Snipe and Redshank (up to five pairs) and Curlew were found (Nick Christian<sup>47</sup>, pers. comm.), and drumming Snipe were a familiar feature. A few pairs of Lapwings may still nest on arable fields, but numbers are small. Curlews recorded in February 2020 were likely to have been on passage rather than breeders.
- 6.200. Autumn (July-October): At this time of year, the site becomes very dry and there are very few waterbirds.

**Bird movement between the site and the SPA**

- 6.201. While there were probably extensive movements of waterbirds between the SPA and Elmore before the last reclamation in the 1960s, there seems to be little or no exchange nowadays as so few birds from the SPA occur there.

**Connectivity between this and other non-SPA sites**

- 6.202. With so few SPA species currently occurring at Elmore there is unlikely to be much interchange between this site and those around it. Elmore Marsh is, however, very well placed strategically, being close to the SPA and a number of the other sites under consideration in this work, including Minsterworth, Walmore Common and Wilmore.

**Current condition of the site**

- 6.203. In its present condition (with extensive arable and little open water), the site currently is of limited interest for wetland birds. The impact of favourable management has, however, been documented in recent years; a large field to the east of Elmore Back was left fallow for some years prompting Lapwing to nest. In 2018 it was ploughed up and planted with maize and the birds accordingly did not return.

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<sup>47</sup> Local ornithologist with many years’ experience of nest finding.

### ***Disturbance issues***

- 6.204. There are a number of footpaths within the area, the most heavily used being along the Severn bank (the Severn Way) with additional routes crossing the farmland. Elmore Back itself is a hamlet located on the river bank, with a number of houses and farms. Ecoscope (1990) were concerned about potential disturbance from these sources, but in fact the whole area is rather out of the way, and seems to receive only minimal numbers of visitors.

### ***Opportunities for enhancement***

- 6.205. The story of Elmore Marsh is a sad one, emblematic of the loss of small but important wetlands in the Severn Vale. There are huge opportunities for wetland restoration here, but they would be costly and would require purchase or control of large areas of land (currently being farmed by private owners), by a major conservation body. We understand that the Elmore Court Estate may be interested in “rewilding”, so there is perhaps an opportunity for capital works and future management (however light) that could be beneficial to one or more Interest Species. Quite what the “vision” for this area could be depends on the preferences of the landowner(s), constraints relating to drainage of adjacent land in third party ownership (e.g. neighbouring farmers wishing to maintain drier conditions to allow cultivation) and funds available.

### ***Site evaluation against the 1% SPA population criterion***

- 6.206. The assessment of this site’s importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Elmore Marsh is of only low importance to some species.

**Table 5.9 – Summary of site evaluation for Elmore Marsh against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	<1%	low	<1%	Black-tailed Godwit	none	none	none
Gadwall	<1%	low	low	Turnstone	none	none	none
Wigeon	<1%	low	<1%	Knot	none	none	none
Mallard	<1%	low	<1%	Ruff	none	none	none
Pintail	<1%	low	<1%	Dunlin	none	none	none
Teal	<1%	low	<1%	Snipe	low	low	low

Pochard	none	none	none	Redshank	none	none	none
Tufted Duck	<1%	<1%	<1%	Spotted Redshank	<1%	low	<1%
Lapwing	<1%	low	<1%				

## 15319 River Severn – Gloucester to Maisemore

### **Location and size**

6.207. The approximate centre of this site is at SO821206 and it covers approximately 152ha. Maisemore Ham is an area of floodplain between the two arms of the Severn, north-west of Gloucester, from the Upper Parting (SO822216) down to the A40 trunk road and main railway line where they cross the Severn at Over. It is contiguous with Alney Island, which forms the southern and smaller part of the island, and which is covered in a separate site description. It includes the former Maisemore Brickpits (SO826206), until recently used by wildfowlers as a flight pond.

### **History**

- 6.208. Maisemore Ham was once a typical Severn Vale hay meadow, but almost the whole of it has been converted into arable land with crops of cereals and maize, even though the whole of it floods in most winters, often closing the A417 Gloucester to Ledbury road which runs along the main course of the Severn on its eastern side. As a result, it attracts rather few birds and is not highly regarded by local ornithologists. The only area of open water is in the old Maisemore brickpits, created in the 19th century when new houses were being built in Gloucester; these brickpits were once used as a flight pond by local wildfowlers, but then became rather overgrown; the vegetation has recently been cleared of vegetation, and the land is currently being reprofiled with higher banks, apparently for use as a fishing lake.
- 6.209. Similar former brickpits exist on the opposite bank of the river at Walham Pools (SO828202) and, a little further upstream, at Sandhurst (SO819228 and SO817233). Walham Pools has been reduced in size during the building of the Gloucester northern bypass (in about the 1980s) and is subject to considerable disturbance from the nearby travellers' camp. Sandhurst, also a former brickpit, was once a Gloucester City Council reserve, and was the site of the last breeding record of Marsh Warbler in Gloucestershire in 1984; it is now heavily overgrown, but supports a heronry (with up to ten nests) and small numbers of ducks.
- 6.210. Maisemore Ham is not mentioned in the Ecoscope report.

### **Water levels and flooding**

6.211. There are a number of ditches across the site. When the level of the Severn is high, much of the southern and eastern part of the Ham floods, the water flowing from east to west and often flooding the main A417 trunk road at the low point (9 metres above sea level) just north of the roundabout on Alney Island.

### Water and flood conditions in winter 2019/20

6.212. winter 2019/20 was unusually wet with several periods of heavy flooding, in particular in November and mid-February: the February flood kept the A417 closed from 18 February to 6 March, an unusually long period. As noted above, these floods created conditions attractive to waterbirds,

which were recorded in unusual numbers.

### **Site coverage**

- 6.213. The WeBS site River Severn – Gloucester to Maisemore has been covered regularly in the winter months (generally September to April) from 2010/11 until the present day; it covers all but the northernmost tip of Maisemore Ham, which is private land with no right of access.

### Accuracy of the counts

- 6.214. The WeBS counts have been carried out for a long time by the present counter, who has considerable experience. As long as the site is not under water, the East Channel of the river north of Over Bridge can be covered by following by a footpath, and other public footpaths across the Ham allow the whole area to be covered effectively, with the exception of the private agricultural land at the northern tip.

### **Current importance of site to SPA species and other notable wetland birds**

- 6.215. Winter (November-March): Shelduck and Gadwall are the two ducks among the SPA qualifying species. For Shelduck, there are very limited records with only one winter record in ten years of WeBS counts. Gadwall are regularly recorded, usually in single figures, with a highest count of 17. Of the ducks which contribute to the SPA Assemblage (Wigeon, Teal, Mallard, Pintail, Shoveler, Tufted Duck and Pochard), Teal are regular visitors, with numbers often passing 50 in winter and two counts of over 100 in early 2015 - 137 in January and 115 in February. Wigeon rarely reach double figures with a peak count of 23 in November 2012. Mallard are present on most counts, but no count has ever exceeded 50 individuals. Pintail are rarely recorded, usually ones and twos, maximum of seven in the heavy flooding of March 2020. Shoveler are more frequent, with up to 19 recorded in winter. Tufted Duck are only occasionally noted in winter, always in single figures; there are no records of Pochard. For Lapwing there are only a very few records, generally in single figures, but counts of 269 on 13 January and 187 on 10 February 2013 (in both cases during periods of heavy flooding) presumably represented some of the normal wintering flocks which alighted around the flood for a short time. Records of Snipe are few and far between, just three records of up to five in the last ten years. There are three records of single Woodcocks, all in November or December. Green Sandpipers are very occasionally noted, as might be expected of this species which winters in small number in the Vales, but never more than two.
- 6.216. Spring (April-June): Few records are available outside the winter WeBS season. Mallard definitely breed (two broods in April 2020). Tufted Ducks are occasionally noted (15 in April 2011, eight in April 2020); this species has bred on the nearby lake at Maisemore Court (SO815215) and could also breed at other brickpits in the area.
- 6.217. Unusually heavy flooding on the site in late March and early April 2020 attracted unaccustomed numbers of birds to the site, in particular over 200 Black-tailed Godwits which are considered to be birds moving up from Slimbridge to take advantage of favourable feeding conditions before departing on migration to Iceland. Other species not often recorded here, which also occurred in this period (in much smaller numbers) included: Shelduck (up to 21), Gadwall, Pintail (up to seven), Oystercatcher, Lapwing, Green Sandpiper and even an Avocet, as well as 29 Mute Swans.
- 6.218. Autumn (July-October): Again, there are relatively few records, from this generally dry period of the

year. The winter build-up of ducks (Teal and Mallard) begins during this period.

### ***Bird movement between the site and the SPA***

- 6.219. The main evidence of movements between the SPA and this site (which in any case holds only small numbers of birds) comes from recoveries of ducks ringed at Slimbridge and shot at a site given as "Maisemore", which could mean one of the several brickpits and flight ponds in the immediate area of Maisemore village. For Teal, there are four recoveries of birds ringed at Slimbridge, two of them shot in the same winter (one ringed on 7 December 2010, shot on 8 January 2011; the second ringed on 28 October 1997, shot on 21 December 1997), and two in later winters, also two birds originally ringed at Abberton Reservoir in Essex. The only Shoveler ringed at Slimbridge and shot at Maisemore had been ringed on 12 January 1987 and shot at Maisemore on 25 January of the same year. For Gadwall there is a single recovery of a bird ringed at Slimbridge in December 1984 and shot in January 1987. For Mallard there are as many as 53 birds ringed at Slimbridge and shot at Maisemore, 19 of them in the same winter.
- 6.220. It has already been suggested that some Teal move upriver from the SPA towards Walmore and Minsterworth; some of these birds probably reach Alney Island and Maisemore Ham too. In the case of Mallard, there is no clear pattern of movement, rather a general spreading out from Slimbridge, but some undoubtedly reach Maisemore.
- 6.221. Another species for which there is compelling evidence of movement from the SPA is Black-tailed Godwit, which (as shown in the species account for this godwit) move from Slimbridge to inland sites to feed before migrating to Iceland.

### ***Connectivity between this and other non-SPA sites***

- 6.222. Maisemore Ham is very close to Alney Island, and it is likely that birds move between these two sites (and no doubt also to other brickpit sites in the vicinity).

### ***Current condition of the site***

- 6.223. The whole area is privately owned, much of the site is currently under arable crops, despite the likelihood of it being flooded. The main area of interest for waterbirds is the brickpit on the Ham, which is apparently being redesigned as a fishing lake. But the heavy flooding of March/April 2020 illustrates that, in time of heavy flood, the Ham may still attract a good variety and quantity of waterbirds.

### ***Disturbance issues***

- 6.224. There are very few buildings on the site because of the flood risk – the few houses are on higher ground, usually on or near the flood-bank. There are some footpaths which cross the site, but use of them is minimal, so that disturbance is not an issue at this site. The main road on the western side carries quite heavy traffic, but does not cause any major problems, since the road is fairly narrow and there are few places where it is possible to stop.

### ***Opportunities for enhancement***

- 6.225. Since the land is largely in private hands and managed for agricultural purposes, there seems little prospect of enhancement. We understand that much of the farmland on Maisemore Ham is under

agri-environmental agreements but it is unclear to what extent these are aimed at, or beneficial to the Interest Species. If a fishing lake is being developed at the former brickpits, the site could perhaps provide habitat for open-water bird species but our understanding is that bird scarers have been used, presumably to discourage piscivorous species such as Cormorants (*Phalacrocorax carbo/ sinensis*).

### **Site evaluation against the 1% SPA population criterion**

6.226. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that the site is of high importance to Gadwall in winter. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold.

**Table 5.10 – Summary of site evaluation for River Severn – Gloucester to Maisemore against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	none	none	none
Shoveler	low	mod	<1%	Black-tailed Godwit	<1%	<1%	low
Gadwall	mod	high	low	Turnstone	none	none	none
Wigeon	<1%	<1%	<1%	Knot	none	none	none
Mallard	low	mod	<1%	Ruff	none	none	none
Pintail	<1%	<1%	<1%	Dunlin	none	none	none
Teal	<1%	low	<1%	Snipe	<1%	low	<1%
Pochard	none	none	none	Redshank	none	none	none
Tufted Duck	low	<1%	low	Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%				

## 15321 Coombe Hill Meadows

### **Location and size**

- 6.227. The approximate centre of this site is at SO873272. The main site is approximately 160ha in extent, including the central section of the canal and the meadows, south of it.
- 6.228. The Severn Hams are the central part of the Severn floodplain between Gloucester and Tewkesbury. Coombe Hill Meadows border the canal which runs from east bank of the River Severn at Wainlodes (SO847264) to the ridge of high ground at Coombe Hill (SO887274). (The WeBS site was formerly called “Coombe Hill Canal” but the name was changed to reflect the fact that the meadows are the part of the site most attractive for waterbirds). The Severn Hams composite WeBS site (15320) is made up of the three WeBS sites of Coombe Hill (15321), Ashleworth Ham (15322) and Chelt and Leigh Meadows (15324).

### **History**

- 6.229. This area was known as Inchmore Common in the early 18<sup>th</sup> century (the name survives in Inchmore Mill on the River Chelt in the Chelt and Leigh Meadows site). The canal was dug in the late 18<sup>th</sup> century and fell into disuse around 1860. The meadows continued to be farmed for a hay crop with aftermath grazing. The whole of the floodable area was originally designated as an SSSI by the then Nature Conservancy in the early 1950s.
- 6.230. In the late 1970s or early 1980s, in response to a European Community grant for planting linseed, many of the meadows north of the canal were ploughed up by the then owner, causing immense damage to the soil structure and flora. Under the 1981 Wildlife and Countryside Act, the SSSI was re-notified, but with a much smaller area, including only the canal and its banks (important for their invertebrate populations) and the Long Pool (SO870271) the Broadmere withy bed (SO876273) and the ditch joining them (important for the rare True Fox Sedge *Carex vulpinus*). In the 1980s an attempt was made by the then owner of the canal to restore it for pleasure boats, but this effort was rapidly abandoned. The whole length of the canal with its banks were acquired in the early 1980s as a nature reserve by the Gloucestershire Wildlife Trust (GWT). In 1997 the Trust purchased a large area of meadows north of the canal, with the aim of restoring the ploughed meadows and increasing the attractiveness of the site for flora and fauna; by 2003 two scrapes were excavated with an undisturbed area around them, and a number of hides were installed; traditional management of the hay meadows was maintained in cooperation with local farmers. This approach has continued until the present day, with further land purchase, both north and south of the canal. Some meadows remain the property of private farmers, and Natural England has made special efforts to ensure that they are covered by agri-environmental schemes intended to promote flora and fauna, by regulating hay cutting dates and controlling use of chemicals.
- 6.231. Coombe Hill was one of the 18 sites identified in the Ecoscope Report (Ecoscope, 1999) as having potential for wetland (re-)creation and improvement in the Severn and Avon Vales, which guided much of GWT's actions in the early 2000s.

### **Water levels and flooding**

- 6.232. The canal nowadays has no hydrological function; at its western end it no longer connects with the Severn. It is to all intents and purposes a pond three kilometres long and ten metres wide, heavily

overgrown in places, which often dries out in late summer. Before the building of the canal, Inchmore Common was drained by the Deerhurst and The Leigh Old Parish Drains, which flowed from those two villages into the Chelt at Wainlodes and via the Chelt into the Severn; in order to prevent disturbance of water supplies to the canal, at least three culverts were dug under the canal to allow these two old Parish Drains to continue operating; at least two of these culverts still function and in time of flood carry floodwater from the Chelt back up them and onto the meadows. At the time of the canal construction a new Leigh Parish Drain was dug south and immediately alongside the canal and a new Deerhurst Parish Drain was dug immediately north of the canal. In normal (i.e. non-flood) conditions these new Parish Drains carry water from Deerhurst and The Leigh to the Chelt.

- 6.233. In time of minor flooding (when the Severn is at a high level and the Chelt cannot discharge into it), Chelt water is carried back up the new Parish Drains, and floods the meadows, filling up the Long Pool; this is the lowest point on the west side of the Severn, and even in the driest of Summers, retains some water into the autumn. Minor winter flood events occur regularly, perhaps three or four times a season, and have for centuries created optimal conditions for wintering water birds. Such minor flood events may also occur in spring, or even in summer.
- 6.234. A major flood occurs when the Severn is so high that it not merely prevents the Chelt from discharging but overtops its own flood-banks. The lowest point on the west bank of the Severn, just downstream of Haw Bridge, is at SO845274. When the Severn breaks its banks here, water surges into Coombe Hill Meadows, and fields are even more deeply flooded. Waters from these major floods are very slow to clear, because the meadows are lower-lying than the flood-bank; the water cannot surge back over the top of the bank, but flows out very slowly through the Parish Drain and other outlets. In a moderate flood, the flooding is not too deep, the canal towpath remains accessible and the Grundon Hide (SO875271), overlooking the scrapes may still be reached. In a heavy flood, water is much deeper (perhaps up to 2m deep in the deepest areas), and may gradually extend all the way to the bottom of the slope at Coombe Hill, covering even the GWT reserve car park; (following the summer 2007 floods, an embankment was constructed to the east of the carpark to protect houses at the bottom of the slope from flood damage). In such high flood conditions, the meadows can only be surveyed from higher ground on the northern (Apperley) side.
- 6.235. In summer, water levels generally drop gradually. Over the last five years (but not in 2019), the scrapes have generally dried out completely and only the Long Pool retains a little water. In summer 2017, extra flashes were cut in the meadows in front of the scrape, to retain winter water for birds in spring. There is at present no way of controlling water levels in Coombe Hill Meadows, as the scrapes are simply depressions in the ground. GWT has given some thought to controlling water levels, perhaps by installing a tilting weir on the Deerhurst Parish Drain, thus preventing water draining away, back to the Chelt and Severn.

#### Water and flood conditions in winter 2019/20

- 6.236. Summer 2019 had been unusually wet, with a mid-June flood (the first since 2007) which meant that the scrapes did not dry out in late summer (as they had done for the last five years) and filled up quickly with the rain in late September. winter 2019/20 was the wettest winter since 2013/14 (itself a winter which broke many records for high water levels). There was almost constant flooding from late September until late March, with only short breaks when the Grundon Hide could be reached (first three weeks of October; briefly in mid-December; much of January and the first week

of February), and even then a full circuit of the site including the Long Pool was only rarely possible.

- 6.237. The Grundon Hide was still accessible in mid-October; the circular walk through the meadows to the Long Pool Hide, open for the WeBS count on 12 October, was impassable by 16 October; by 28 October the flooding was deep, extending to the carpark at Coombe Hill, and access was only possible from the Apperley side; this situation continued throughout November (including the 16 November WeBS count) and into early December. By the 14 December WeBS count, flooding was still extensive, but the Grundon Hide was accessible, though not the circular walk to the Long Pool Hide; but by 21 December the flooding had reached the carpark again and the only possible access was from Apperley.
- 6.238. By 2 January, the floodwater had dropped a little, allowing the Grundon Hide (but not the Long Pool) to be reached and these conditions persisted for the 11 January WeBS count; the Grundon Hide was just reachable on 21 January (almost the only occasion this winter when the floodwater was iced over), but was more easily accessible from 26 January (when the Long Pool Hide could still not be reached) to 8 February (by which date flooding had dropped enough to make the Long Pool Hide accessible for the February WeBS count). But waters then began to rise again and by 12 February the Grundon Hide was only just accessible dry shod, and by 15 February the level on the boardwalk was above wellington height. Flooding was then extensive until mid-March and the 7 March WeBS count had to be made from the northern Apperley side. The Grundon Hide was not accessible again until 19 March, and then only with thigh waders.

#### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.239. Winter (November-March): Coombe Hill has always been an important site for wintering waterbirds – swans, geese, ducks and some waders like Lapwing which favour flooded grasslands. This function has always been mentioned in the SSSI designations. Older WeBS data and comments from the interviews indicate that in the 1990s, smaller numbers of waterbirds occurred regularly around the Long Pool but that larger numbers only occurred in time of flood. Once more extensive areas of open water were available in the scrapes from 2003, larger numbers of waterbirds (especially surface-feeding ducks) occurred throughout the winter, though numbers became larger still in time of shallow flooding.
- 6.240. Bewick's Swans are known (through observations of birds marked with darvic rings and by recognition of bill patterns) to move from Slimbridge on the estuary SPA to graze on inland meadows when they flood. Ten years ago, flocks of up to 60 might occur but such movements have become much less frequent in the last five years, because of the decline in numbers of Bewick's Swans wintering on the SPA; nowadays records of Bewick's Swans at Coombe Hill are more often of ones and twos in autumn, stopping off on their southward route to Slimbridge. A small flock of Whooper Swans (usually five or six, maximum twelve) winters regularly in the area between Coombe Hill and Walmore Common, with sites used by this species dotted along the river valley between them, on farmland and other floodplain habitats, and occasionally appears at Coombe Hill. White-fronted Geese, like Bewick's Swans, used to occur on the Severn Vale floods in the same way, and were considered to be birds originating from the SPA, but there have been none at Coombe Hill in the last five years, no doubt once again because of the decrease in numbers wintering at Slimbridge, where resource depletion and/or competition for food is now much less likely to occur.

- 6.241. At first sight it would appear logical that Shelducks and surface-feeding ducks at Coombe Hill might also originate in the SPA in the same way as the Bewick's Swans and White-fronted Geese. However, investigations by the present study suggest that for most surface-feeding ducks (Wigeon in particular – see the account for this species, given above) this is not the case, and that there is little exchange between the SPA and the Vales. Even when numbers decrease in icy periods, it may be that they simply move to larger ice-free waters nearby rather than moving back to the estuary. Pintail have regularly appeared in internationally important numbers (over 600 individuals) in some winters, and they must come from the coast, though perhaps farther afield than the Severn estuary, perhaps estuaries on the Welsh coast or in northwest England. It is possible therefore that a Functional Linkage exists between this site and another more distant SPA elsewhere in the UK. Teal and Shoveler also occur in appreciable numbers, but again there is little evidence of exchanges with the Severn Estuary SPA. Lapwings may occur in flocks of several hundred, sometimes thousands, occasionally (in times of extensive shallow flood) accompanied by small numbers of other wintering waders – Dunlin, Little Stint, Black-tailed Godwit or Ruff; but there is no evidence of movement from the estuary (see under Wintering Waders). Over the last ten to fifteen years numbers of naturalised wintering geese (essentially Greylags and Canadas) have increased considerably with numbers of each often reaching a thousand. These are thought to originate further north in the Severn Vale where Midlands gravel pits (rather than the estuary) are their preferred breeding sites. Diving ducks are not numerous, except in times of high flood when up to fifty Tufted Duck, with small numbers of Pochard and the occasional Goldeneye or Goosander, may occur.
- 6.242. The habitats used are the shallowly flooded meadows, and the edges of the scrapes and Long Pool for Wigeon, Pintail, Shoveler and waders. Teal skulk among the thicker vegetation, especially the old osier beds (and are hence particularly difficult to count; variations in count data may in fact simply reflect whether or not the Teal emerged from their hiding places). At times of very deep flooding (as in most of winter 2019/20) the water becomes too deep for the birds to feed: there is no open grassland for Wigeon to graze, and water is too deep for dabbling ducks like Teal or Shoveler to reach the bottom, even if they upend on the water surface. Many of these birds then leave the area in search of shallower floodwater (very often at nearby Longdon Marsh). Floodwater at Coombe Hill accumulates fairly rapidly since the site is in direct contact with the Severn; at Longdon, water has to back some way up the Bushley or Longdon Brook before the flat shelving fields in Longdon Marsh are covered, so that shallow flood conditions hence occur later at Longdon than at Coombe Hill. In years of only moderate flooding at Coombe Hill this exodus does not seem to occur.
- 6.243. Spring (April-June): In the past WeBS counts were not recorded at Coombe Hill in spring and summer, though since 2017 these counts have been registered.
- 6.244. Most of the wintering swans, geese and ducks leave from February onwards, with very few remaining to breed – Mallard being the most numerous (perhaps 20 pairs), not more than two or three pairs each of Shelduck, Gadwall and Tufted Duck, and the very occasional Garganey; non-SPA species like Mute Swan, Canada and Greylag Goose also breed in small numbers. Breeding waders which had started to appear in March settle in to breed, on islands in the scrapes or around the edges of the scrapes; the traditional species are: Lapwing, Redshank and Curlew, but no longer Snipe (since 2003), all are declining in numbers. In recent years some new breeding waders have appeared: Oystercatchers regularly, occasional Avocet and Little Ringed Plover. Despite the declining numbers of birds involved, Coombe Hill remains one of the most important sites for

breeding waders in the Severn Vale; floods in late spring or even in summer (as in June 2019) play havoc with the nests and young of these ground-nesting birds.

- 6.245. Another major bird feature in spring is the northward passage of waders, gulls and terns on route to more northerly breeding grounds. Some are moving north-west to breeding sites in Ireland, western Scotland or Iceland; notable among them are Black-tailed Godwit (up to 100 in mid-March in recent years – see under Migratory Waders) and Whimbrel (up to 20 in late April and early May). Others use the Severn-Trent-Humber cross country route, and species which usually prefer maritime environments regularly occur: not just Dunlin and Ringed Plover, but also a few individuals of Grey Plover, Sanderling, Bar-tailed Godwit and Turnstone, plus Little Gull and Arctic or Black Terns.
- 6.246. Autumn (July-October): In the past, WeBS counts were not registered at Coombe Hill before September, though since 2017 counts for July and August have been noted.
- 6.247. From July (sometimes even mid-June) returning migrants occur: Teal and Shoveler, plus some passage waders, Lapwing, Snipe and Green Sandpiper in particular, but also other species such as Little Ringed Plover, Wood Sandpiper or Greenshank; numbers however are generally smaller than in spring.
- 6.248. In most recent years, once hay has been cut on the meadows, pools and scrapes dry out (though they did not used to do so quite as regularly); the exception is the Long Pool which normally holds a little water until the autumn, and attracts the biggest numbers of birds. In general the meadows are very dry in early autumn and attract few waterbirds.

### **Site coverage**

- 6.249. Coombe Hill was a WeBS counting area from 1960 to 1968. The site has been continually monitored, in winter months only, from 1976 to the present day.
- 6.250. Interviews were carried out with the current three-man WeBS counting team: David Anderson (who has been a member for at least ten years), Andrew Godden (who has joined the team in the last two or three years), and Mike Smart (who has been counting the site, on and off, since the 1950s). Their comments, from a detailed interview sheet, are incorporated into the description below.

### Accuracy of the counts

- 6.251. Because of the risk of overlooking bird movements between Coombe Hill and the neighbouring WeBS sites of Ashleworth and the Chelt Meadows, attempts are always made to make simultaneous counts of all three sites. In general it is believed that there is little double counting, though it can never be totally eliminated. A bigger problem is counting in time of flood, when parts of the area may be inaccessible, and some species (notably Teal) hide in the vegetation, in osier beds or behind flooded hedges; it was notable that the highest Teal count of 2019/2020 (1850) was on 21 January when the floodwater had iced over and the Teal were much easier to see on the ice; one of the few other counts of over a thousand Teal (1055) was on 10 February, when the ducks were sheltering from a very strong wind in an area where they were much easier to see than usual. In times of high flood it is not possible to reach the Long Pool Hide and to carry out a full count of the birds (notably Teal) which sit there in a sheltered area surrounded by willows and out of the wind.

***Bird movement between Coombe Hill and the SPA***

- 6.252. In general, numbers of wintering waterbirds at Coombe Hill remain low until there is at least a little floodwater. As soon as waters begin to rise, the birds flood in, and the obvious source is the Severn estuary, although there are currently no empirical data to support this view.
- 6.253. As noted above, Bewick's Swans and European White-fronted Geese visiting Coombe Hill undoubtedly originate from WWT Slimbridge, but numbers at Coombe Hill have decreased markedly, to single figures in recent years. For several winters running up to 2017, a partly leucistic Wigeon, very obvious because of its pale pink colouration, was regularly observed at Coombe Hill; what must have been the same bird was also seen several times at Slimbridge.
- 6.254. Because of the difficulty of counting Teal accurately, it is not clear whether, once arrived, they remain all winter at Coombe Hill or if they disperse to other sites, including the SPA. Some waders (Dunlin, Black-tailed Godwits, Little Stint, Ruff) occur in winter only when conditions are right – shallow fresh flooding, with feeding opportunities. Given that habitat suitable for these species is only regularly found on intertidal habitat, they must come from the estuary.
- 6.255. It is certain that the majority of breeding waders must come from coastal areas (though not necessarily from the Severn estuary), as they are largely absent from Coombe Hill between August and February. There is one recovery of a colour-ringed Redshank at Coombe Hill: it had been colour-ringed at Farlington Marshes (like the bird at Bow Farm (Ripple Lakes)) on 13 September 2014 and was seen at Coombe Hill on 21 March 2015, but not later that season; at this early date it could have been a bird breeding at Coombe Hill or a migrant on route to Icelandic breeding territories. It is also clear that many of the migrant waders and terns seen in spring have come from the estuary (although the Severn may not have been their main wintering area) and are on northward passage from the estuary.

***Connectivity between this and other non-SPA sites***

- 6.256. Coombe Hill Meadows, Ashleworth Ham and Chelt and Leigh Meadows are counted simultaneously, whenever possible, to minimise the risk of missing bird movements between these neighbouring sites.
- 6.257. Bird movements documented are shown on maps in Appendix 1. These include definite and probable movements of Whooper and Bewick's Swans, White-fronted Goose, Shelduck, Wigeon, Shoveler, Pintail, Teal, Lapwing, Curlew and Black-tailed Godwit.

***Current condition of the site***

- 6.258. The site is a natural part of the Severn floodplain, so has always been subject to flooding, often heavy, especially in winter. Few data are available on whether the flooding has become more or less severe in recent years. The scrapes and flashes dug by GWT since 2003 have created areas of semi-permanent open water, which certainly attracts more birds. This habitat might be further improved if some control of water levels could be established, perhaps by installation of a tilting weir in the Deerhurst Parish Drain, west of the scrapes. This would allow some water to be retained in dry periods, especially in late summer and early autumn.
- 6.259. Hay cuts are usually late, to allow ground-nesting birds to finish breeding on GWT land, and to comply with agri-environment schemes that have the same aim on private land. This late hay cut is

a major feature of the land management. In Summers when some fields have remained uncut, because of flooding or other agricultural difficulties, the habitat has been less suitable for wintering and breeding birds in following years.

### ***Disturbance issues***

- 6.260. There have always been public footpaths and bridleways on both sides of the canal towpath, along its entire length. The local Fox Hunt uses the area as well. The stretch of the canal bank between the car park at SO887274 and the first bridge along the towpath at SO881273 is particularly popular with dog-walkers, who walk out on one bank and back on the other. Some ten years ago, GWT attempted to restrict the public right of way to just one side of the canal, but this was widely opposed by both ramblers and horse-riders and both towpaths remain open. Because of this experience, and the general difficulty of changing footpaths routes, there is currently little appetite in GWT for altering rights of way.
- 6.261. There are also a number of public footpaths across the meadows. Since the GWT land acquisition in 1997, the central area of the meadows (between the Grundon Hide and the Long Pool) has become much quieter and less disturbed by people. Ditches were deepened alongside footpaths to prevent footpath users straying into this area. As a result, a no-go area has been established where both wintering and breeding birds remain largely free from disturbance, and appear to use the area with assurance. This no-go area could be further improved by re-routing these paths around the edges of the fields (perhaps by establishing new permissive path routes further from the central area, which might arouse less opposition than formal changes to footpath routes). Signs have been erected by GWT where footpaths move from the canal towpath into the meadows, requesting people to remain on the paths, but some visitors still stray into areas where birds would otherwise be undisturbed.
- 6.262. Frequent helicopter overflights are an additional source of disturbance. There is a helicopter pilot training school at Staverton Airport only five miles away, and helicopters often fly low over the site. GWT and others have made frequent representations (noting that it is potentially dangerous to fly low over sites with large numbers of birds which might hit the rotors), but have so far had little effect.

### ***Opportunities for enhancement***

- 6.263. As noted above, scrapes were excavated in 2003 to attract more wetland birds. Similar work could be done elsewhere on the site.
- 6.264. In addition to the above, permanent footpath diversion and/or screening would benefit birds using the site, as would dealing once and for all with this and other sources of disturbance.

### ***Site evaluation against the 1% SPA population criterion***

- 6.265. The assessment of this site's importance to SPA Interest Species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Coombe Hill is of high importance to all of the wintering surface-feeding ducks as well as Lapwing. In autumn, the site is of high importance to Mallard and Snipe and in spring it is of high importance to Gadwall and Mallard.

- 6.266. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold.
- 6.267. This assessment does not do justice to the importance of the site in spring for Curlew, Redshank and Black-tailed Godwit. Curlew and Redshank nest (up to three pairs each) whilst Curlew gather in pre- (February/March) and post- (June/July) breeding roosts (up to 30 birds). In recent years, spring Godwit numbers have reached 100 birds or more.

**Table 5.11 – Summary of site evaluation for Coombe Hill against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	<1%	low	low	Golden Plover	<1%	low	<1%
European White-fronted Goose	low	low	<1%	Grey Plover	<1%	<1%	<1%
Bewick's Swan	<1%	low	low	Ringed Plover	<1%	<1%	low
Whooper Swan	low	low	<1%	Whimbrel	<1%	<1%	mod
Shelduck	<1%	low	<1%	Curlew	<1%	<1%	low
Shoveler	mod	high	mod	Black-tailed Godwit	low	low	low
Gadwall	mod	high	high	Turnstone	<1%	<1%	<1%
Wigeon	low	high	low	Knot	<1%	<1%	<1%
Mallard	high	high	high	Ruff	low	mod	mod
Pintail	low	high	low	Dunlin	<1%	<1%	<1%
Teal	mod	high	low	Snipe	high	mod	low
Pochard	<1%	low	low	Redshank	<1%	<1%	<1%
Tufted Duck	low	mod	mod	Spotted Redshank	<1%	<1%	low
Lapwing	low	high	low				

## 15322 Ashleworth Ham

### Location and size

- 6.268. The approximate centre of this site is at SO831263. The Severn Hams are the central part of the Severn floodplain between Gloucester and Tewkesbury. The Ashleworth Ham WeBS site comprises both Ashleworth Ham proper, now a nature reserve owned by Gloucestershire Wildlife Trust, and Hasfield Ham, a larger area of land between Ashleworth Ham and the Severn, partly owned by Hasfield Estates, partly by a variety of smaller landowners; the whole of this area (apart from the top of the Severn flood-bank), may be submerged at times of major flooding, as occurred for much of the 2019/20 winter. In total, the counting area covers 160ha.

### History

- 6.269. Some parts of Hasfield Ham are reported by local farmers to have been ploughed up for agricultural

production during the Second World War but, as shown by their current very rich hay meadow vegetation, many have never been ploughed (notably, but not only, those along the River Wick from SO827258 to the Severn at SO828252; and again those along the Severn); the only exception is the field at SO839256 the bottom of Stank Lane where a maize crop was planted perhaps ten years ago. From the 1950s the whole of the floodplain, i.e. both Ashleworth and Hasfield Hams, was included in the SSSI. Following the 1981 Wildlife and Countryside Act, however, the area was re-notified, though still extensive and covering much of both Hams, was somewhat smaller; the citation mentions wintering waterbirds and ditch flora. Until about 2000 some fields were treated with fertilisers, but this has now ceased and most of the fields are under some kind of agri-environmental agreement with Natural England aiming to maintain the floodplain grassland.

- 6.270. The colourful history of the reserve at Ashleworth Ham in the last fifty years deserves special attention. Ashleworth Ham is still known locally as “The Duckeries”, which reflects its former status as the main hunting area of the Hasfield Estate, based at Hasfield Court. The fields in the Duckeries (covering about 100 acres along the Ham Road between Ashleworth village and Tirley), were put up for sale by the Estate in the late 1960s and were bought by the late Peter Duddridge, a local naturalist. Soon afterwards, major summer floods in 1968 and 1969 completely ravaged the hay crop and led local farmers to call on the government for better flood protection measures on land around the Duckeries. In response an Internal Drainage Board (IDB) was established to ensure improved drainage and management of the ditches. Mr Duddridge however pointed out that he had bought the wetland site as a nature reserve and did not want his land to be drained. After an official inquiry, the inspector recommended that, despite Mr Duddridge’s wishes, his land should be included within the IDB area, so that he had some say over drainage and other activities. Most unusually (possibly following some high level political intervention with the then Minister of Agriculture who was a Worcester MP?), the inspector’s recommendation was overturned: Mr Duddridge’s land remained outside the IDB, and measures were taken to isolate it in hydrological terms from the IDB area; (a hydrologist commented at the time that it was like ‘creating a mountain in the middle of the floodplain’). As a result, the main central watercourse, which for centuries had brought inflow from the north, from as far away as Forthampton, was blocked by sandbags at the northern entrance to the reserve at SO832269, and the main flow diverted along the ditch through Hasfield Ham (east of the reserve) to the Severn outfall at SO829252. At the same time a drop-board sluice was installed at the southern inflow to the reserve at SO828260; so the main source of water for the old Duckeries henceforth came from the south, through water which backed up the ditch system when the Severn was high. The water level could be controlled by insertion of boards in the sluice, which held back flood levels after those on surrounding land had been drained away, thus creating open water on the reserve and an attractive spectacle for observers from the hide at SO827264 in Meerend Thicket, overlooking the reserve.
- 6.271. During the 1970s and 1980s Ashleworth Ham reserve remained the property of Mr Duddridge, who however sought outside advice through a Management Committee including participants from Gloucestershire Wildlife Trust (GWT), the Wildfowl and Wetlands Trust and the Gloucestershire Naturalists’ Society (GNS). There was constant discussion in this period about the time at which the boards should be removed from the southern sluice, and practice varied enormously: in some years water was held on the reserve very late (into May) in the hope of attracting breeding waterbirds like ducks or crakes; in other years, the boards were removed earlier (from March), to avoid drowning the hay meadow vegetation; and in addition, of course, natural variations in the water supply and flood conditions made it impossible in some years to follow any plans. In the end,

it was agreed in the early 1990s that the boards should be manipulated with the aim of maintaining water levels at a height of about 7.80m AOD from October until the end of the March to benefit wintering waterbirds; and that from late March/early April, the boards should be removed as soon as possible to natural ditch level, in order to maintain meadow botany and to prevent nesting waders from being flooded out.

- 6.272. In 1999 Mr Duddridge handed ownership of the land over to GWT, and soon afterwards, GWT joined the IDB. The first five year GWT Management Plan for Ashleworth ran from 2005, and in about 2007 GWT appointed a full time warden to manage (with the support of the Management Committee) Ashleworth and other GWT reserves in the Severn Hams (including Coombe Hill Meadows). During this period, the reserve was slightly enlarged by purchase of another three meadows of high botanical interest, covering about 12 acres, south of Dirty Lane at about SO827258.
- 6.273. The very latest twist in this convoluted history is that (after much discussion in the Management Committee and a hydrological survey), since operation of the southern sluice is difficult and cumbersome and its benefits doubtful, the 1960s blockage in the main water course at the northern end has been removed, thus allowing the original centuries-old water levels and flooding to be restored. The block was replaced by a culvert (waterflow through which is still much lower than in the traditional system) in September 2019, just before the heavy flooding episodes began; as yet, therefore, there has been insufficient time to judge the effects.
- 6.274. "*Ashleworth Ham and Hasfield Ham*" was mentioned (as a part of the very large site 9 "*River Severn, Tewkesbury to Longford*") in the Ecoscope Report (Ecoscope, 1999) as having "*considerable potential for improving wader numbers*". This report, which guided much wetland restoration policy in the Vales during the early 2000s, also commented that "*Wintering waterfowl could also benefit from increased flooding frequency during the winter*".

### ***Water levels and flooding***

- 6.275. The old 'Duckeries' at Ashleworth Ham (now the GWT reserve) are situated at the lowest point on the west bank of the Severn floodplain – just as the Long Pool at Coombe Hill is the lowest point on the east bank. GWT thus owns the two lowest and dampest areas of land on each bank.
- 6.276. Historically, water flowed into Ashleworth and Hasfield Hams from the north, along a stream called Newham Brook above Haw Bridge, passed through the Hams and reached the Severn at the outfall just north of Ashleworth Quay at SO828252; further waterflow to this outfall comes from high ground to the west of Hasfield village which joins the main ditch system at SO827258. A second outfall nearer Ashleworth Quay at SO824252 discharges water flowing from above Hasfield village down the River Wick (which can be quite torrential after heavy local rain). These streams will back up if the Severn level is high enough to prevent discharge through the two outfalls, creating low-level flooding on the meadows. This occurs several times in most winters, and local people are well accustomed to such conditions, which cause no major problems because there are no buildings in the floodable area.
- 6.277. In addition to these regular flood events, however, there are also major river floods, when the Severn overtops its banks. The Severn flood-bank west of Hasfield Ham has been raised to a considerable height and is rarely overtopped. However, there are several low points in the flood-

bank north of Malthouse Farm (upstream of The Haw), notably around SO849283 and SO854285. In time of high water the Severn overtops its banks here, floods the area behind the higher ground/island at The Haw, and joins Newham Brook, pouring down under the causeway which Telford knowingly constructed through the floodplain when he built the original Haw Bridge in the early nineteenth century. This inflow creates much deeper water throughout Hasfield and Ashleworth Hams, and very often makes the Ham Road from Ashleworth to Tirley impassable for days or weeks on end. As in major river floods at Coombe Hill, such large floods at Ashleworth take a long time to subside, because the meadows and hams are at a much lower level than the flood-bank, and floodwater can only be discharged to the Severn, once the river level has dropped, through a small number of narrow outfalls.

- 6.278. One of the results of the creation of the Internal Drainage Board in the late 1960s after the 1968 and 1969 summer floods was the establishment of a new outfall just south of Haw Bridge at SO844272, to allow the floodwater to discharge more easily into the Severn. Another result was more frequent cleaning out of ditches, with the aim of allowing water to flow through the system. The result of this has been limited, however, since the floodplain is still needed to soak up rainfall (both local and from higher up the catchment) and because with the building of ever more houses and concrete surface, water run-off rates remain extremely high.
- 6.279. In 2004 a major “*Water Management Level and Habitat Restoration Study for Ashleworth Ham and Associated Floodplain Areas*” was carried out by the WWT Wetlands Advisory Service for GWT. It identified low points in the floodplain where water might be retained for conservation purposes (perhaps in response to the Ecoscope suggestion of increased flooding frequency?); and indeed two new concrete sluices were constructed in ditches on Hasfield Ham, one at SO843259, the other at SO833258, both on privately owned and farmed land. However, the land owners soon dug ditches to bypass the sluices, since the retained water hindered farming and especially hay-making operations.
- 6.280. In the last few years, anecdotal information from the farming community suggests that fields on Hasfield Ham have become ever wetter, perhaps from increasingly rapid run-off caused by urban building upstream. Increased encroachment of water-loving plants like Reed Canary Grass (*Phalaris arundinacea*) tends to support this view. Whilst this may benefit some wildlife, the direct effect on wetland birds is not clear: despite increasingly wet conditions breeding waders (see species accounts in the previous section of this report) continue to decrease.

#### Water and flood conditions in winter 2019/20

- 6.281. Following a series of dry autumns when the Ashleworth Ham reserve had barely been flooded at all before Christmas, the site was still fairly dry for the WeBS count on 14 September. Following heavy rain in late September and early October, some of the Ashleworth reserve was inaccessible on the 12 October WeBS count and there was extensive flooding on the Hasfield Ham side; the Severn reached its highest level since December 2013 on 31 October, and the whole of the floodplain at Ashleworth and Hasfield was under water for much of November, so that the 15 November WeBS count had to be conducted from distant high ground. The Ham road and GWT hide were accessible again in the first two weeks of December, though flooding on the Hams remained extensive and impeded WeBS counters on 14 December, and until Christmas water levels rose again. In the last week of December and for most of January flooding remained extensive, but the area was accessible and WeBS counts could be carried out on 11 January and

8 February. From mid-February until mid-March however the whole area was under deep flooding and totally inaccessible. The WeBS count on 7 March had to be carried out from the top of the Severn flood-bank, the only area of terra firma emerging from the waters.

### **Site coverage**

- 6.282. From the time of the establishment of the reserve in the early 1970s, Ashleworth Ham has been and remains a popular site with local birdwatchers and naturalists, largely because of the easy access by road. Although (unlike Coombe Hill) entry onto the reserve itself is not allowed without a special permit from GWT, the site can be viewed from the hides, progressively installed from the late 1970s, which overlook it from the Ham Road. There are no footpaths on the Ashleworth reserve, but there are public footpaths on Hasfield Ham and along the Severn, which make it possible to make a circular walk around the reserve. These conditions have resulted in a large number of bird records from both the reserve and the surrounding area.
- 6.283. Interviews were carried out with the current three-man WeBS counting team: David Anderson (who has been a member for at least ten years), Andrew Godden (who has joined the team in the last two or three years), and Mike Smart (who has been counting the site, on and off, since the 1970s). Their comments, from a detailed interview sheet, are incorporated into the description below.

### Accuracy of counts

- 6.284. Counts are generally made from the hide in Meerend Thicket overlooking the GWT reserve, and from vantage points along the Ham Road. However the line of pollarded willows along the main water course, and the small copse at the north end of the reserve make it difficult to count birds on the eastern half of the reserve, so counters generally walk around to this eastern side of the reserve (with the permission of GWT) to survey birds there, especially species such as Snipe which are difficult to count. Visits to this eastern side run the risk of flushing some birds, despite the observers' best efforts; but sometimes birds hide in the vegetation and can only be seen if they fly up; as at other sites, Teal are particularly likely to be under-estimated. The counts also comprise counts of birds on Hasfield Ham, reached either by public footpath or via farmland with the permission of the farmers. These counts from the back of the reserve and the Hasfield side are important for a full count; coverage only from the hide or Ham Road risks an underestimate.
- 6.285. It is often the case (and particularly in winter 2019/20) that the floods are so extensive that the Hasfield side and the eastern part of the reserve are inaccessible, and counts can only be made from a distance around the edges of the WeBS site or from Stank Lane. Counting is even more difficult at times of very high flood (as happened twice in 2019/20, in November and March) when the Ham Road is under water and the only option is to attempt an estimate from high ground by the footpath to Colways Farm near Hasfield village (at SO826265) or by walking down the Severn flood-bank from Haw Bridge to a point below Norton Hill at about SO840255. However, as already noted, waterbird numbers often drop drastically in such times of very high flood, as the birds move off to other sites such as Longdon Marsh.

### **Current importance of the site to SPA species and other notable wetland birds**

- 6.286. Winter (November-March): As indicated by the traditional role of The Duckeries as a hunting ground, and by SSSI notifications, Ashleworth and Hasfield Hams have always been important for wintering waterbirds - swans, geese, ducks and some waders - mainly in time of shallow winter flood. The

creation of a permanent artificial winter waterbody on the Ashleworth Ham GWT reserve since the 1970s attracts waterbirds on a more or less permanent basis; another less permanent water body (whose level varies according to flood levels) exists on the lowest-lying field at Hasfield Ham at SO835260. Unless there is a major river flood, these two areas generally attract the majority of water birds. As at Coombe Hill, water birds tend to leave the area if the floodwater is so deep that they cannot graze around the edges or reach the bottom by dabbling or upending; in such conditions they may either move to nearby areas of shallower flooding like Longdon Marsh. In longer periods of icy conditions numbers also decrease, again because birds move away perhaps to nearby water bodies like Bow Farm (Ripple Lakes) or Bredon's Hardwick which rarely flood completely.

- 6.287. In the past it has always been assumed by the counting team and local bird-watchers that these water birds derive from the SPA on the estuary; as soon as there is a little surface water in autumn, water birds begin to appear. The origin from the SPA seems clear in the case of Bewick's Swan and White-fronted Goose, both of which have their main wintering area in southwest England at WWT Slimbridge; numbers of both species have declined considerably at Slimbridge in the last decade, and while both species occurred regularly in small numbers up to ten years ago, there have been only a handful of records of ones and twos in the last few years. Nowadays there are plenty of geese, more and more every winter, but they are almost exclusively semi-naturalised Greylag and Canada Geese, probably originating from Midlands gravel pits and parks rather than the Severn Estuary SPA.
- 6.288. The Shelducks probably do originate on the SPA; it was originally thought that surface-feeding ducks (notably Wigeon and Teal, also Shoveler and Pintail) which occur in considerable numbers also originated on the SPA, but studies undertaken for the present project throw doubt on this view, especially for Wigeon (see species account in previous section of this report). Pintail are worthy of special mention as they may occur in quite spectacular numbers, reaching international importance (over 600 individuals).
- 6.289. The situation for Whooper Swan is different. A small flock (usually half a dozen, maximum 12) winters in the Severn Vale (one of the most southerly wintering flocks of Whoopers in England) moving from one small riverine wetland (Ashleworth, Coombe Hill, Over, Walmore, Wilmore) to another and only rarely appearing at Slimbridge. In some years they use the Ashleworth Ham reserve as a night roost, flying out to grazing areas in the surrounding fields (notably the Chelt Meadows) and largely unaffected (unlike Bewick's) by icy conditions.
- 6.290. Among waders the most frequent winter visitor to Ashleworth is Lapwing which may occur in considerable numbers. Sometimes other waders such as Dunlin, Ruff or Black-tailed Godwit, join them in small numbers around the edge of the shallow floodwater. Good numbers of Snipe (perhaps up 50) and much smaller numbers of Jack Snipe also winter at Ashleworth.
- 6.291. Spring (April-June): Numbers of nesting waterbirds on the GWT reserve at Ashleworth are nowadays limited by the drawdown of water when the boards are removed from the southern sluice in late March. In previous years when water levels were maintained at a higher level, there was a suspicion of nesting by Teal, Garganey and Shoveler.
- 6.292. Small numbers of Shelducks (one or two pairs) and Mallard (perhaps ten pairs) currently breed in both Ashleworth and Hasfield Hams, and Gadwall may do so. Among waders Lapwing, Curlew, Redshank and Snipe used to breed, but Snipe have not done so for fifteen years or more and

Redshank not in the last ten years. One or two pairs of Lapwings still attempt to breed on the GWT reserve, or surrounding fields in most years. Two to three pairs of Curlew continue to breed on Hasfield Ham; one of the males was colour-ringed on the SPA in 2010 and has returned to Hasfield Ham every spring since then.

- 6.293. As at Coombe Hill a small number of passage waders, on route from southern wintering grounds (via the Severn Estuary SPA and Severn Hams) to northern and Arctic breeding grounds, pass through in Spring: Black-tailed Godwits (probably commuting from Slimbridge to put on weight in March/April – see species account), Whimbrel in April/May, the occasional Little Ringed Plover and other wader species such as Dunlin or Greenshank if there is a Spring rise in water levels.
- 6.294. Autumn (July-October): In most years, the area becomes very dry in late summer and early autumn, and there is often little water left, even in the pools on the GWT reserve, so numbers of return autumn migrants are low. However some migrants appear, notably Green Sandpiper, which are more numerous from early July to September than in spring.

### ***Bird movement between the site and the SPA***

- 6.295. The situation is very similar to that at Coombe Hill (only three or four miles away as the waterbird flies). Numbers of birds generally remain low in autumn and winter until some open water appears after autumn rains; as soon as there is fresh water surface-feeding ducks such as Wigeon, Teal, Pintail and Shoveler appear; in the past it was generally presumed that they came from the SPA, but investigations under the present study throw doubt on this suggestion, particularly for Wigeon. Shelducks appear later in the winter (from December or January onwards), as they do not return to the SPA from their Wadden Sea moulting area until November or December. The Bewick's Swans and White-fronted Geese which used to occur must have come from Slimbridge, but wintering numbers have dwindled there, and hence also at Ashleworth in the last ten years. Lapwings and some other waders feed around the edges of shallow floods, and some may come from the SPA, though it is argued in the Wintering Waders section above that they are largely a separate wintering population.
- 6.296. In spring and summer some waders which must have wintered on the SPA or similar coastal areas, return to the Hams to breed. Passage waders originating on the SPA or further south move northwards through the Hams in spring; only small numbers alight on their way back southwards in autumn when conditions are much drier.

### ***Connectivity between this and other non-SPA sites***

- 6.297. Ashleworth Ham (WeBS site 15322) is, with Coombe Hill Meadows (WeBS site 15321) and Chelt and Leigh Meadows (WeBS site 15324), one of the three component parts of the larger "Severn Hams" complex (WeBS site 15320). All three sites, whenever possible, are counted simultaneously, to minimise the risk of missing bird movements between these neighbouring sites. Most notable on a regular basis are movements of Canada Geese, but other species, including SPA Interest species, are likely to undertake this short journey.

### ***Current condition of the site***

- 6.298. The site is a natural floodplain, so flooding is part of the normal annual cycle and well accepted by local people. Much of the site is an SSSI and under some form of conservation management, either

as a GWT nature reserve or under agri-environment schemes administered by the Rural Payments Agency. In the past the SSSI has been considered to be in an unfavourable conservation condition, largely because some plants from the National Vegetation Classification MG4 community (for which the SSSI was notified originally) seemed to have disappeared.

- 6.299. The restoration of the original Water levels and flooding, with water now flowing in from the north as it had done for centuries, marks a considerable improvement, even if the inflow pipe still needs to be enlarged.

### ***Disturbance issues***

- 6.300. As already noted, there is no public access to the GWT Ashleworth Ham reserve, so disturbance is minimal. However, the Ham Road runs very close to the western edge of the reserve, and traffic along the road (particularly very large or noisy vehicles, or horses) may cause birds to fly. The birds however seem to get used to the traffic quickly and cars or cyclists rarely disturb them. The footpath across Hasfield Ham and the Severn Way are much less frequented and walkers rarely cause any problems.
- 6.301. There is a pheasant shoot at Colways Farm, on high ground above the reserve, and shooting may flush some birds (which often seem to move to Coombe Hill).
- 6.302. As at Coombe Hill there is also occasional disturbance from helicopters, practising low flying over Hasfield Ham.

### ***Opportunities for enhancement***

- 6.303. The effect of the opening up of the original waterflow pattern in autumn 2019 needs to be assessed, and any further adjustments made. There may be opportunities for extending conservation management in association with current farmers and land-owners. Ashleworth and Hasfield Hams (with Coombe Hill) would be an excellent area for attempting large-scale restoration of breeding wader populations, using methods developed at other major wetland complexes like the Somerset Levels, Otmoor or the Ouse Washes.

### ***Site evaluation against the 1% SPA population criterion***

- 6.304. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Ashleworth Ham is of high importance to all of the wintering surface-feeding ducks, as well as Lapwing and Snipe.
- 6.305. It should be noted that the assessment criteria are not sensitive to the value of such sites for breeding birds of conservation concern, such as the three pairs of Curlews that occur there. This is not a small number in the context of a total population of 30-35 pairs in the whole of the Vales.
- 6.306. Additionally, the criteria used in this assessment do not capture the importance of the site to smaller numbers passage birds such as non-breeding Curlew, Black-tailed Godwit and Whimbrel in spring.

**Table 5.12 – Summary of site evaluation for Ashleworth Ham against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	<1%	low	<1%
European White-fronted Goose	<1%	low	<1%	Grey Plover	none	none	none
Bewick's Swan	<1%	low	<1%	Ringed Plover	none	none	none
Whooper Swan	<1%	low	low	Whimbrel	<1%	<1%	low
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	low	high	low	Black-tailed Godwit	<1%	low	low
Gadwall	low	high	mod	Turnstone	none	none	none
Wigeon	<1%	high	low	Knot	<1%	<1%	<1%
Mallard	mod	high	mod	Ruff	<1%	low	<1%
Pintail	<1%	high	low	Dunlin	<1%	<1%	<1%
Teal	low	high	low	Snipe	low	high	low
Pochard	<1%	low	<1%	Redshank	<1%	<1%	<1%
Tufted Duck	<1%	low	low	Spotted Redshank	none	none	none
Lapwing	<1%	high	<1%				

**15323 River Severn – Haw Bridge to Tewkesbury****Location and size**

6.307. This site comprises a long reach (just over 5km) of the River Severn, from Haw Bridge (SO844278) in the south to the site of the old Lower Lode ferry (SO877317) in the north, stopping at the southernmost tip of the Severn Ham Tewkesbury. The river flows through an extensive floodplain, particularly on the right (west) bank, with extensive hay meadows (subject to flooding), one of which, Chaceley Meadow (SO857306), is a small SSSI. Immediately to the north are the Lower Lode brickpits (SO877320). Neither of these sites is, however, included in the official WeBS counting area, which currently covers some 89ha.

**History**

6.308. This stretch of the Severn, after the S-bend just north of Haw Bridge, is fairly straight and has high sandy banks with (when river levels are low in summer) narrow areas of beach, notably just above Malthouse Farm at SO849262 and below Forthampton at SO872313. On both banks, but rather more extensively on the right (west) bank there are broad floodplain meadows, traditionally managed for a late hay cut with aftermath grazing; these hay meadows are subject to flooding, as described below.

6.309. The WeBS site currently includes only the river itself and its flood-banks, and not the floodable hay

meadows beside the flood bank; these floodable areas (especially along the Newhall Brook just north of Chaceley Stock around SO865300) often hold numbers of ducks when flooded; there is sometimes some wildfowling in this area.

- 6.310. A few hundred metres beyond the northern tip of the site are the Lower Lode brickpits, excavated in the 19th century. Unlike other former brickpits along the Severn, these are quite deep and so have not been invaded and overgrown by willow carr; they are surrounded by a fringe of tall trees; just to the north of the pits is a large grassy field, which often attracts loafing waterbirds. The Forthampton Court estate occasionally holds duck shoots over the brickpits.
- 6.311. Quinn in his 1995 survey covered the whole of the meadowland inland of the floodbank, which he divided into “*Chaceley Meadows*” (Haw Bridge to Chaceley Stock) and “*Chaceley Stock*” (Chaceley Stock to Lower Lode). He found three pairs of Curlews in Chaceley Meadows, commenting that “*no other individual site in the Severn Vale held more than three pairs of Curlew*”. At Chaceley Stock he recorded six pairs of breeding Lapwing, two of Curlew and two of Redshank, and noted that “*Chaceley Stock was one of the most important sites for breeding waders in the Severn Vale*”. The Ecoscope report (1999) included a very large sector called “*River Severn, Tewkesbury to Longford*”. It quoted Quinn and rated the potential of the whole large site (including Ashleworth and Hasfield Hams as well as Sandhurst) for both breeding waders and wintering waterfowl as “medium”. The BTO survey of Breeding Waders of Wet Meadows in 2002 found between Haw Bridge and Chaceley Stock just one pair of Lapwings and two of Curlews, and between Chaceley Stock and Lower Lode a single pair of Curlews (Wilson and Smart 2003). Surveys of breeding waders between 2015 and 2018 found two to three pairs of Curlews over the whole area, but little sign of any other breeding waders, apart from some Lapwings on arable crops (M. Smart, unpublished report to Natural England). The Wildfowl and Wetlands Trust’s Severn Curlew Project studied this area in summer 2019 and found two to three pairs of Curlews still present.

### ***Water levels and flooding***

- 6.312. The Severn flows through the site with high floodbanks on either bank, intended to carry river water off to the estuary as quickly as possible. Inland of the floodbank on the western side, Newhall Brook flows south on a course roughly parallel with the Severn for approximately three quarters of the length of the WeBS counting area, passing under the B4213 road between Haw Bridge and Tirley, and does not discharge into the main channel of the river until just before it reaches Ashleworth Quay (except for a new arm cut across to join the Severn south of Haw Bridge at SO844271 in the 1970s, whose effectiveness is doubtful) some 4km further to the south. If Newhall Brook is unable to discharge, it backs up, causing local flooding, especially north of Chaceley Stock. If the Severn level gets very high (above 11m AOD), the river overtops its banks at two places north of Haw Bridge and may cause much more serious flooding which lasts for much longer. On such occasions, flood water joins the Newhall Brook as it flows through the low ground behind The Haw (on which most of the buildings are located), and creates a torrent running under the causeway which carries the B4213 over the floodplain, and on down towards Ashleworth and Hasfield Hams. At times the volume of water is such that the B4213 is closed by floodwater, sometimes for several days.

### **Water and flood conditions in winter 2019/20**

- 6.313. According to the Ecoscope report (1999) the Severn floodbank is designed to be overtopped on average once per year. In winter 2019/20 it overtopped several times. During this very wet winter there was a series of unusually frequent flood episodes in this area. By 15 October there was as

yet no flooding on the hay meadows west of the Severn, and on 27 October, with the Severn level rising, it had still not broken its banks above Haw Bridge; but by 3 November the meadows south of Cockbury Hall (SO855293) were deeply flooded and held some Canada Geese, a few Wigeon and many gulls. By 15 November the flooding was at its height and the footpath along the floodbank at Malthouse Farm near Haw Bridge was impassable. After the mid-November flood, water levels receded a little: on 13 December there was still a great deal of shallow flooding along Newhall Brook just north of Chaceley Stock, where the winter's largest count of surface-feeding ducks (about 200) was recorded; another deep flood occurred from about 18 to 26 December, but by 31 December large numbers of geese were grazing on the meadows between Haw Bridge and Chaceley Stock. At the beginning of January, water levels dropped again in the river and on the meadows and on 11 January there were still moderate numbers of grazing geese and some Mallard. After the mid-January flood episode, water levels had dropped by 6 February and few waterbirds were found. The heaviest flooding of the whole winter occurred from mid-February, almost uninterrupted until mid-March; during this period the area was inaccessible.

### **Site coverage**

- 6.314. River Severn, Haw Bridge to Tewkesbury, has long been included in the list of WeBS but coverage has been poor over the years (only ten counts in the last ten years), largely because the site comprises only the course of the river between its floodbanks and in normal conditions few waterbirds occur here; it is difficult to recruit counters for sites where few birds occur. The few counts that have been carried out have generally taken place either in conditions of high flood, when the Severn overtops its banks and floods the adjoining meadows, or in cold winter weather, when other floodplain wetlands are iced over and birds seek refuge on the Severn.

### Accuracy of the counts

- 6.315. The accuracy of counts on the WeBS counting area itself should be without question, as a footpath runs along the length of the Severn within it and views of the river are relatively unimpeded. It is likely, however, that short-lived concentrations of birds on the river and the wider floodplain in time of flood, when access is difficult, may well have been overlooked in the past.
- 6.316. The site which most regularly holds waterbirds is the brickpits at Lower Lode, which is outside the current WeBS area. Extending the boundary of the site to include this and the flood meadows would ensure that the importance of the area is fully captured.

### **Current importance of site to SPA species and other notable wetland birds**

- 6.317. In reviewing bird data at the present site, it should be remembered that the data set is very limited, more so than for other sites, and that the few WeBS counts were generally carried out in conditions of high winter flood when waterbirds had abandoned other deeply flooded sites like Coombe Hill to take refuge in the Haw Bridge-Tewkesbury sector, or in periods of hard weather when other sites were heavily iced, so that birds took refuge on the unfrozen river. Because of the limited data available, the project team made special efforts to cover the site in winter 2019/20. Records from Lower Lode brickpits are however a little more frequent.
- 6.318. Winter (November-March): Of the two duck species which qualify the site as an SPA, there is only one winter record of two Shelducks in January 2020; for Gadwall there is just one record on the river of five birds in icy conditions in December 2010, but there are regular records of five to nine

Gadwall on Lower Lode brickpits, with a high count of 22 in November 2018.

- 6.319. Of the other surface-feeding ducks which contribute to the SPA assemblage, the outstanding record for Wigeon is of 1500 in February 2013, a time of heavy flooding when the birds (no doubt moving away from deeper floodwater at sites like Coombe Hill) were feeding on the flooded meadows near Cockbury Hall; in the cold snap in late December 2010 (when there were ice floes on the Severn and other sites were frozen over), up to 120 Wigeon were noted on the river; the highest count in winter 2019/20 was of 16 on flooded meadows on 13 December; Wigeon too are occasionally recorded at the brickpits with counts of up to 30 birds. There are few records on the river or meadows of Teal, the only one reaching three figures being of 126 on shallow flood by Newhall Brook on 13 December 2019; Teal also appear on the brickpits, often in single figure counts, but sometimes in double figures with a maximum of 56 in November 2015. There are no records of Pintail or Shoveler on the river or meadows, but Shoveler occasionally occur on the brickpits, usually in single figures but with a record of 21 Shoveler in December 2011.
- 6.320. For diving ducks like Pochard and Tufted Ducks which contribute to the assemblage, nearly all the records come from Lower Lode brickpits, generally with only one or two Pochard, but larger numbers of Tufted Ducks, maximum of 32 in October 2016. Among other diving ducks, as many as five Goldeneye were recorded in icy conditions in December 2010, and there are some records of Goosander, generally single birds but five in February 2012.
- 6.321. One major feature of the brickpits in winter in recent years has been the night roost of Cormorants that assembles in the tall trees around them, with up to 80 individuals in recent winters. This probably represents practically the whole of the wintering Cormorant population in the Vales; in previous years, roosting birds had gathered at Bredon's Hardwick, then Ripple, but the current preference seems to be for Lower Lode brickpits.
- 6.322. Records of wintering waders in the meadows alongside the WeBS site are very few and far between.
- 6.323. Large flocks (several hundreds) of semi-natural Greylag and Canada Geese regularly graze in the fields on the west bank, as confirmed by the records of the GPS-tagged Greenland Whitefront which joined them in December 2018, and was regularly recorded in the area south of Cockbury Hall, undoubtedly associating with the flocks of other geese. In recent years a wintering flock of Mute Swans, numbering up to 50 individuals, has fed on the grass ley immediately north of the brickpits, then flown to roost on the river alongside.
- 6.324. Spring (April-June): There are a few spring and early summer records of Shelduck, always in single figures; it is possible that they might nest somewhere in the area. Tufted Ducks occur in small numbers through the summer at the brickpits and could well breed there. Mute Swan and Great Crested Grebe regularly nest on the brickpits.
- 6.325. The numbers of breeding Lapwing and Redshank recorded by Quinn in 1995 no longer occur in the meadows. Just one or two pairs of Lapwings still breed (often on maize fields rather than the meadows). There are still three to four pairs of breeding Curlews however, some of which have successfully produced young in the last few years.
- 6.326. Small numbers of migrant waders, in particular Common Sandpipers, are recorded on the river banks on northward passage.

- 6.327. Autumn (July-October): Most of the area dries out in late summer, leaving the brickpits the only area with any open water, and any ducks are concentrated here. With low water levels in the river, migrant waders (not just Common Sandpiper but also Dunlin or Greenshank) on their way south down the Severn occasionally appear in very small numbers along the sandy edges of the river.

#### ***Bird movement between the site and the SPA***

- 6.328. There is no evidence from ringing of movements between the site and the SPA, since there are no recoveries of shot ducks or observations of colour-ringed birds. Wigeon are likely to be from the wintering group that winters in the Bredon's Hardwick /Ripple /Coombe Hill area and which show no sign of movement back to the river. There could, as at other sites, be some movement of Teal between the SPA and this site, but there is no empirical evidence.
- 6.329. It is known from observations of colour-ringed birds that nesting Curlews from neighbouring hay meadows winter on the SPA, so it seems highly likely that the Curlews nesting in the meadows alongside the site do the same.

#### ***Connectivity between this and other non-SPA sites***

- 6.330. There is some slender evidence that at times when there is deep flooding at nearby sites like Coombe Hill or Ashleworth, surface-feeding ducks might move to feed on shallow floodwater in the meadows between Haw Bridge and Tewkesbury; and that in times when these nearby sites are iced over, these ducks might take refuge on the Severn.

#### ***Current condition of the site***

- 6.331. The river itself is currently in good condition for a large watercourse that has been managed for navigation for a very long time. The meadows along the banks are of high botanical value and many of them are under agri-environmental agreements which aim to maintain traditional farming practices. The positive effect of this on wetland birds is that Curlew continue to breed in the area. The loss of other breeding species is, however, of great concern.

#### ***Disturbance issues***

- 6.332. There are footpaths along both banks of the river, which do not at present seem to present any major problems. There are also some footpaths crossing the meadows, but they do not seem to cause major problems for wintering or nesting SPA listed species. There is a camp site and caravan park at the Lower Lode Inn, very close to the brickpits, which attract considerable numbers of visitors, but at present this seems to have little impact on the birds of the pits.

#### ***Opportunities for enhancement***

- 6.333. Surface water flooding on the meadows would be more frequent, and consequently attract more waterbirds, if drainage priorities were relaxed, although there would be an effect on productive farmland that would need to be compensated for. Any extension of the existing botanical SSSI would be welcome. As for other hay meadows holding breeding Curlews in the Severn and Avon Vales, it is greatly to be hoped that current discussions of the Environmental Land Management scheme will lead to a recovery network for Curlews, which would involve payments to farmers who manage their land in a Curlew friendly manner.

- 6.334. Notwithstanding other wildlife interest that has not been identified by this review, and subject to the agreement of the owners, some consideration of enhancement opportunities at Lower Lode brick pits for SPA Interest species could be given, as this is the only feature within or adjacent to the WeBS counting area where permanent still water is found. In its current condition, it only attracts a limited range and number of wetland birds.
- 6.335. In terms of monitoring, it would obviously be desirable to improve the regularity of WeBS counts, and to include the inland flood meadows and the Lower Lode brickpits in the counting scheme.

**Site evaluation against the 1% SPA population criterion**

- 6.336. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that this area is of only low importance to SPA Interest species, if present. However, as outlined above, the number of records upon which this assessment is based is small. It is thought likely that importance values would increase if the site was covered more regularly.
- 6.337. In common with other site evaluations where they are found, this assessment fails to take account of its importance to breeding Curlew, which should be highlighted.

**Table 5.13 – Summary of site evaluation for River Severn – Haw Bridge to Tewkesbury against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	none	none	none	Black-tailed Godwit	none	none	none
Gadwall	<1%	low	<1%	Turnstone	none	none	none
Wigeon	<1%	low	<1%	Knot	none	none	none
Mallard	low	low	low	Ruff	none	none	none
Pintail	none	none	none	Dunlin	none	none	none
Teal	<1%	low	<1%	Snipe	<1%	<1%	<1%
Pochard	<1%	<1%	<1%	Redshank	none	none	none
Tufted Duck	<1%	low	<1%	Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%				

## 15324 Chelt & Leigh Meadows (and Cobney Meadows)

### ***Location and size***

- 6.338. The approximate centre of this site is at SO855260. It covers 179ha. The Severn Hams are the central part of the Severn floodplain between Gloucester and Tewkesbury. The “Chelt and Leigh Meadows” site borders the River Chelt from the A38 main road at Inchmore Mill at SO869249 to its junction with the Severn at Fletcher’s Leap, Wainlodes, at SO848263, a distance of about three kilometres. (The south-eastern part of the meadows near the A38 are normally called “Leigh Meadows”, while those at the north-western end near the Severn are “Cobney Meadows”). Two tributaries flow parallel with the Chelt, the Leigh Brook to the north and Collier’s Brook to the south, and join the Chelt just before its confluence with the Severn. The old Leigh Parish Drain (flowing in from Coombe Hill Meadows) also joins the Chelt near Wainlodes. When the Severn level is high, the Parish Drain backs up to flood Coombe Hill Meadows, while the two tributaries and the Chelt itself flow back, flooding the Chelt and Leigh Meadows.
- 6.339. This site was added to the network of WeBS sites only relatively recently in 2001, when it was realised that Whooper Swans from Ashleworth and Bewick’s Swans from Slimbridge were grazing in the fields, and that the meadows at the western end of the site near the Severn (“Cobney Meadows”) occasionally in time of flood (generally once or twice each winter, when flooding is moderate rather than the deep floods experienced for much of the winter period 2019/20) hold appreciable numbers of waterbirds.

### ***History***

- 6.340. The floodplain of the Chelt is largely made up of hay meadows which in winter take up floodwater that cannot discharge into the Severn; most of the drains and ditches dry out during the summer, as do the meadows. This site is unusual in that it is crossed by a relatively large water course, the Chelt, which carries water throughout the year, flowing down from the Cotswolds and receiving input of water from Cheltenham. Hence the historic Inchmore Mill (one of the very few watermills in the Severn Vale) on the Chelt near the A38 could function throughout the year. Just above the mill, the Chelt was funnelled through a stone channel to build up a head of water so that the mill could function.
- 6.341. Over the years the meadows have been used for hay production and aftermath grazing. Ownership of the meadows is split between a number of different farms. The remains of old brick weirs in the Chelt, suggest that in past Summers, water was diverted into the meadows to provide summer drinking for cattle. Some of the meadows (especially Cobney Meadows at the western end, and the meadows near the A38 at the eastern end) are of high botanical value, having never been ploughed up. In the central part of the site there is an ancient water meadow at SO858262, long fallen into disuse. Some of the fields in this central part of the site are currently used for arable crops such as maize to support more intensive cattle raising. One or two fields, once arable, are now in grassland reversion schemes.
- 6.342. The site is not recognised as an SSSI, though parts of it undoubtedly merit designation on botanical grounds. Many of the remaining hay meadows are under agri-environmental schemes which aim to maintain the current farming regime of hay production and aftermath grazing, which benefits their botanical value.

- 6.343. Only in the last ten years or so has the conservation potential of the site been recognised. This is one of the very few sites in the whole of the Severn and Avon Vales where (other than the main courses of the Rivers Severn and Avon) there is a year-round source of running water (the other is along the River Leadon or - much further downstream - the River Frome below Stroud), and where there is potential for controlled re-wetting of grassland especially in the often very dry summer months. Some small measures have already been taken. The stone and concrete mill race has been removed by the Environment Agency and the ancient meanders on a short section of the Chelt restored, to allow migration of fish (notably eels) upstream, and has incidentally created habitat for some waterbirds, notably Green Sandpiper and Snipe, which (although they may be found all along the Chelt) seem to favour the meanders in particular. The meanders are also used by Kingfisher and by Grey Herons and Little Egrets which nest a little way upstream. The Gloucestershire Wildfowlers' and Conservation Association (GWCA) has purchased a 9ha field between the Leigh Brook and the Chelt at SO860254, where water from the Leigh Brook has been diverted to produce waterbird habitat over an area of approximately 2ha.
- 6.344. The Gloucestershire Wildlife Trust (GWT) has helped one landowner to re-establish conditions for aquatic botany on one meadow at SO862245 covering 1.7ha of land.
- 6.345. Strangely, the Chelt Meadows are not mentioned in the Ecoscope Report (Ecoscope, 1999) which reviews potential for wetland (re-)creation and improvement in the Severn and Avon Vales.

### ***Water levels and flooding***

- 6.346. For much of the year, the meadows remain dry, with the Chelt flowing out fast to the Severn, and the only surface water to be found in the Cobney Meadows flight pond and the wildfowlers' scrape. When the Severn level is high however, generally in winter, the Chelt and its tributaries cannot discharge into the Severn and back-flood the meadows. Cobney Meadows flood first since, in addition to overflow from the old (pre-canal) Leigh Parish Drain, they receive water from the Deerhurst Parish Drain, which flows in from the north through a still operational culvert under the Coombe Hill canal at SO856267. The Chelt readily breaks its banks at SO855256, flooding the central arable area, and the Leigh and Collier's Brook also break their banks over much of their course. In times of high water levels in the Severn, all the meadows, right up to the A38 and past the major road towards Barrow Ponds (SO880245), may be deeply flooded (as in winter 2019/20) and light flooding may even disrupt traffic along the A38.

### **Water and flood conditions in winter 2019/20**

- 6.347. The September WeBS count was carried out in dry conditions. By mid-October levels were already higher than in most recent years. In November and December, the whole area was deeply flooded, and the count could only be made from distant high ground. Floods were still extensive in January and early February, though not quite as deep, so that the main areas could be reached. By mid-February, however, flooding was deep and extensive, right up to the A38 again, lasting until mid-March.

### ***Site coverage***

- 6.348. The Chelt and Leigh Meadows have been counted between 2011 and the present, in the winter months only. They are, with Ashleworth Ham (WeBS site 15322) and Coombe Hill Meadows (WeBS site 15321) one of the three component parts of the larger "Severn Hams" complex (WeBS site

15320). All three sites, whenever possible, are counted simultaneously, to minimise the risk of missing bird movements between these neighbouring sites.

- 6.349. Interviews were carried out with the current three-man WeBS counting team: David Anderson (who has been a member for at least ten years), Andrew Godden (who has joined the team in the last two or three years), and Mike Smart (who has been counting the site, on and off, since the 2001). Their comments, from a detailed interview sheet, are incorporated into the description below.

#### Accuracy of the counts

- 6.350. As noted above, the current three-man team attempts to make simultaneous counts at the three Severn Hams WeBS count sites, in order to avoid double counting. This is not always possible however, either because of flooding or manpower problems, and priority is given to Ashleworth and Coombe Hill which have larger areas of open water and normally hold much more significant concentrations of waterbirds. Chelt and Leigh Meadows is a large site, and complete coverage takes a very long time, so that the site is usually covered by visits to the two principal areas at each end, Leigh Meadows in the south-east and Cobney Meadows in the north-west; both these areas are privately owned, and the land-owners have given permission for counts to be carried out there. Higher numbers of ducks generally occur here only in time of moderate flooding. In time of flood, access is more difficult, and in very high flood is quite impossible, so that the area can only be surveyed from distant high ground on Norton Hill above the Red Lion at Wainlodes.

#### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.351. Winter (November-March): In the 2000s, small flocks of up to 20 Bewick's Swans grazed by day in the meadows, though they have not been recorded in the last five or more years. At that period too, the small wintering flock of up to six Whooper Swans regularly grazed in these fields by day, flying to roost by night at the GWT reserve at Ashleworth Ham; in more recent times the Whoopers have preferred to graze on other Severn wetlands like Walmore or Wilmore.
- 6.352. Cobney Meadows seems to be the favourite site for Shelducks in the whole of the Severn Hams (perhaps because the fields are so close to the Severn?) from late December to February, and 50 or more may gather on the floodwater. At times of light flooding, Cobney Meadows attract many hundreds of surface-feeding ducks to the area of the old flight pond at SO856266, especially Wigeon and Teal, but also Pintail and Shoveler, acting as an extension of Coombe Hill Meadows. When the flooding becomes really deep, these ducks tend to move up the Chelt, and are seen at the Leigh Meadows end. Waders, notably Lapwing, also occur around the edges of the floodwater, and Snipe and Jack Snipe are also regular. Green Sandpiper, for which this site is one of the most reliable places in Gloucestershire, regularly winter in single numbers along the fast-flowing waters of the Chelt.
- 6.353. Spring (April-June): WeBS counts have not generally been carried out between April and June. The area dries out in this period and most waterbirds are to be found around the few areas of open water – the flight pond in Cobney Meadows and the wildfowlers' field. One or two pairs of Shelduck nest, as do some five or ten pairs of Mallard. A very few pairs of Lapwings nest (some on the arable fields in the central section); one or two pairs of Redshanks have nested, but not in the last five years; at least two pairs of Curlews nest in the hay meadows.
- 6.354. Autumn (July-October): WeBS counts have not generally been carried out in July and August and

resume in September. The area dries out further in late summer, with few water birds until autumn rain sets in. As at nearby Coombe Hill, Green Sandpipers appear from July onwards along the Chelt and pools, sometimes with other autumn passage waders.

#### ***Bird movement between the site and the SPA***

- 6.355. Movements between the SPA and the Chelt and Leigh Meadows are likely to be similar to those between the SPA and Ashleworth or Coombe Hill. Bewick's Swans that used to come to graze returned to Slimbridge in the evening. The numerous Shelducks, a species which generally opts for mudflats, seem very likely to originate on the estuary, as do surface-feeding ducks like Wigeon.

#### ***Connectivity between this and other non-SPA sites***

- 6.356. As noted above, Chelt and Leigh Meadows lie in close proximity to Ashleworth and Coombe Hill Reserves and there is interchange between these three areas.

#### ***Current condition of the site***

- 6.357. As noted under "History", the site is essentially a suite of floodable hay meadows, the central part of which has been converted to arable or intensively managed grassland. The remaining hay meadows are in good condition and are protected by agri-environmental agreements. The site has huge potential for wetland creation, perhaps greater than any other site in the Severn and Avon Vales, because of the availability of a ready source of water from the Chelt.

#### ***Disturbance issues***

- 6.358. A number of footpaths cross the site both from north to south and from east to west, but do not go through the main areas of interest, Cobney and Leigh Meadows, and are used only by modest numbers of visitors. Disturbance by ramblers and walkers is therefore not a major concern.
- 6.359. The wildfowlers' field in the central area is not heavily shot over, about once a month from October to January. The GWCA is quite as much concerned with maintenance and recreation of wet habitats as with shooting.

#### ***Opportunities for enhancement***

- 6.360. The floodbanks of the Chelt are a conspicuous feature of the landscape in this area and it is clear that they confine most high flows to the channel of the river. Some consideration could be given to allowing a more natural water flow and frequency of flooding across the floodplain by lowering these banks. The effect of this on farming productivity and uses would obviously have to be assessed, agreed and compensated for. Additionally, any increase in summer flooding could impact negatively on ground-nesting birds and existing botanical interest, so any such measures would need to be carefully planned.

#### ***Site evaluation against the 1% SPA population criterion***

- 6.361. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Chelt and Leigh Meadows are of not of high importance to any SPA species. It should be noted, of course, that the assessment

criteria are not sensitive to the value of such sites for very intermittent occurrence of wintering birds such as the swans, or small numbers of breeding birds, such as the Curlew that occur there.

**Table 5.14 – Summary of site evaluation for Chelt and Leigh Meadows against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	<1%	<1%	<1%
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	<1%	low	<1%	Ringed Plover	none	none	none
Whooper Swan	low	low	<1%	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	low	low	<1%	Black-tailed Godwit	<1%	<1%	<1%
Gadwall	<1%	low	low	Turnstone	none	none	none
Wigeon	<1%	mod	<1%	Knot	none	none	none
Mallard	low	mod	<1%	Ruff	none	none	none
Pintail	<1%	low	<1%	Dunlin	<1%	<1%	<1%
Teal	<1%	mod	<1%	Snipe	low	low	<1%
Pochard	none	none	none	Redshank	<1%	<1%	<1%
Tufted Duck	<1%	<1%	<1%	Spotted Redshank	none	none	none
Lapwing	low	low	<1%				

#### **40001 Pershore Wetland Meadows, with Lower Moor, Craycombe, Wood Norton and Throckmorton**

##### ***Location and size***

- 6.362. The approximate centre of Pershore Wetland Meadows is at SO951465. The site covers 24ha. The approximate centre of Lower Moor is at SO974467. The site covers 18.4ha. The approximate centre of Craycombe is at SP003470. The site covers approximately 25ha. The approximate centre of Wood Norton SP011471. The site covers approximately 33ha. The approximate centre of Throckmorton SO981486. The site covers approximately 105ha, although the lagoons that generally attract water birds are smaller than this.
- 6.363. All of these sites except for Throckmorton are in riverside meadows along the banks of the Avon, within and upstream of Pershore. They are presented here together because of their close proximity to each other and/or their similar character.
- 6.364. The only WeBS counting area within this cluster of sites is Pershore Wetland Meadows (its WeBS site name), otherwise known as "Avon Meadows Community Wetland and Local Nature Reserve". The site was covered for WeBS from February 2010 to March 2011, but no data have been

submitted since then. However, there are weekly censuses, the results of which were provided to the current authors by their co-ordinator, Mr. Richard Stott. Lower Moor is a reserve near the village of that name, 2km upstream of Pershore; it is close to a number of former gravel pits along the Lench Ditch and is just across the Avon from a regular Curlew nesting site at Wick SO971466. Lower Moor is not registered as a WeBS site either, though there too the meadows are covered on a frequent basis. Craycombe and Wood Norton are areas of the Avon valley just upstream of Fladbury. At Craycome, water control measures have in the past been made in riverside meadows, largely to encourage breeding waders (Andy Graham pers. comm); it is not covered under WeBS. Wood Norton is another floodplain area which is less well documented than the other sites but is included here because large numbers of waders and wildfowl have been noted intermittently.

### **History**

- 6.365. Pershore Meadows is a reserve created in 2008 for the community of Pershore (as the name indicates) by the Pershore Town Council and Wychavon District Council, principally as an amenity site. The reserve is on public land close to the town and comprises a number of meadows along the Avon with some scrapes and pools. The change of habitat, specifically creation of standing water and reedbeds, has brought in species that specialise in using such habitats. The meadows are in the flood plain of the River Avon and are subject to flooding. At times of flood the whole survey area is inundated, normally for a relatively short time. The wader scrape is fed by rainwater and therefore dries out in summer; the degree to which it dries out and the timing of drying is entirely dependent on weather patterns. Summer 2019 was very wet and the scrape was only fully dry for about three weeks. Species numbers and diversity have increased over this period but the site has never attracted large numbers of water birds, other than those resident. Grebes, particularly Great Crested Grebes have decreased over the last ten years. Most waterbird species counts are quite low, so population trends cannot be meaningfully estimated. The "Friends of Avon Meadows" is a registered charity with its own website and Newsletter. The site is widely used by local people and so waterbirds are subject to considerable disturbance.
- 6.366. Much of the Lower Moor area has been managed for several years as a nature reserve by the Vale Landscape Heritage Trust, and comprises six meadows along the Avon bank, with a scrape overlooked by a viewing area at SO977468. The meadows at Lower Moor are managed for a hay cut with aftermath grazing by a local farmer. Including the arable fields further upstream, mentioned in Quinn (1995), the area within which there has been, or currently is, interest for breeding waders, is just over 40ha. On the northern side of the Lench Ditch, which forms the northern boundary of the site, are a series of deep former gravel pits, Lower Moor Leisure Park, now mainly used for recreational pursuits such as sailing, which occasionally attract diving ducks, with Oystercatchers nesting on islands.
- 6.367. Only a further kilometre to the north is the Throckmorton Landfill Site (which until October 2016 accepted food waste and hence attracted large numbers of gulls from the Severn estuary) where there are still a number of pools of interest to waterbirds.
- 6.368. In the 1990s measures were taken in the meadows below Craycombe Farm to provide open water and to encourage breeding waders. Recent information on this area is scant.
- 6.369. Wood Norton contains a flooded area that attracts both wintering wildfowl Teal and Wigeon and waders in spring, notably Curlew, Lapwing and Redshank with at least one nesting attempt by

Lapwing. Black-tailed Godwits have been seen on passage. There are no documented efforts to promote the interest of the site for birds or any other wildlife.

- 6.370. Quinn (1995) does not mention Pershore wetlands but does refer to Lower Moor (which he calls “Lench Ditch”); he made a single summer visit and noted that many of the fields “*looked suitable for Curlew*” and “*could be suitable for Redshank, Snipe or Lapwing*”. Wilson and Smart (2003) noted “*a complete change in the Lapwing situation... mainly between Lower Moor and Fladbury*”, where up to seven pairs were nesting on arable fields between Lench Ditch and the Avon.
- 6.371. The Ecoscope report (Ecoscope 1999) note on the long section of river named “Site 16: River Avon from Evesham to Birlingham”, which the authors did not visit, suggests that “*the re-creation of inundation grasslands could provide suitable feeding habitats for grazing species of wintering waterfowl*”. It rates the whole long stretch of river as of “medium suitability” for wetland restoration in general for breeding waders and wintering waterfowl, but “High?” for inundation grassland. Most of the wetland re-creation schemes along the Worcestershire Avon over the last 20 years (Gwen Finch, John Bennett, Pershore, Lower Moor) have occurred in this stretch of the river.

### ***Water levels and flooding***

- 6.372. All of the floodplain sites are drained by ditches which flow into the Avon and are liable to flooding by the Avon in winter. The Ecoscope report sums up the water levels and flooding as “*This is a series of floodplain areas on the left and right banks of the River Avon from Pensham to Evesham. Along much of the river there are old flood banks which are breached in many places. Some of these banks are private and some are the result of river dredging. The water level is partly controlled by a series of weirs and navigation locks, such that it changes in a series of ‘steps’*” (Ecoscope 1999).

### **Water and flood conditions in winter 2019/20**

- 6.373. All of the riverside sites were heavily flooded at times in winter 2019/20, notably in November and again in February. Throckmorton is above the floodplain and subject only to rainwater inflow from surrounding landfill.

### ***Site Coverage***

- 6.374. The two most active counters, Richard Stott (Pershore) and Rob Prudden (Lower Moor) were interviewed and their comments are included in the account below.

### **Accuracy of the counts**

- 6.375. Counts are carried out weekly (sometimes more frequently) at Pershore, and given the excellent access, they are considered to be very accurate. Lower Moor is covered almost daily, and the counts are of high accuracy. Much less information is available about Craycombe, Wood Norton and Throckmorton.

### ***Current importance of the sites to SPA species and other notable wetland birds***

- 6.376. Winter (November-March): Small flocks of surface-feeding ducks (mainly about 45 Wigeon and up to 100 Teal in winter 2019/20, with small numbers of Shoveler and the occasional Shelduck) winter at Lower Moor. At Pershore, numbers of these ducks do not generally exceed single figures; Teal is a winter visitor (maximum 38), the others are considered as occasional winter visitors. At Wood

Norton, flocks of Wigeon have reached between 150 and 260.

- 6.377. Up to 200 Lapwing and 300 Golden Plover may occur within the area between Pershore and Craycombe (Golden Plover only flying over at Pershore) and Snipe occur in winter (maximum of 36 at Pershore).
- 6.378. Spring (April-June): Mallard is the only regular breeding resident duck at Pershore, while Little Ringed Plover has attempted to nest at this site. Lapwing and formerly Redshank still attempt to breed at Lower Moor but have been unsuccessful for some years, whereas Redshank have not been recorded for some time. The pair of Curlews which nests across the Avon at Wick often comes to rest and feed at Lower Moor; Oystercatchers nest locally and may appear at Lower Moor, sometimes at Pershore. Curlews may still nest at Craycombe and may account for records of birds at neighbouring Wood Norton. Northward passage of waders (including Common and Green Sandpiper, Greenshank, and sometimes in March, flocks of Black-tailed Godwits) is noted at Pershore, Lower Moor and Wood Norton, with a larger variety and number at the latter two sites as the least disturbed areas.
- 6.379. Autumn (July-October): Wader return passage in autumn is not very marked, since all sites generally dry out in late summer.

#### ***Bird movement between the site and the SPA***

- 6.380. Local observers who have great experience of these sites consider that, as for other Worcestershire sites, there is little or no movement of wintering ducks or waders between the SPA and these sites. They consider that the wintering birds, once arrived, stay in the local area, or only move to other sites close by. The number of birds at Pershore is in any case small.

#### ***Connectivity between this and other non-SPA sites***

- 6.381. There may be local movement between these sites, and perhaps between them, Gwen Finch and John Bennett Reserves, but there is no definite record of this.

#### ***Current condition of the sites***

- 6.382. Pershore meadows are managed by the Pershore and Wychavon Councils, and receive constant attention. Lower Moor is managed as a nature reserve by the Vale Landscape Heritage Trust in Worcestershire. Craycombe and Wood Norton are actively farmed and their current condition is unknown.

#### ***Disturbance issues***

- 6.383. Disturbance is a major issue at Pershore, because the site is heavily used by local residents, for whom it was intended as an amenity site. Lower Moor is a non-access site, so disturbance is minimal. Craycombe and Wood Norton are on private farmland and so are undisturbed.

#### ***Opportunities for enhancement***

- 6.384. Pershore could be improved by the provision of larger scrapes, so that visitors are further off from the birds. At Lower Moor the Avon Vale Trust is trying, in cooperation with the farmer, to improve the reserve. It would be worthwhile contacting the owner of the land at Wick across the Avon from

Lapwing. Black-tailed Godwits have been seen on passage. There are no documented efforts to promote the interest of the site for birds or any other wildlife.

- 6.370. Quinn (1995) does not mention Pershore wetlands but does refer to Lower Moor (which he calls “Lench Ditch”); he made a single summer visit and noted that many of the fields “*looked suitable for Curlew*” and “*could be suitable for Redshank, Snipe or Lapwing*”. Wilson and Smart (2003) noted “*a complete change in the Lapwing situation... mainly between Lower Moor and Fladbury*”, where up to seven pairs were nesting on arable fields between Lench Ditch and the Avon.
- 6.371. The Ecoscope report (Ecoscope 1999) note on the long section of river named “Site 16: River Avon from Evesham to Birlingham”, which the authors did not visit, suggests that “*the re-creation of inundation grasslands could provide suitable feeding habitats for grazing species of wintering waterfowl*”. It rates the whole long stretch of river as of “medium suitability” for wetland restoration in general for breeding waders and wintering waterfowl, but “High?” for inundation grassland. Most of the wetland re-creation schemes along the Worcestershire Avon over the last 20 years (Gwen Finch, John Bennett, Pershore, Lower Moor) have occurred in this stretch of the river.

### ***Water levels and flooding***

- 6.372. All of the floodplain sites are drained by ditches which flow into the Avon and are liable to flooding by the Avon in winter. The Ecoscope report sums up the water levels and flooding as “*This is a series of floodplain areas on the left and right banks of the River Avon from Pensham to Evesham. Along much of the river there are old flood banks which are breached in many places. Some of these banks are private and some are the result of river dredging. The water level is partly controlled by a series of weirs and navigation locks, such that it changes in a series of ‘steps’*” (Ecoscope 1999).

### **Water and flood conditions in winter 2019/20**

- 6.373. All of the riverside sites were heavily flooded at times in winter 2019/20, notably in November and again in February. Throckmorton is above the floodplain and subject only to rainwater inflow from surrounding landfill.

### ***Site Coverage***

- 6.374. The two most active counters, Richard Stott (Pershore) and Rob Prudden (Lower Moor) were interviewed and their comments are included in the account below.

### **Accuracy of the counts**

- 6.375. Counts are carried out weekly (sometimes more frequently) at Pershore, and given the excellent access, they are considered to be very accurate. Lower Moor is covered almost daily, and the counts are of high accuracy. Much less information is available about Craycombe, Wood Norton and Throckmorton.

### ***Current importance of the sites to SPA species and other notable wetland birds***

- 6.376. Winter (November-March): Small flocks of surface-feeding ducks (mainly about 45 Wigeon and up to 100 Teal in winter 2019/20, with small numbers of Shoveler and the occasional Shelduck) winter at Lower Moor. At Pershore, numbers of these ducks do not generally exceed single figures; Teal is a winter visitor (maximum 38), the others are considered as occasional winter visitors. At Wood

Lower Moor, to investigate measures for the Curlews that still breed there. It would be good to re-establish contacts with the owner at Craycombe to investigate measures for conservation of the meadows

### **Site evaluation against the 1% SPA population criterion**

- 6.385. The assessment of the importance of three of the four sites to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. Summary tables of the results are given below. The assessment of Pershore Wetland Meadows shows that this site is of high importance to Mallard throughout the year. The site achieves only moderate or low importance to Snipe, although this may be due to the difficulties inherent in determining numbers of this species, with under-counts likely to be frequent. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold.

**Table 5.15a – Summary of site evaluation for Pershore Wetland Meadows against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	<1%	<1%	<1%
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	<1%	low	low	Black-tailed Godwit	<1%	<1%	<1%
Gadwall	<1%	low	<1%	Turnstone	none	none	none
Wigeon	<1%	<1%	<1%	Knot	none	none	none
Mallard	high	high	high	Ruff	none	none	none
Pintail	<1%	<1%	<1%	Dunlin	<1%	<1%	<1%
Teal	<1%	<1%	<1%	Snipe	low	mod	low
Pochard	<1%	<1%	<1%	Redshank	<1%	<1%	<1%
Tufted Duck	<1%	<1%	low	Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%				

- 6.386. The assessment of the importance of Lower Moor to SPA species is shown in the summary table of the results given below. The assessment shows that this site is of high importance to wintering Shoveler, Teal, Lapwing, Golden Plover and Snipe. It is also of high importance for Snipe in autumn. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold.

**Table 5.15b – Summary of site evaluation for Lower Moor against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	<1%	low	<1%	Golden Plover	low	high	low
European White-fronted Goose	none	none	none	Grey Plover	<1%	<1%	<1%
Bewick's Swan	none	none	none	Ringed Plover	<1%	<1%	<1%
Whooper Swan	<1%	low	<1%	Whimbrel	<1%	<1%	<1%
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	low	high	low	Black-tailed Godwit	low	<1%	low
Gadwall	low	mod	low	Turnstone	none	none	none
Wigeon	<1%	mod	<1%	Knot	none	none	none
Mallard	none	none	none	Ruff	low	<1%	low
Pintail	<1%	low	<1%	Dunlin	<1%	<1%	<1%
Teal	low	high	low	Snipe	high	high	low
Pochard	<1%	low	<1%	Redshank	<1%	<1%	<1%
Tufted Duck	none	none	none	Spotted Redshank	none	none	none
Lapwing	low	high	<1%				

6.387. The assessment of the importance of Throckmorton to SPA species is shown in the summary table of the results given below. The assessment shows that this site is of high importance to Gadwall and Pochard in autumn and winter. Other surface-feeding and diving ducks do occur at the site but in numbers too low and/or too infrequent for the site to achieve importance for them. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold.

**Table 5.15c – Summary of site evaluation for Throckmorton against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	<1%	low	low	Golden Plover	<1%	low	<1%
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	<1%	<1%	<1%
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	low	mod	<1%	Black-tailed Godwit	none	none	none
Gadwall	high	high	mod	Turnstone	none	none	none
Wigeon	<1%	<1%	<1%	Knot	<1%	<1%	<1%
Mallard	<1%	low	<1%	Ruff	none	none	none
Pintail	<1%	low	<1%	Dunlin	<1%	<1%	<1%
Teal	none	none	none	Snipe	none	none	none
Pochard	high	high	low	Redshank	<1%	<1%	<1%
Tufted Duck	low	mod	low	Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%				

6.388. Counts at Wood Norton were too infrequent for an evaluation to be made with any reliability.

#### **40003 Bow Farm (Ripple Lakes)**

##### ***Location and size***

- 6.389. The approximate centre of this site is at SO869369. The WeBS counting site is approximately 185ha in extent, covering the two lakes either side of the M50.
- 6.390. The official name of the WeBS site is Bow Farm (WeBS site 40003), which derives from the farm on high land to the east of the Severn floodplain which is low-lying and marshy and has always attracted relatively small numbers of ducks and Lapwings. Many local birdwatchers refer to the site as Ripple Lakes. WeBS counts were made at this site in 1992/93 and 1993/94, but there were no further counts until January 2014 by which time the southern lake had been dug. The northern lake was excavated rapidly and extraction was completed in 2019. It seems that plans are afoot to make further extractions in the wet fields near Bow Farm, immediately south of the present southern lake.
- 6.391. The two large deep lakes on site are situated along the Severn in Worcestershire on either side of the M50, only a few miles north of Tewkesbury and the confluence of Avon and Severn. They are the most recent of the many Worcestershire gravel and sand pits on the Severn, after Grimley, Ryall and Clifton.

## **History**

- 6.392. Bow Farm (Ripple Lakes) is a recent and very important addition to the wetlands of the Severn Vale. Extraction of the south lake began about 2002 and proceeded gradually until 2007; by 2009 a large deep lake, attractive to waterbirds, had been established. The sand and gravel was transferred onto barges at a wharf very close to the M50 bridge and transported up the Severn to the processing plant at Ryall near Upton. A second northern lake was excavated much later and rather more rapidly. Gravel and sand extraction was completed in 2019 and the machinery removed. Discussions about the future use of the lakes is under way.
- 6.393. Some shooting of waterbirds traditionally occurred at Bow Farm before sand and gravel extraction began. There is currently a pheasant shoot only a few fields south of the site, and duck-shooting still occurs occasionally near the lakes (Andy Warr pers. com.).
- 6.394. As a large open water body, which does not dry out in summer, with as yet few surrounding trees, and broad edges providing grazing for geese and Wigeon, the site immediately became a major attraction for waterbirds, especially in late summer when other local sites with shallower pools (like Hill Court, Longdon, Coombe Hill, Ashleworth or Cobney Meadows) often dry out, and movements from these sites to Ripple Lakes have regularly been recorded. In addition, both lakes have an island in the centre; the south lake in particular has a very large island which attracts breeding waders and loafing geese and ducks.
- 6.395. Ripple Lakes was not among the 18 sites identified in the Ecoscope Report (Ecoscope, 1999) as having potential for wetland (re-)creation and improvement in the Severn and Avon Vales, for the obvious reason that excavation of the gravel and sand pits had not yet begun at that time.

## **Water levels and flooding**

- 6.396. Ripple Lakes are largely fed by ground water, and levels vary little in the course of the year, dropping slightly with summer evaporation. But being sited in the Severn floodplain they are subject to flooding in very wet winters (like 2019/20), if the Mythe Brook which normally flows south, backs up; equally there are occasions when the Severn breaks its banks just south of the M50 at SO867368, creating a sheet of water under which the lakes disappear and are not discernible.

### Water and flood conditions in winter 2019/20

- 6.397. In the very wet winter of 2019/20, the fields to the south of the lake were flooded on several occasions, notably in November and February, creating excellent conditions for surface-feeding ducks. More significant, the heavy floods of November and February completely submerged the whole of the floodplain, so that the lakes were no longer visible as such, hidden under a sheet of water. The flood gates in Uckinghall village were then closed so that the normal approach by the track from Uckinghall to the fishing ponds by the river was impassable. The floodwater was so high that even an approach from the higher ground on the east near Bow Farm was impossible.

## **Site coverage**

- 6.398. An interview was carried out with the observer who carries out WeBS counts, Andy Warr, and his views are included in the following account. Some counts were done in 1977-79, then 1983-85, then 2015 – present. Additional counts were made in winter 2019/20 by the project team.

### Accuracy of the counts

- 6.399. In normal conditions, the lakes are easily accessible from the footpath along the Severn bank which gives good views over both lakes and accurate counts can be made. In time of high flood this approach is not possible, so an approach from the minor road along the route of the disused railway on the east bank can be attempted from SO874373, but there is a copse between this road and the lake which obscures the view. On several occasions in 2019/20 the only way to survey the lakes was from a distance on high ground near Shuthonger Common at SO883352. But in conditions of high flood, many birds leave the lake and go elsewhere.

### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.400. Winter (November-March): Situated so close to the confluence of Severn and Avon, Ripple Lakes receive birds from both river valleys. The site is also only about four kilometres from Longdon Marsh and when floods are high at Longdon there are undoubtedly exchanges between the two sites, the more so if the whole of the floodplain at Ripple Lakes is under water, as occurred several times in winter 2019/20.
- 6.401. Given that the excavation has only recently been completed, there is so far little fringe vegetation to provide cover for Teal or Shoveler, which therefore only occur around the lake in small numbers; however, when Severn levels are high (as happened on several occasions in winter 2019/20) the original Bow Farm fields to the south around SO875350 are flooded and on occasion may hold numbers of Teal. Since the open water on the main lakes is fairly deep, numbers of Pintail are small.
- 6.402. The current conditions on the lakes are highly suitable for Wigeon, which graze (with the geese) around the grassy edges of the lake and may take refuge on the open water. From the 1980s to the early 2000s flocks of several hundred Wigeon occurred at Bredon's Hardwick Pits along the Avon (barely three kilometres off); as disturbance increased and the fringing vegetation around the pits grew higher at Bredon's Hardwick, these Wigeon seemed to transfer their allegiance to Ripple Lakes, now the principal site for Wigeon in the area (though they may still occasionally return to Bredon's Hardwick). In the early part of the winter (when sites like Coombe Hill and Ashleworth are largely dry) there is considerable movement of Wigeon between these sites and Ripple Lakes; in early autumn and winter, Wigeon roost at Ashleworth or on the Long Pool at Coombe Hill (often the only area at Coombe Hill still retaining water at this time of year) and are seen flying out to the north at or soon after first light; they are observed by day at Ripple Lakes, feeding, but then are seen returning at dusk to Coombe Hill or Ashleworth (Mike Smart, Andy Warr, personal observations).
- 6.403. Many hundreds of semi-natural Canada and Greylag Geese behave in the same way, feeding by day at Ripple Lakes, but moving out to roost at Coombe Hill or at Kemerton Lake near the Avon; the satellite-tagged Greenland White-fronted Goose mentioned under Upham Meadow joined these flocks in December 2018.
- 6.404. Being deeper than the floodplain wetlands, Ripple Lakes in this period regularly attract larger numbers of diving ducks - Tufted Ducks in their hundreds, up to a hundred Pochard and smaller numbers of Goldeneye and Goosander as well as rarer species such as the occasional Smew and Long-tailed Duck. Great Crested Grebes winter and Great Northern Diver has been recorded.
- 6.405. Waders in winter are not present in large numbers because of the lack of shallow edges, but flocks of Lapwings and Golden Plover may occur (coming perhaps from Longdon Marsh). Small numbers

of Green Sandpiper winter and there have been several records in recent years of wintering Common Sandpiper. Snipe also occur in numbers, especially around the island in the south lake. Migrant Black-tailed Godwits on their way to Iceland pass through in considerable numbers (up to a hundred), mainly in mid-March.

- 6.406. Spring (April-June): By April the wintering ducks have moved out, though some six to eight pairs of Tufted Duck regularly nest. Breeding waders arrive from March to nest on the island in the south scrape, with up to three pairs of Oystercatchers and Little Ringed Plovers and half a dozen pairs each of Lapwing and Redshank. Curlews do not nest at Ripple Lakes, but at least three pairs nest in nearby hay meadows (across the Severn at Queenhill Rough, just to the north at Uckinghall Meadows, and to the south at Shuthonger) and these birds come to the lakes in summer for a drink or wash and brush-up.
- 6.407. Furthermore, Ripple Lakes regularly host migrant waders which make short stopovers on their way from wintering grounds, often in Africa, to Arctic breeding grounds. A wide variety of species occur in small numbers, from the commoner Dunlin and Ringed Plover to less numerous but regular migrants such as Wood Sandpiper and normally littoral species like Sanderling or Turnstone. Migrant terns also occur at this time, in particular Black and Arctic Terns.
- 6.408. Autumn (July-October): Since water levels remain high in late summer and early autumn, waterbirds concentrate at Ripple Lakes as other sites dry out. Up to 50 Tufted Ducks and Pochard remain and small numbers of early returning Teal and Shoveler are seen. Locally breeding waders have left by late July but those that have breed further north, sometimes in the Arctic, are more frequent in autumn at gravel pits like Ripple Lakes than at dried-out floodplain wetlands; a large variety occurs, as on the northward spring passage, including Ruff and Greenshank.

### ***Bird movement between the site and the SPA***

- 6.409. Local observers consider that there is little evidence of any influx of the Wigeon to the area from the estuary SPA. They believe that Wigeon move in from northern Europe in autumn and spend the following months in the Ripple Lakes/ Bredon's Hardwick area. In the past there were regular Wigeon cannon-netting sessions at Bredon's Hardwick, and these have continued at Ripple Lakes. Two Wigeon ringed at Ripple Lakes in February 2019 have been recovered in the Yamalo-Nenets Autonomous Region, east of Archangelsk (Arctic Russia) in May 2019, with a third in Sussex in December 2019, when one Wigeon ringed ten years previously at Bredon's Hardwick was also re-trapped; as yet there are no recoveries showing Wigeon movement between Ripple Lakes and the SPA, though they certainly commute between Ripple Lakes and Coombe Hill or Ashleworth. Further detail on Wigeon movements within the study area is given in the Species account. Numbers of other surface-feeding ducks at Ripple Lakes are small, and there is little evidence of movement between Ripple Lakes and the SPA.
- 6.410. The diving ducks from Ripple Lakes are also considered by experienced local observers to arrive from the north. Numbers of all diving ducks at Ripple Lakes and other Worcestershire gravel pits are much higher than in Gloucestershire; if there were exchanges with the SPA in the south, diving ducks would surely be more numerous in Gloucestershire. It seems much more likely that diving ducks do arrive from the north, perhaps following the line of the Severn southwards. After the first big flood at Ripple Lakes in winter 2019/20 numbers of diving ducks dropped dramatically and there were corresponding rises at Clifton, so local observers again considered movements were largely

of this local nature.

- 6.411. The breeding waders at Ripple Lakes on the other hand will definitely have wintered on coastal sites, some of them no doubt on the Severn Estuary SPA. There is one recovery of a colour ringed Redshank at Bow Farm (Ripple Lakes), a bird ringed in October 2009 as a juvenile in Farlington Marshes, Hampshire, re-sighted there in September 2013 and 2015, then noted at Bow Farm (Ripple Lakes) in May 2016; the May date suggests it was breeding at Ripple Lakes (there is a comparable recovery of a Farlington Redshank at Coombe Hill). Among the Curlews that come to drink and preen at the site, one that nests just across the Severn at Queenhill Rough is known to come from the SPA, since it was colour-ringed in September 2010 near Lydney (where it returned every winter until 2015/16) and was seen at Ripple Lakes and Queenhill in summer 2014 and 2015.

#### ***Connectivity between this and other non-SPA sites***

- 6.412. There are numerous, albeit largely unsubstantiated, records of wetland birds travelling from this to other non-SPA sites, as is described elsewhere in this report. For example, there is clear connectivity with other sites adjacent to it, such as Bredon's Hardwick, Upham Meadow, Longdon Marsh, Combe Hill and Ashleworth, with documented movement from Ripple Lakes to Clifton Pits. Further details can be found in the accounts for these sites.

#### ***Current condition of the site***

- 6.413. The site is currently in excellent condition for waterbirds. Unlike older gravel pits (such as parts of Grimley or Bredon's Hardwick) fringing trees have not yet grown up and waterbirds have excellent all around views of potential threats.

#### ***Disturbance issues***

- 6.414. The main disturbance issue at present is uncontrolled dog-walking, by people who park their cars at the Uckinghall Fishing Lakes at SO864376, then walk downstream along the Severn Way with their dogs, which are more often than not off the lead, and sometimes run into the water where they disturb the birds present. There have been numerous occasions on which this has happened, documented most recently by an observer in July 2020 who witnessed a dog swimming out to an island and eating the eggs of a Great Crested Grebe. Given that SPA and other species have been recorded attempting to establish territories in the same area, if this disturbance and predation pressure is sustained then it presents a very grave issue for the continued conservation importance of the site for breeding wetland birds as well as indicating that even island "refuge" sites are not secure at any time of the year. Some dog walkers leave the official footpath and make a complete circuit of the lakes, returning up the 'inland' eastern side for much of which there is no footpath, and where a quiet undisturbed area would be of huge benefit to the birds.
- 6.415. Fishing occurs on the banks of the Severn (with notices from the Environment Agency to fishermen in four languages, including Polish and Latvian). There is currently no fishing on the lakes themselves.

#### ***Opportunities for enhancement***

- 6.416. The future use is under discussion. It is very much to be hoped that its current importance as a waterbird site can be maintained. In particular, there is a need to regulate current dog-walking

activities, so that dog-walkers in future keep to the footpaths and do not spread over the whole of the area. It would be desirable to clarify the situation as regards shooting, fishing and boating on and around the Lakes.

### **Site evaluation against the 1% SPA population criterion**

- 6.417. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Bow Farm is of high importance to wintering Shoveler, Gadwall, Wigeon, Teal and Pochard. In addition, it is important to Gadwall in spring and Pochard in autumn, with year-round importance to Tufted Duck. On spring passage, the site is important to Whimbrel.
- 6.418. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold. The assessment is not sensitive to the presence of breeding and migrant waders other than Whimbrel. The regional significance of the site to breeding Lapwing and Redshank should be emphasised particularly, as should the use of the site by Curlew breeding on adjacent land. The potential significance of the site to dispersing Black-tailed Godwits in spring is highlighted elsewhere in this report.

**Table 5.16 – Summary of site evaluation for Bow Farm, Bow Farm (Ripple Lakes) against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	<1%	<1%	low	Golden Plover	<1%	low	<1%
European White-fronted Goose	low	low	<1%	Grey Plover	<1%	<1%	<1%
Bewick's Swan	<1%	low	<1%	Ringed Plover	<1%	<1%	low
Whooper Swan	<1%	low	low	Whimbrel	<1%	<1%	<b>high</b>
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	mod	<b>high</b>	low	Black-tailed Godwit	<1%	low	low
Gadwall	mod	<b>high</b>	<b>high</b>	Turnstone	<1%	<1%	<1%
Wigeon	mod	<b>high</b>	low	Knot	<1%	<1%	<1%
Mallard	mod	mod	low	Ruff	low	low	low
Pintail	<1%	mod	low	Dunlin	<1%	<1%	<1%
Teal	low	<b>high</b>	low	Snipe	low	mod	low
Pochard	<b>high</b>	<b>high</b>	mod	Redshank	<1%	<1%	<1%
Tufted Duck	<b>high</b>	<b>high</b>	<b>high</b>	Spotted Redshank	low	low	<1%
Lapwing	low	mod	<1%				

## 40004 Oakley pool

### **Location and size**

- 6.419. The approximate centre of this site is at SO892605. The site is 1.2ha in size. It is a small lake in a depression in farmland, with quite extensive reedbeds, just south of Droitwich, and about 3km southeast of Westwood Park.

### **History**

- 6.420. Oakley Pool was listed as an SSSI of 5.9 hectares in 1955, and was renotified under the 1981 Act in 1984. The citation notes that the “*site consists of a pool surrounded by reed-swamp, fen and grassland. The pool appears to have been formed by subsidence following underground brine extraction and is thought still to be extending due to continued subsidence. The secluded nature of the area provides a valuable breeding site for a number of wetland birds including the reed warbler *Acrocephalus scirpaceus* which has a large breeding colony in the reed-swamp. The margins of the pool also provide secure breeding areas for little grebe *Tachybaptus ruficollis*, tufted duck *Aythya fuligula pochard* *A. ferina* and ruddy duck *Oxyura jamaicensis*. Grasshopper warbler *Locustella naevia* breeds in the tall vegetation at the north end of the pool. The site is regularly used for bird ringing and other ornithological research, which adds to its scientific importance*”. The reference to brine extraction is interesting and suggests a parallel with The Flashes at Upton Warren.
- 6.421. The site is outside the river valleys covered by Ecoscope (1999).

### **Water levels and flooding**

- 6.422. The pool is sited in a depression and naturally collects water. The site is some way from the rivers and is not affected by river floods.

### Water and flood conditions in winter 2019/20

- 6.423. No detailed information available, but the heavy rainfall from September to March will no doubt have led to a rise in water levels.

### **Site coverage**

- 6.424. Oakley Pool was covered for WeBS (mainly in winter, but with a few summer counts) from 2008/09 until 2015/16 but has not been covered since then. The project team made one visit to Oakley Pool in January 2020.

### Accuracy of counts

- 6.425. The site is easily surveyed from the higher ground which surrounds it, so there is no problem with obtaining a general overview. Some species may be under-estimated because they are hidden in the thick reed-swamp.

**Current importance of the site to SPA species and other notable wetland birds**

- 6.426. Winter (November-March): The results of WeBS counts at Oakley Pool between 2008/09 and 2015/16 show relatively small numbers of ducks present in winter, the most numerous species being Mallard with a maximum count of 120 birds; other ducks were: Teal (recorded most winters with a maximum of 25), Gadwall (maximum of two recorded in three winters out of eight); Shoveler (maximum of three in two winters); a single Wigeon on one occasion. Tufted Duck was the only diving duck recorded (present most winters, maximum of five). Lapwings were recorded in three winters (maximum six individuals). Snipe were recorded in only one winter (maximum seven), a single Jack Snipe on one occasion. Little Grebe and Water Rail were recorded in most winters, illustrating the overgrown nature of the habitat. The Ruddy Duck had of course disappeared. The observations made by the project team in February 2020 produced comparable results, with Mallard, Tufted Duck and Little Grebe present in small numbers.
- 6.427. Spring (April-June): The spring and summer WeBS counts record breeding by very small numbers of Mute Swan, Mallard, Little Grebe, Coot and Moorhen. There is little indication of breeding by waders (the occasional record of Lapwing), and no sign of migrant waders passing through on their way north.
- 6.428. Autumn (July-October): Although water levels no doubt drop in late summer, it must be rare for the site to dry out completely. Even so, there is no indication of any SPA bird species occurring in autumn.

**Bird movement between the site and the SPA**

- 6.429. There is no indication at all of movement between the SPA and Oakley Pool.

**Connectivity between this and other non-SPA sites**

- 6.430. There may be minor movement from Oakley Pool to nearby Westwood Park, particularly in the case of Tufted Ducks.

**Current condition of the site**

- 6.431. The site is small, surrounded by farmland, with a farmer who appears to be sympathetic. It seems to be in good condition, though there are extensive house building projects on the outskirts of nearby Droitwich, which might lead to encroachment.

**Disturbance issues**

- 6.432. Some footpaths pass close to the site, but disturbance does not appear to be a major issue.

**Opportunities for enhancement**

- 6.433. It is not clear whether any active conservation takes place at present. Some management of reedy vegetation might be desirable to maintain some areas of open water.

**Site evaluation against the 1% SPA population criterion**

- 6.434. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A

summary table of the results is given below. The assessment shows that Oakley Pool is not of high importance for any SPA species, but it has low importance or supports less than the equivalent of 1% of the SPA populations for five species, all but one of them dabbling ducks.

**Table 5.17 – Summary of site evaluation for Oakley Pool against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	none	none	none	Curlew	none	none	none
Shoveler	<1%	<1%	<1%	Black-tailed Godwit	none	none	none
Gadwall	<1%	low	<1%	Turnstone	none	none	none
Wigeon	<1%	<1%	<1%	Knot	none	none	none
Mallard	low	low	<1%	Ruff	none	none	none
Pintail	none	none	none	Dunlin	none	none	none
Teal	<1%	<1%	<1%	Snipe	<1%	<1%	low
Pochard	none	none	none	Redshank	none	none	none
Tufted Duck	<1%	<1%	<1%	Spotted Redshank	none	none	none
Lapwing	<1%	<1%	<1%				

#### **40007 John Bennett Nature Reserve, 40058 Gwen Finch Nature Reserve, Asham Meadow and Eckington Marshes**

##### **Location and size**

- 6.435. These sites are treated together as geographically very close to each other and with clear connectivity between them. All lie along the floodplain of the River Avon upstream of Upham Meadow and Rectory Farm Meadows, for which descriptions are provided elsewhere in this section of the report.
- 6.436. Asham Meadow is a Lammas Meadow on the right (north) bank of the Avon, immediately upstream of Eckington Bridge; it is not a WeBS site. Gwen Finch (WeBS site 40058) and John Bennett (WeBS site 40007) are two small wetlands, recently created on former arable and grassland fields, respectively one and two kilometres upstream of Asham, on the same right (north) bank of the Avon. There is much movement of birds between the three sites, so they are treated together here. Eckington Marshes are a series of floodplain meadows downstream of Asham Meadow on the opposite left (east) bank of the Avon, from the railway bridge at SO917425 down to Strensham Lock at SO915405, as far inland as Hammock Ditch; they have never been included in WeBS counts but

are significant for breeding waders.

- 6.437. The approximate centre of Asham Meadow is at SO925425 and it is 32ha in extent. The approximate centre of Gwen Finch Nature Reserve is at SO937419 and it is 20ha in extent. The approximate centre of John Bennett Reserve is at SO945422 and it is 20.6ha in extent. The approximate centre of Eckington Marshes is at SO914414 and it is 81ha in extent.

### **History**

- 6.438. Asham Meadow, east of the B4080 from Eckington to Pershore, is an ancient Lammas Meadow (see under Upham Meadow for details of Lammas meadows), where the land is divided into strips belonging to different owners (currently nine strips with six different owners), a system which dates from mediaeval times; a late hay cut is taken, followed by aftermath grazing. The site is not an SSSI since the owners wish to maintain the option of an early hay cut in June. West of Eckington Bridge is Gooseham Meadow which, like Asham, is Access Land under the 2000 CROW Act; the vegetation of Gooseham has been agriculturally improved and holds little interest for wetland birds.
- 6.439. Eckington Marshes are a series of riverside hay meadows along the banks of the Avon below Eckington Bridge, which include some very wet areas along Hammock Ditch, including an old water meadow at SO913415. Some ten years ago scrapes were excavated at the southern part of the site at SO913411 and SO915412 under an agri-environmental scheme, with a view to attracting breeding waders. This was moderately successful in attracting Redshanks in the early years.
- 6.440. Gwen Finch and John Bennett are two of the sites along the Avon where wetland restoration work has been carried out in the last 20 years by a variety of conservation bodies (see also the account for Pershore and Lower Moor).
- 6.441. Upstream of Asham, just beyond the sharp bend in the Avon known as the Swan's Neck, is Gwen Finch Nature Reserve, created in 2001 by Worcs WT from former arable land, just south of the village of Birlingham. This site is composed of an area of wet woodland, four scrapes, a reedbed and a flooded channel fringed with Common Reed (*Phragmites australis*), the latter filled using two wind-pumps that extract water from the Berwick Brook, which itself flows into the River Avon. The majority of the rest of the site is given over to wet grassland; the reserve is grazed but there are problems of encroaching vegetation. Gwen Finch is a non-access reserve and so is best viewed from high ground on other side of the Avon overlooking the site.
- 6.442. John Bennett Nature Reserve is just upstream of Nafford Lock and Gwen Finch, and was created by as a private nature reserve developed by Worcestershire Wildlife Trust in cooperation with the landowner, NE and the Environment Agency from 2010 onwards, by excavation of pools in a former arable field. The aim of this habitat creation was, as at Gwen Finch, to create a series of reed-fringed pools for the benefit of water birds. The reserve is reached by a permissive footpath leading to a hide which gives good views over the scrapes. Worcs WT assists in the management of the site.
- 6.443. Quinn (1995), writing before any wetland restoration work had begun, notes at "Woodfield Farm" (which coincides with the present site of John Bennett) the 'large amount of spring sown crops' and remarks that 'the land is intensively farmed and sprayed heavily with pesticides'.
- 6.444. At Eckington Marshes both Quinn (1995) and Wilson and Smart (2003) noted three pairs of nesting

Lapwings and two pairs of nesting Curlews, and the Curlews are still present (MS pers. obs.).

- 6.445. The Ecoscope report (Ecoscope 1999) deals with conservation and restoration of meadow and floodplain habitats; its note on the long section of river named “Site 16: River Avon from Evesham to Birlingham” does not refer to any of these sites.

### ***Water levels and flooding***

- 6.446. Asham Meadow is a riverside hay meadow, liable to wintering flooding when the Avon is high, as are Eckington Marshes. Gwen Finch and John Bennett are both effectively situated on an island between the Avon and the Berwick Brook; water is pumped into Gwen Finch by wind-pumps inside the reserve; the scrapes at John Bennett are linked to the river by a ditch with a valve at the junction, so that water can be let in or out. Neither Gwen Finch nor John Bennett normally dry out completely in late summer.

### **Water and flood conditions in winter 2019/20**

- 6.447. winter 2019/20 was very wet, with several flood events on the Avon, so that all four sites were completely submerged on several occasions. There was very heavy passage of water over the weir at Nafford at times of high flood.

### ***Site coverage***

- 6.448. There is a long practically unbroken run of WeBS counts for Gwen Finch from its early days in 2003 to the present. The counts from John Bennett run from its creation in 2017 to the present.
- 6.449. The current main WeBS counter for both Gwen Finch and John Bennett, Rob Prudden, was interviewed, and his comments are included in the present account of the sites.

### **Accuracy of counts**

- 6.450. WeBS counts are not carried out at Asham or Eckington and they are seldom visited by birdwatchers in the winter. The WeBS counter has access to Gwen Finch reserve for counts, and the site can also be surveyed from a distance from high ground on the opposite side of the Avon. John Bennett is easily counted from the hide overlooking the main scrape, which can be approached without scaring birds on the open water.

### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.451. Winter (November-March): Asham Meadow and Eckington Marshes hold few waterbirds in winter, other than perhaps a few Snipe in damp patches.
- 6.452. Gwen Finch’s pools and reedbeds were designed to attract wintering ducks, and from the outset have regularly held midwinter totals of a few hundred Teal (maximum over 400) and smaller numbers of Wigeon (usually less than 100, maximum 160), with the occasional Shoveler (up to 30 in March just before the departure to the breeding grounds) and small numbers of Shelduck; Gadwall and Pintail are rarely seen. Up to a dozen Tufted Duck occur. The numbers of wintering Snipe are notable, sometimes over 100, with frequent records in single figures of Jack Snipe and sometimes Green Sandpiper.
- 6.453. John Bennett NR has been in existence for a much shorter time and, situated above Nafford weir,

remains less overgrown than Gwen Finch NR, with more open water. The suite of species and their number is similar, with Wigeon (up to 120), some Shoveler, Tufted Duck and Pochard.

- 6.454. Spring (April-June): Asham in spring regularly hosts at least one pair of nesting Curlew, and used to have nesting Redshanks; Quinn in 1995 records two pairs of Redshanks, but none were found in 2002 (Wilson and Smart, 2003). The Asham Curlews are regularly seen at Gwen Finch and John Bennett, where they go to drink and bathe. Up to 70 mainly migrant Lapwings appear in spring at Gwen Finch and John Bennett, and one or two pairs may try to nest; at John Bennett Redshanks still occur in the breeding season. Mute Swan, Mallard, Coot and Tufted Duck all nest at Gwen Finch and/or John Bennett. Both sites attract migrant waders passing from the SPA up the Avon to more northerly breeding sites – Lapwings in early spring and other more northerly breeding waders like Dunlin and Ringed Plover in April and May.
- 6.455. Autumn (July-October): Asham and Eckington both dry out after the hay cut, but both Gwen Finch and John Bennett retain water in autumn, so attract some waders on their way back south.

#### ***Bird movement between the site and the SPA***

- 6.456. As for other Worcestershire sites, and even more so for those along the Avon, there is little or no evidence of movement by wintering waterbirds between the estuary SPA and Gwen Finch or John Bennett, with the exception of the small number of Shelducks which probably did originate on the estuary.
- 6.457. The Curlews that nest at Asham and Eckington certainly wintered on the coast and are very likely to have come from the SPA, as is also likely to be the case with nesting Redshanks and Lapwings.
- 6.458. The small numbers of migrant waders that occur on passage are undoubtedly on their way from the SPA to northern breeding sites in spring, and on their way back to the SPA and beyond in autumn.

#### ***Connectivity between sites within this cluster***

- 6.459. There are certainly constant exchanges between Asham, Gwen Finch and John Bennett. There may also be the occasional exchange (perhaps by Wigeon and Teal?) with sites further down the Avon like Bredon's Hardwick or Kemerton, but there is no empirical evidence for this.

#### ***Current condition of the sites***

- 6.460. Asham Meadow and Eckington Marshes are hay meadows in good condition with sympathetic owners who wish to maintain traditional agricultural practices, and are of considerable botanical interest.
- 6.461. At Gwen Finch, the pools have tended to silt up, and their fringes have tended to scrub over, partly because of difficulties in controlling water levels below Nafford weir; silt removal is prohibitively expensive and Worcs WT has attempted to practice vegetation control measures, which demand large resources in personnel and time. The management of John Bennett, located above the weir, is for the moment less of a problem because water levels are more controllable, but in the long term the same problems may arise.

#### ***Disturbance issues***

- 6.462. Asham Meadows is crossed by a footpath fairly heavily used by dog walkers, which causes some distress to breeding waders. The owners have installed notices at each end requesting users to keep their dogs under control.
- 6.463. A public footpath runs along the bank of the Avon alongside Eckington Marshes, but it is bordered by a fence which effectively prevents walkers and their dogs from straying onto the meadows disturbing any nesting birds.
- 6.464. Gwen Finch is a non-access reserve, where disturbance is not a problem. The permissive path to John Bennett simply leads to the hide, so is not used by passing ramblers.

### ***Opportunities for enhancement***

- 6.465. Asham Meadow is included in the Carrant Brook Facilitation Fund<sup>48</sup>, which enables the Farming and Wildlife Advisory Group to offer advice on environmental issues to farmers. Asham and Eckington remain very important for breeding waders, notably Curlews, and any future agri-environmental schemes or environmental land management regulations, should provide for grants to farmers who take measures to promote successful breeding by waders.
- 6.466. Both Gwen Finch and John Bennett are managed by conservation bodies, who aim to develop the sites for their value to wild flora and fauna.

### ***Site evaluation against the 1% SPA population criterion***

#### John Bennett NR

- 6.467. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that the site is of high importance to wintering Shoveler, Gadwall, Wigeon, Teal and Snipe. It is also of high importance to Mallard in autumn.
- 6.468. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold. As for other sites, the assessment is not sensitive to the presence of breeding waders. Redshank still occur here and this is highly significant in a local and perhaps a regional context. Whether or not the birds that nest are from the wintering population found on the SPA is, however, not known.

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<sup>48</sup> <https://www.fwagsw.org.uk/carrant-catchment-restoration-project>

**Table 5.18 – Summary of site evaluation for John Bennett Nature Reserve against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	<1%	<1%	<1%
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	low	high	<1%	Black-tailed Godwit	none	none	none
Gadwall	<1%	mod	mod	Turnstone	none	none	none
Wigeon	<1%	high	<1%	Knot	none	none	none
Mallard	high	mod	low	Ruff	none	none	none
Pintail	<1%	<1%	<1%	Dunlin	none	none	none
Teal	low	high	<1%	Snipe	low	high	mod
Pochard	<1%	low	low	Redshank	<1%	<1%	<1%
Tufted Duck	<1%	mod	low	Spotted Redshank	low	<1%	<1%
Lapwing	<1%	<1%	<1%				

**Gwen Finch NR**

- 6.469. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that the site is of high importance to wintering Shoveler, Gadwall, Mallard, Teal and Snipe. It is of additional high importance for Mallard and Snipe in autumn and Tufted Duck in spring.
- 6.470. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold.

**Table 5.19 – Summary of site evaluation for Gwen Finch Nature Reserve against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	<1%	<1%	<1%
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	<1%	<1%	<1%
Whooper Swan	none	none	none	Whimbrel	<1%	<1%	<1%
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	mod	high	low	Black-tailed Godwit	<1%	<1%	<1%
Gadwall	low	high	high	Turnstone	<1%	<1%	<1%
Wigeon	low	mod	low	Knot	none	none	none
Mallard	high	high	high	Ruff	low	<1%	<1%
Pintail	<1%	<1%	<1%	Dunlin	<1%	<1%	<1%
Teal	mod	high	<1%	Snipe	high	high	mod
Pochard	<1%	low	low	Redshank	<1%	<1%	<1%
Tufted Duck	low	mod	high	Spotted Redshank	low	<1%	<1%
Lapwing	low	low	<1%				

## 40051 Great Pool Westwood Park

### Location and size

- 6.471. The approximate centre of this site is at SO879632. It is 29ha in size and is found to the west side of Droitwich. This is 3km northwest of Oakley Pool.

### History

- 6.472. "Westwood Great Pool", was listed as an SSSI in 1955 and re-notified under the 1981 Act in 1984. The citation indicates that "*The site represents one of the largest areas of open water in Worcestershire and is important for both its plant and bird communities ... and two national [plant] rarities, the eight-stamened waterwort (Elatine hydropiper) and the ribbon-leaved water plantain (Alisma gramineum). The latter species was first discovered in Britain at Westwood Great Pool in 1920 and is only known from three other sites in the country. The Lake and its marginal vegetation provide a valuable habitat for wetland birds. Breeding species include great crested grebe (Podiceps cristatus), tufted duck (Aythya fuligula) and pochard (A. ferina). Westwood Great Pool is also one of the most important sites for over-wintering waterfowl in Worcestershire*".
- 6.473. The site is in private grounds and only small numbers of permits are issued to birdwatchers. The SSSI citation does not seem to have been updated recently, and the overall picture of wetlands in Worcestershire has changed with developments at other sites; while Westwood Pool boasts an

exceptional list of bird records (thanks largely to very intensive coverage by a committed group of birdwatchers), it could not (given the existence nowadays of sites like Bow Farm (Ripple Lakes), Clifton or Bredon's Hardwick) be considered as one of the most important sites in Worcestershire for surface-feeding ducks, though the numbers of diving ducks remain impressive.

6.474. The site is outside the river valleys covered by Ecoscope (1999).

### ***Water levels and flooding***

6.475. Westwood Pool is a large lake created in the seventeenth century by damming of a stream in the grounds of the historical Westwood House. *"A pool created for landscape reasons, and through the years used for various recreational activities – water-skiing, sail boarding, jet skiing, yachting, and fishing from punts and platforms, all causing disturbance of one form or another"* (Dutton 2017).

### Water and flood conditions in winter 2019/20

6.476. The very wet winter of 2019/20 no doubt caused the water levels to rise, but the site is not subject to flooding like floodplain sites.

### ***Site coverage***

6.477. The project team made one visit to Westwood Pool, where they met Wayne Dutton who visits the site almost every day, carries out the WeBS counts and has produced a very detailed and comprehensive document on "Westwood Birding" up to 2017 (Dutton, 2017).

### Accuracy of the counts

6.478. The counts are carried out by a very experienced observer, and the vantage points around the lake allow good views of the whole water surface. The counts are therefore considered to be of a high standard of accuracy.

### ***Current importance of the site to SPA species and other notable wetland birds***

6.479. Winter (November-March): Counts at Westwood Pool date back to 1947/48, when the then "duck counts" started, reflecting the comment in the SSSI citation that it was one of the most important sites for wintering ducks in the county.

6.480. Wintering Canada Geese have increased to several hundred. Shelduck is noted by Dutton (2017) as "Common", with more than 100 records, though usually occurring in single figures.

6.481. The principal species noted in WeBS counts among surface-feeding ducks are: Mallard (up to 220 in the early years, 450 in the 1970s and 1980s, winter maxima generally less than 200 in last ten years); Teal (maximum 30 in the early years, up to 200 in the 2000s, rarely 100 in the last ten years); Wigeon (generally 50 early on, occasionally over 130; fewer in the 1970s, generally in double figures in the last thirty years, but occasionally up to 150); Gadwall increasing over the years (up to 18 occurring from the 1970s and 1980s, 40 in the 1990s and 2000s, 20 in last ten years); Shoveler also increasing (up to 40 from the late 1970s, but up to 100 in the last ten years); Pintail is a scarce winter visitor, numbers rarely exceeding five.

6.482. Among diving ducks: Tufted Duck (present throughout, rarely exceeding 100); Pochard also present through the period (up to 200 in the 1970s, occasionally 100 in the last ten years); the occasional

Goldeneye (but up to 20 in the mid-2000s); Goosander occasional in single figures, very small numbers of Scaup, Smew, Red-breasted Merganser or Long-tailed Duck; a curiosity - still Ruddy Ducks in the 1980s and 1990s (up to 90); most were eradicated in the Midlands in 2005, but the last record at Westwood Pool was as late as May 2015.

- 6.483. Snipe common in 1960s, now rare due to water level (Dutton, 2017); even Lapwing is now considered as “uncommon” (Dutton, 2017) though flocks of hundreds occurred in the 1970s and it has bred.
- 6.484. From the early 2000s until 2015 when the Throckmorton Landfill site ceased accepting food waste, the site held a major gull roost of several thousand gulls (mainly Black-headed, Lesser Black-backed and Herring Gulls) but also some very rare ones.
- 6.485. Spring (April-June): Gadwall is scarce in summer but has bred. Mallard breeds. Tufted Duck has bred.
- 6.486. Some passage waders occur, but in very small numbers since there are few muddy edges, and even species like Common Sandpiper and Redshank are barely recorded annually. Migrant terns, which can feed over the deep water, are recorded on their way north: Common, Arctic and Black Terns are all ‘common migrants’ according to Dutton (2017), and there are very occasional records of Sandwich and Little Terns, and Little Gulls.
- 6.487. Autumn (July-October): Westwood Pool does not dry out in the autumn, so still attracts southward bound migrant waders, but not in any considerable numbers. Migrant terns occur again on return passage, with even the very occasional skua.

#### ***Bird movement between the site and the SPA***

- 6.488. As at other Worcestershire sites, local birdwatchers do not believe that there is any exchange of surface-feeding ducks between the SPA and Westwood, and there is no empirical evidence to demonstrate any such movement. Diving ducks seem much more likely to arrive from the north or east: Tufted Ducks and Pochard are much more numerous here than further south, and the range of diving species much wider, with a higher frequency of occurrence. The one duck which might perhaps have a link with the estuary is Shelduck, normally a species which seeks saltwater habitats, but comes inland in search of nesting sites; on the other hand there is no evidence of movement between the Severn Estuary and Westwood; it could equally well be the case that Westwood Shelducks originate from north-western estuaries like the Dee or Ribble.
- 6.489. The deep-water habitats at Westwood only attract small numbers of waders: it may be that the occasional passing wader drops in on northward passage in spring or on its way back in autumn, but numbers are not great. On the other hand the regular occurrence of terns and some gulls and even skuas in spring and/or autumn is surely a sign that birds taking the inland Severn Estuary-Trent-Humber migration route do appear at Westwood.

#### ***Connectivity between this and other non-SPA sites***

- 6.490. There may be some movement of birds between Westwood Pool and nearby sites like Grimley Gravel Pits (7km to the southwest) or Upton Warren (6km to the northeast), particularly for diving ducks disturbed from those sites; or perhaps for migrating terns in spring or autumn. Gulls which

used to feed by day at Throckmorton Landfill Site (15km to the southeast near Pershore) regularly came to roost at Westwood Pool, as demonstrated by the observation of rare birds such as Laughing Gull (*Leucophaeus atricilla*) seen at both sites.

#### ***Current condition of the site***

- 6.491. The site seems currently to be in good condition for supporting a range of waterbirds, with a large area of open water and extensive beds of fringing emergent vegetation and Willow scrub.

#### ***Disturbance issues***

- 6.492. As already noted, the site is private, with little incursion from outside, and the owners are sympathetic to conservation aims; but the site is regularly used, much more in summer than in winter, for water sports, which cause considerable disturbance to birds on the water body.

#### ***Opportunities for enhancement***

- 6.493. Within the constraints of the site and its current uses, no opportunities to enhance the site that would benefit SPA species, and which have not already been tried were identified.

#### ***Site evaluation against the 1% SPA population criterion***

- 6.494. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that this site is of high importance to wintering Shoveler, Gadwall, Pochard and Tufted Duck, with Gadwall and Tufted Duck also present in important numbers in autumn and spring. The site is of high importance to Mallard in the autumn only.
- 6.495. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold.

**Table 5.20 – Summary of site evaluation for Great Pool Westwood Park against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	low	<1%	<1%	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	low	high	low	Black-tailed Godwit	<1%	<1%	<1%
Gadwall	high	high	high	Turnstone	none	none	none
Wigeon	<1%	low	<1%	Knot	none	none	none
Mallard	high	low	low	Ruff	none	none	none
Pintail	<1%	low	<1%	Dunlin	none	none	none
Teal	low	low	<1%	Snipe	<1%	<1%	<1%
Pochard	mod	high	low	Redshank	<1%	<1%	<1%
Tufted Duck	high	high	high	Spotted Redshank	none	none	none
Lapwing	<1%	<1%	<1%				

**40056 Upton Warren LNR****Location and size**

- 6.496. Otherwise known as the “Christopher Cadbury Wetland Reserve”, this site is located alongside the A38 between Droitwich and Bromsgrove. The approximate centre of this site is at SO933671 and it covers an area of some 26ha, divided into three - The northern sector (“The Moors”), the southern sector (“The Flashes”) with a lake between them used for outdoor pursuits.

**History**

- 6.497. In Roman times Droitwich was known as Salinae (meaning “Salt Works”) and the origins of salt extraction in the area go back to prehistoric times. Droitwich Spa brine exists far below the ground and emanates at the surface as springs. The brine is so salty that the Dead Sea is the only other natural source of salt water able to equal its strength and density.
- 6.498. The Moors are freshwater pools alongside the River Salwarpe, on former agricultural land. The saline pools of the Flashes receive brine from underground seepage, and salt-tolerant or salt-dependent plants form a rare inland saltmarsh.
- 6.499. A larger area (also including the former gravel pit between The Moors and The Flashes, now part of the Aztec water sports complex) was designated as an SSSI covering 42.8 hectares in 1972 under the 1949 National Parks and Access to the Countryside Act, and was re-notified in 1984

under the 1981 Act. The citation notes: “*The northern and southern pools are the results of subsidence associated with salt extraction. The middle pool is a worked out gravel pit. The southern pools are significantly saline due to brine seepage from underground. The land which surrounds the pools consists of permanent pasture, fen and neglected grassland. The River Salwarpe and the Hen Brook run through the site, and a number of pollarded crack willows Salix fragilis line their courses. The principal importance of the site is its ornithological interest. The pools provide an important habitat for wintering and passage waterfowl and wader species. The bare mud and saltmarsh of the southern pools are particularly important in this respect. The pools also have good breeding bird communities with over 60 species recorded...*”

- 6.500. The 26ha reserve (excluding the central Aztec pool) is now owned by Worcestershire Wildlife Trust, who consider it as one of their flagship reserves. Much of the land was purchased by Christopher Cadbury who also helped to pay for many developments and improvements. The reserve now bears his name in recognition of his involvement.
- 6.501. Upton Warren is not covered in the Ecoscope report (1999), which deals with floodplain sites in the Severn and Avon Vales only.

### ***Water levels and flooding***

- 6.502. The River Salwarpe flows alongside The Moors, then on through Droitwich, joining the Severn just opposite Grimley. It may overflow in winter. As noted, above the brine deposits are an important feature of The Flashes.

### Water and flood conditions in winter 2019/20

- 6.503. The heavy rain of the winter kept the Salwarpe at a high level, and occasionally impeded access to The Moors, but access to The Flashes remained open. There was at no time extensive flooding as occurred in floodplain meadow sites.

### ***Site coverage***

- 6.504. Upton Warren is one of Worcestershire WT's most popular reserves, since both The Moors and The Flashes are well served with hides and observation points.
- 6.505. Ornithological coverage of the reserve is very thorough, with records every day since the time of Arthur Jacobs, now collated by John Belsey. Upton Warren has an extremely long series of WeBS counts dating back to 1965/66, in the early years winter counts only, in recent years in every month.

### Accuracy of the counts

- 6.506. The site is extremely well covered from an ornithological point of view and has a large and regular complement of counters, who know the site well. There is every reason to be entirely confident of the accuracy of the counts.

### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.507. Unlike many other riparian sites in Worcestershire, Upton Warren is not a deep-water site resulting from recent gravel excavation, but a series of shallow pools which do not dry out in summer and autumn, and thus remain attractive to water birds throughout the year.

- 6.508. Winter (November-March): Of SPA qualifying species, Shelduck occurs from the New Year onwards, but numbers rarely reach double figures (13 in February 2015, 12 in January 2018); Gadwall also occurs throughout the winter (and at other times of the year too), with up to 22 individuals (March 2017). Among ducks contributing to the SPA species assemblage and the SSSI listing (Wigeon, Teal, Mallard, Pintail, Shoveler, Pochard and Tufted Duck), Wigeon occasionally reaches double figures with maxima of 29 and 31 in 2013; Teal occurs in larger numbers in winter with maxima sometimes exceeding 200 birds (227 in November 2014 and 239 in December 2013); Mallard also occurs throughout the winter, with peaks of up to 150; Pintail (as elsewhere in Worcestershire away from Longdon and Ripple) is scarce, generally occurring only occasionally in ones and twos (maxima of 11 in January 2012 and October 2014, 18 in October 2012); numbers of wintering Shoveler are altogether larger than of Pintail, with winter maxima generally over 50 and occasionally reaching three figures (151 in October 2014, 115 in October 2015, 130 in October 2016); among diving ducks Pochard are regular winter visitors, usually with up to 50 birds present, maximum of 89 in February 2019; Tufted Ducks also winter regularly, with numbers generally around 100 in winter.
- 6.509. Curlew numbers in the 1980s and 1990s reached as many as 122 in post-breeding or autumn passage flocks, these numbers shrinking during the winter (John Belsey pers. comm.); nowadays Curlew is no longer a passage migrant but a winter visitor at Upton Warren, occurring from July to March in a small wintering flock which has decreased in recent years (reflecting the national and international decline in breeding Curlews) – up to 30 in 2011 and 2012, barely double figures in the last ten years; this wintering flock may comprise birds that nest on high ground to the north and west, perhaps the Staffordshire Moors and Peak District, or further afield. Two ringed Curlews have been recovered at Upton Warren: one was ringed as a juvenile at a post-breeding group in a sugar beet lagoon near The Wrekin in August 1980 and recovered at Upton Warren 17 years later in February 1997 (Tony Cross pers. comm.); the other was ringed near Aberystwyth in January 2016 and recovered at Upton Warren in September 2017.
- 6.510. Lapwing occurs in considerable numbers in winter, with peak counts reaching 1000 birds (January 2018 and 2019 on The Flashes) and winter peaks in recent years regularly above 500. Snipe winters in considerable numbers, with occasional counts reaching three figures: 100 in February and November 2013, 124 in November 2014, 130 in February 2014. Jack Snipe, normally a discreet, retiring species, difficult to observe, occasionally appears here in unusual numbers, particularly when working parties that are clearing scrub vegetation flush birds from vegetation at the water's edge (John Belsey, pers. comm.): 35 in February 2014, 11 in February 2013 and December 2014.
- 6.511. In recent winters Whooper Swans, presumably of Icelandic origin, have occurred at Upton Warren, some staying only briefly (presumably on their way to or from wintering areas further south) - five on 27 February 2016, eight on 7 November 2016, three birds briefly on 5/6 October 2017. But others make longer stays: in winter 2017/2018 from 26 October a single adult was present until late February when it was joined on 25 February by three adults and two immatures; all six flew off together and were not seen again. In autumn 2018 up to eight appeared in October, four of them remaining until early December.
- 6.512. Spring (April-June): Shelducks often reach their peak numbers in spring (22 in April 2014) and occasionally breed successfully (2014 and 2016); Gadwall numbers often reach double figures throughout the summer, and the species has bred successfully on The Moors in several recent years. Mallard regularly breeds. Two to four pairs of Shoveler have bred in the last five years (John

Belsey pers. comm.). Tufted Duck is the only diving duck which breeds regularly, and summer numbers are often as high as in winter (over 100 birds) with 14 broods on The Moors in 2018.

- 6.513. Upton Warren (and especially The Flashes) is important for its breeding waders: the first inland Avocet colony anywhere in Britain has now been established there for many years: in 2015 12 pairs nested hatching 35 and fledging 29 young, in 2016 17 pairs hatched 31 chicks and fledged 24 (West Midlands Bird Club WMBC archives). Lapwing regularly nest: in 2016 eight pairs – 15 young hatched, nine fledged, at least one egg being predated by a Moorhen; in 2015 seven pairs hatched 25 young, but only one fledged (WMBC archives). Redshank has bred – a pair fledged three young in 2016 - but occurs only in small numbers, generally less than four, but 27 in May 2016. Oystercatcher and Little Ringed Plover are also regular breeding species on The Flashes.
- 6.514. Upton Warren is particularly important as a stopover point for migrant waders using the inland cross-country route from Severn to the Wash or the Humber, on their way north to breeding sites (often in the Arctic) in spring, southward in autumn; several of them are included among the SPA qualifying species – Dunlin, Ringed Plover and Spotted Redshank – while others contribute to the SPA species assemblage, or SSSI listing: Grey Plover, Knot, plus two other waders of special interest, Black-tailed Godwit and Ruff. Dunlin are regularly recorded in small numbers (usually less than ten) on spring passage, often in mid-May, suggesting they are late migrants going very far to the north, maxima 22 on 15 May 2013 and 18 on 11 May 2014. Similarly, Ringed Plover appear ever year in small numbers on northward passage in April and May (more often in May), with maxima of 13 on The Flashes on 13 May 2014, 23 on 12 May 2017. Spotted Redshanks, Grey Plover and Knot are extremely rare: a single recent record of a Spotted Redshank in nuptial plumage on 30 April 2017; three spring records of Grey Plover in late March 2017 and in May of 2016 and 2018 (on each occasion a single bird); no recent spring records of Knot. Black-tailed Godwits occur in spring, usually in single figure totals, though there were unusual flocks of 69 on 12 April 2013 and 24 on 21 May 2017, recalling numbers more often found at Ripple or Coombe Hill. There are rather few recent spring records of Ruff, mostly involving only one or two birds in April or May.
- 6.515. Autumn (July-October): Mallard numbers are often at their highest of the year in late summer (525 in August 2012, 605 in August 2014 – presumably concentrations of birds as other surrounding wetlands dry out). Lapwing numbers build up after the breeding season, often up to 250 birds from July to September, no doubt gatherings of moulting adults and birds of the year. Dunlin also occur, though in smaller numbers than spring, on southward autumn passage from July to September with the very occasional record in winter. Ringed Plover also pass southwards from July to September, maximum four. There is just one recent record of a juvenile Spotted Redshank in September 2016, a single record of a Grey Plover in October 2013, and a single juvenile Knot in August 2012. Returning Black-tailed Godwits may appear in small flocks in July (21 on 27 July 2016, 19 on 11 July 2017, 12 on 21 July 2018), with numbers tailing off in August and September, and the occasional singleton in October and even some years November or December. Ruff are rather more numerous in autumn than in spring, and occur mainly in July and August, continuing into September and occasionally October, with maxima of six in mid-August 2013 and 2015.

### ***Bird movement between the site and the SPA***

- 6.516. Local observers consider that there is little or no exchange of ducks between the SPA and Upton Warren. They do however consider that the Arctic breeding waders which occur in spring and autumn are on their way between the SPA and their breeding grounds.

- 6.517. There are rather few recoveries of ringed birds at Upton Warren, and most ringing recoveries relate to birds like Mute Swan or Canada Goose with engraved darvic rings. There are few recoveries of ringed ducks, since there does not ever seem to have been any regular duck shooting there; but there are two old recoveries of Slimbridge-ringed Mallard: one ringed in September 1949 was at Upton Warren the following July; the second, ringed in December 1970, was at Upton Warren in September 1971; both were probably birds gathering in post-breeding assemblies at Upton Warren. The ringing recoveries of Curlews, mentioned above, were not on their way to the SPA, though the two Common Sandpiper recoveries from Derbyshire (mentioned under the “Migrant Waders” chapter) probably were. The three Avocets recovered at Upton Warren had been ringed, not on the SPA, but in Teesside and North Yorkshire; on the other hand observations in early spring of Avocets at Severn Vale wetlands (e.g. Coombe Hill, Ripple, Clifton, Grimley) are probably birds on their way from the SPA back to the Upton Warren breeding colony.
- 6.518. It would appear, therefore, that there is little indication of exchanges with the SPA, with the only documented movements being of Mallard.

#### ***Connectivity between this and other non-SPA sites***

- 6.519. The sites in the present report closest to Upton Warren are Grimley and Westwood Pool. Local observers assume some movement of wintering ducks between these sites, but there is little empirical evidence for such connectivity.

#### ***Current condition of the site***

- 6.520. The site is one of Worcestershire WT’s flagship sites and receives considerable attention from their staff and from working parties of volunteers. It is currently in excellent condition for supporting a high wetland bird interest.

#### ***Disturbance issues***

- 6.521. The Moors and The Flashes both have well-policed access points, and entry is open only to those who are members of the Worcs WT, or who have purchased a day permit. The Flashes are furthermore surrounded by a fox-proof fence to deter mammalian predators. Disturbance is therefore not a problem here, although there have been occasional episodes of antisocial behaviour, most recently during the relaxation of Covid-19 lockdown rules that led to groups holding impromptu parties and boating on the Moors. It is hoped that this kind of behaviour will not become more regular.

#### ***Opportunities for enhancement***

- 6.522. Worcestershire WT have indicated that no major land improvement is needed at the moment, but that acquisition of neighbouring land would be beneficial and remains on the Trust’s “wish list”.

#### ***Site evaluation against the 1% SPA population criterion***

- 6.523. The assessment of this site’s importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Upton Warren is of high importance year-round to Shoveler, Gadwall, Mallard and Tufted Duck. It is of high importance in autumn and winter to Teal, Lapwing and Snipe whilst it is of high importance in autumn only (under

the criteria used) for Ruff, although it is clearly of some not inconsiderable importance to other birds on passage, particularly waders.

- 6.524. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold. As for other sites, the assessment is not sensitive to the presence of breeding SPA species. In the case of Upton Warren, the presence of breeding Gadwall, Shoveler, Lapwing and Redshank is of high importance locally and perhaps regionally, with birds concerned perhaps originating from wintering populations on the SPA.

**Table 5.21 – Summary of site evaluation for Upton Warren LNR against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	<1%	low	<1%	Golden Plover	<1%	<1%	<1%
European White-fronted Goose	none	none	none	Grey Plover	<1%	<1%	<1%
Bewick's Swan	none	none	none	Ringed Plover	<1%	<1%	low
Whooper Swan	low	low	<1%	Whimbrel	low	<1%	mod
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	high	high	high	Black-tailed Godwit	low	<1%	low
Gadwall	high	high	high	Turnstone	<1%	<1%	<1%
Wigeon	<1%	<1%	<1%	Knot	<1%	<1%	<1%
Mallard	high	high	high	Ruff	high	<1%	mod
Pintail	low	low	<1%	Dunlin	<1%	<1%	<1%
Teal	high	high	low	Snipe	high	high	mod
Pochard	mod	high	low	Redshank	<1%	<1%	<1%
Tufted Duck	high	high	high	Spotted Redshank	low	<1%	low
Lapwing	high	high	<1%				

**40057 Kinsham Pool (Kemerton Lake NR) and 40062 Kemerton Lake**

**Location and size**

- 6.525. The approximate centre of Kinsham Pool is at SO937362 and it is 17ha in extent. The approximate centre of Kemerton Lake is at SO947367 and it is 1.3ha in extent.
- 6.526. These two confusingly named sites are very close together, in the shadow of Bredon Hill, between 2 and 3 km to the east of the River Avon and Upham Meadow. Kemerton Lake (WeBS 40062) is the older smaller WeBS site, a pool in Kemerton village, adjacent to Upper Court; there is a single WeBS count from 1977/78 (plus some counts in 2003/04, wrongly entered here, since they in fact refer to the other lake). The project team visited the site, now heavily shaded by overhanging trees, once in October 2019 and confirmed that it is not a site of great importance for waterbirds, holding

only a few Mallard, a Little Grebe, a Moorhen and a Mute Swan. Nearby is the small John Moore Nature Reserve, established in memory of the local author and conservationist and managed by the Kemerton Conservation Trust (KCT).

- 6.527. Kinsham Pool (WeBS site 40057) is a much larger water body, formerly a gravel pit, now restored by KCT as a nature reserve. The names are the more confusing as the Ordnance Survey map calls WeBS site 40057 'Kemerton Lake' which is the widely used local name for the site. The present account deals exclusively with WeBS site 40057 (called below the KCT reserve), where WeBS counts have been carried out continuously since 2002/03.
- 6.528. The Carrant Brook, which drains Bredon Hill, runs just south of Kemerton and Kinsham and joins the Avon just north of Tewkesbury. There are old, small gravel pits near the Carrant Brook near Aston on Carrant.
- 6.529. The project team visited the KCT reserve and interviewed the current WeBS counter, Rob Prudden, whose comments are included in the account below.

### ***History***

- 6.530. The KCT reserve is the result of gravel extraction towards the end of the 20th century. It is a wetland complex and a designated Local Wildlife Site and has a diverse range of habitats including a 6.5ha. lake, pools, seasonal wet scrapes, reedbeds, grassland, and land specially cultivated for arable plants. The reserve is surrounded by 45ha. of native woodland and arboretum which are not part of the reserve, but which make an important contribution to the habitat mosaic. The lake is a quiet undisturbed area of open water, relatively deep in places and has a number of small islands on which water birds may nest. Since the establishment of the reserve, extensive reedbeds have grown up around the edges of the lake. The reserve is open to the public, and there are bird observation hides around the lake.
- 6.531. Quinn (1995) did not refer to the KCT reserve though he does refer to Cowfield Marsh, further down the Carrant Brook towards Tewkesbury. Ecoscope (1999) do not refer to Kemerton or to the Carrant Brook. Wilson and Smart (2003) refer to the number of waders breeding at the KCT reserve and on arable land along the Carrant Brook (one pair of Oystercatcher, two of Little Ringed Plover, 27 of Lapwing – mainly on arable land - and three of Redshank) as "a major find". Since 2017 a Facilitation Fund, administered by the Farming and Wildlife Advisory Group (FWAG), has been established along the Carrant Brook to advise local farmers on wildlife issues.

### ***Water levels and flooding***

- 6.532. The lake holds water throughout the year, and while not deep is better suited to diving than to surface-feeding ducks. The water is supplied by ground water.

#### Water and flood conditions in winter 2019/20

- 6.533. Although the winter of 2019/20 was very wet, the KCT reserve was not affected by flooding, though fields along the Carrant Brook no doubt were.

### ***Site coverage***

- 6.534. This site is counted by a very experienced ornithologist who visits the site unfailingly, so site

coverage is considered to be excellent.

#### Accuracy of the counts

- 6.535. There are excellent observation facilities from the hides, which allow complete coverage.

#### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.536. Winter (November-March): As noted on the KCT website, the lake is host to flocks of wintering wildfowl. Among surface-feeding ducks, Wigeon and Teal numbers are generally below 100 early in the winter, though Wigeon counts may reach 500 in February; Teal numbers may reach 400, perhaps when there is shooting on neighbouring areas. There are occasional records of small groups of Gadwall and Shoveler, but Pintail are only very rarely recorded. Among diving ducks Tufted Duck (up to 100) and Pochard (usually not more than 20) are regular, with occasional records of rarer species such as Smew and Goosander. The website points out that the reserve is one of the top Worcestershire sites for Jack Snipe, and WeBS counts have regularly recorded 50 or more Common Snipe and up to 15 Jack Snipe.
- 6.537. The reserve serves as a night roost for many hundreds of naturalised Canada and Greylag Geese, which feed by day at Upham and other floodplain sites.
- 6.538. Spring (April-June): Small but increasing numbers of Canada and Greylag Geese (currently a few pairs of each) nest on the lake, as do a few pairs of Mallard and in recent years Gadwall, plus the odd pair of Great Crested and Little Grebes. Nesting waders on the islands currently include Oystercatcher, Little Ringed Plover and Lapwing (two or three pairs of each); Redshank once nested but have decreased. It is not known whether the numbers of nesting Lapwings found on arable land around the site in 2002 still survive.
- 6.539. As with other Worcestershire former gravel pits, a small number of waders such as Greenshank and Common Sandpiper appear on northward spring passage.
- 6.540. Autumn (July-October): Since the lake holds water throughout the summer, return passage of northern breeding waders is noted, with the range of species similar to that in spring.

#### ***Bird movement between the site and the SPA***

- 6.541. There is no definite evidence of this movements of any species between the SPA and Kemerton Lake. Observations seem to indicate that localised and longer-distance bird movements within winters are outside of the protected area, as outlined below.
- 6.542. The waders which come to Kemerton Lake to nest in spring or which pass through in spring and autumn will almost certainly have visited the SPA, but this cannot be proven from the information available. In the breeding season, Curlews often occur, staying for a brief drink or wash; these are presumed to be nesting birds from the Avon Valley (Upham or Fleet Meadows), and also sometimes use the KCT reserve as a roost early in the breeding season (MS pers. obs.).

#### ***Connectivity between this and other non-SPA sites***

- 6.543. It seems likely that surface-feeding ducks present at KCT reserve, especially Wigeon, are using it as a quiet loafing or resting-place, and probably come from the larger flocks to be found in the Avon Valley around Bredon's Hardwick, only about three kilometres off; when flushed, Wigeon appear to

move from the KCT reserve to Bredon's Hardwick Pits. Teal may well find enough food around the edges of the lake or in the shallower areas to sustain them.

- 6.544. Diving ducks (as at other sites) seem more likely to have arrived from the north or east, as evidenced by the occasional records of Goosander and Smew, distinctly rarer further south. Tufted Duck seem to leave the KCT reserve when there is extensive winter flooding on the Severn, presumably to feed on the floodwater.
- 6.545. The relatively large numbers of wintering Snipe and Jack Snipe mirror the situation at other sites further north in Worcestershire like Upton Warren, so here too, the presumption is for minimal connection with the SPA.

### ***Current condition of the site***

- 6.546. The KCT reserve seems in excellent state and is in good conservation management by the Trust.

### **Disturbance issues**

- 6.547. While there are footpaths around the KCT reserve, they are well respected by local people and there is little evidence of disturbance. There are occasional abuses of the hides, which probably occur largely at night in the summer.

### ***Opportunities for enhancement***

- 6.548. KCT is constantly aiming to improve the quality of its reserve, and has identified the following management priorities that would be beneficial to SPA wetland bird species:
- Continuing attempts to remove the invasive plant Swamp Stonecrop (*Crassula helmsii*) from the scrapes, although this has already been tried using several methods over the last 20 years;
  - Managing the invasive pondweed (believed to be Nuttall's Pondweed, but possibly Canadian Pondweed) in the main lake, which is spreading. This is likely to have a detrimental effect on the lake's ecology in many different ways, including potentially impeding diving ducks from finding food;
  - Scraping the four gravel islands to remove build-up of vegetation and improve them for nesting waders and wildfowl, adding more gravel once scraped;
  - Adding additional nesting opportunities, targeted at Shelduck and terns, on the islands;
  - Possible control of feral wildfowl to ensure that huge numbers present do not cause excessive eutrophication.
- 6.549. It would be desirable to investigate the current situation of nesting Lapwings on private farmland along the Carrant Brook.

### ***Site evaluation against the 1% SPA population criterion***

- 6.550. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that the KCT Reserve is of high importance to wintering Gadwall, Wigeon, Pochard, Tufted Duck and Snipe. It is also of high

importance in autumn to Gadwall, Mallard and Pochard whilst it is of importance in spring for Pochard and Tufted Duck.

- 6.551. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold. As for other sites, this assessment is not sensitive to the presence of the breeding Lapwing found on site.

**Table 5.22 – Summary of site evaluation for Kinsham (Kemerton Lake) against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	<1%	<1%	low	Golden Plover	<1%	<1%	<1%
European White-fronted Goose	<1%	low	low	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	<1%	<1%	<1%
Whooper Swan	<1%	low	<1%	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	low	mod	<1%	Black-tailed Godwit	none	none	none
Gadwall	high	high	mod	Turnstone	none	none	none
Wigeon	low	high	<1%	Knot	none	none	none
Mallard	high	mod	low	Ruff	low	<1%	<1%
Pintail	<1%	<1%	<1%	Dunlin	<1%	<1%	<1%
Teal	low	mod	<1%	Snipe	mod	high	mod
Pochard	high	high	high	Redshank	<1%	<1%	<1%
Tufted Duck	low	high	high	Spotted Redshank	none	none	none
Lapwing	low	low	<1%				

- 6.552. Kemerton Lake has been assessed to have a high importance for Mallard, but this is on the basis of only one record, so this has been discounted. This exposes a limitation of the assessment process adopted, as explained in the Methods and Discussion sections of this report.

## 40059 Grimley New Workings

### Location and size

- 6.553. Grimley New Workings has been covered for WeBS continuously since 2003/04. The site comprises an area of recently completed gravel workings northwest of Worcester, centred on NGR SO833597 and covering an area of 23ha. This is south of the village of Grimley along the Severn and west of Camp Lane, an area that is perched above the floodplain. There are however other much older gravel workings at Grimley, a complex north of the village, including Church Farm Pools to the north of the WeBS site (7ha), Wagon Wheel Pits (7ha); this comprises two mature pits in the floodplain around SO838610, then further north Top Barn (Island) Pool at SO834618 (3.6ha), Wild Goose

area at SO835615 (11.5ha) and Holt Sling Pool at SO826622 (3.8ha), extending nearly as far north as Holt Heath at SO824626. None of these other pits have ever been covered for WeBS, although there are records of birds for them.

### **History**

- 6.554. Grimley is the oldest and the northernmost of the chain of gravel pits along the Worcestershire Severn, excavated in the last 40 years. Gravel extraction at Grimley New Workings, south of the village, began at the end of the 20th century, and was completed in about 2017; the land and pits were returned by the operating company Tarmac, to the owners, the Church Commissioners. These 'Camp Lane Pits' are in a depression separated from the Severn by a ridge of higher land and are not subject to flooding; the open water of the pits is currently fringed by Common Reed and Reedmace (*Typha* spp.), providing excellent habitat for waterbirds.
- 6.555. A long-established SSSI called "Grimley Brick Pits", situated on the lowest part of the floodplain near the Severn bank, predates gravel extraction at Grimley. The SSSI was first established in 1955 and re-notified under the 1981 Act in 1984. It consists of three separate former clay-pits, all now largely wooded over, covering some 18.8 hectares at SO840615, SO841607 and SO840598. The citation (which does not appear to have been updated recently) mentions "a wide range of wetland habitats, including willow and alder carr, sedge and reedmace swamp, open water, mixed tall fen vegetation and wet neutral grassland. They remain wet because of the seasonal flooding of the river and impeded drainage". The northern area also contains a heronry.
- 6.556. Quinn (1995) did not cover this site. In spring 2002 Wilson and Smart (2003) reported one pair of nesting Oystercatcher, three of Little Ringed Plover, five of Lapwing.
- 6.557. The Ecoscope report (1999) includes a site "River Severn, Worcester to Holt", which is made up exclusively of areas on the lower-lying floodplain; it mentions the SSSI but not the gravel workings on slightly higher ground. It concludes that the floodplain is "potentially of high suitability for species-rich flood meadow or wet woodland" but gives only a medium rating for breeding waders and a low rating for wintering wildfowl.

### **Water levels and flooding**

- 6.558. The pits are fed by ground water, and hold water throughout the year. Being slightly above the level of the floodplain, they are not subject to flooding, unlike the brickpits in the floodplain proper.

#### Water and flood conditions in winter 2019/20

- 6.559. winter 2019/20 was very wet with heavy flooding throughout the Severn Vale, but this principally affected the brickpits in the SSSI, rather than the gravel workings. Thus the whole of the floodplain below Top Barn was under water on several occasions, notably in late February and early March; on 9 March the flooding had only just dropped from riverside fields by Top Barn.

### **Site coverage**

- 6.560. The principal WeBS counter at Grimley New Workings, Roger Blackmore, who lives close by and visits the whole area very frequently, was interviewed, and the project team made some additional counts, including some in the Wagon Wheel complex.

### Accuracy of the counts

- 6.561. The New Workings are easily accessible, with a footpath circling the pits by Camp Lane, and counts have been carried out for many years by the same observer who is very familiar with the site. On the other hand the WeBS counts do not include the northern older workings, so birds there are not covered.

### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.562. Winter (November-March): Both surface-feeding and diving ducks figure in Grimley WeBS counts in winter. Among surface-feeding ducks the most numerous is Teal, with numbers generally below 100 but occasionally reaching 150; Wigeon numbers are also generally below 100 but occasionally reach 150; Shoveler numbers sometimes exceed 50, as do those of Gadwall, very well represented here; Pintail on the other hand is a rarity. These numbers, from the new workings only, undoubtedly under-represent the total ducks present at Grimley as a whole, since comparable numbers may also appear on the Wagon Wheel Pits. Tufted Duck (generally up to 100) and Pochard (normally about 20) are the most numerous diving ducks, but up to five Goldeneye are regularly found, together with the occasional Goosander and other rarer diving ducks. Lapwing is the most regular wintering wader, though numbers rarely exceed 100, and Snipe are regular in single figures, with the occasional wintering record of Green Sandpiper.
- 6.563. Very large numbers of naturalised Canada Geese occur, 500 being regularly recorded, with almost 1,000 on some recent counts.
- 6.564. Grey Herons occur at winter roosts, where Little Egret, Cattle Egret and Great Egret have been reported in recent years.
- 6.565. Spring (April-June): Oystercatcher, Little Ringed Plover, Lapwing and Redshank continue to nest in small numbers. In spring there is a regular northward movement of a variety of waders on route to northern and even Arctic breeding grounds; in spring 2018 for example the following species were recorded, all in small numbers: Avocet, Sanderling, Little Stint, Ruff, Snipe, Black-tailed Godwit, Whimbrel, Spotted Redshank, Wood Sandpiper, Turnstone. The heronry in the brickpits SSSI remains active.
- 6.566. Autumn (July-October): Since the gravel pits hold water throughout the year, return wader passage is notable in autumn. Again the 2018 species list is impressive: Ringed and Little Ringed Plover, Curlew Sandpiper, Dunlin (on several different dates), Little Stint, Ruff, Black-tailed Godwit, Greenshank, Green and Wood Sandpiper.

### ***Bird movement between the site and the SPA***

- 6.567. Local observers are convinced that there is little or no exchange of surface feeding ducks between the SPA and Grimley. On the other hand, the waders that breed must have come from the coast, while those that pass through on spring and autumn passage, are very likely to have passed through the SPA on their way to and from their breeding grounds.

### ***Connectivity between this and other non-SPA sites***

- 6.568. Some five kilometres northeast of Grimley is Westwood Pool (with its deep water, mainly important for diving ducks) and another 5km to the northeast is Upton Warren, a major site for breeding and

passage waders. It is likely that there is some exchange between the three sites but none has been proven beyond doubt.

### ***Current condition of the site***

- 6.569. The New Workings are currently in prime condition for water birds, with fringing aquatic vegetation, but not yet too overgrown. However, there is no formal management of the site and so its condition is likely to change, with fringing growth of Willow and other trees likely to become increasingly dominant, to the detriment of some wetland bird species.

### **Disturbance issues**

- 6.570. The New Workings are encircled by footpaths, and though local people are generally respectful of footpath regulations, there is some disturbance from dog walkers.

### ***Opportunities for enhancement***

- 6.571. The New Workings have in the last three years been returned by the gravel extraction company to their owners, the Church Commissioners. Future use of the former workings appears to be unclear, but it is greatly hoped that some form of conservation area will be established. Clearly, in order to preserve its current avian interest, measures to arrest or reverse the process of succession will be needed if tree-lined margins are to be avoided.

### ***Site evaluation against the 1% SPA population criterion***

- 6.572. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Grimley is of high importance to wintering Shoveler, Gadwall, Mallard, Teal, Pochard and Tufted Duck. It is also of high importance to Gadwall, Mallard and Tufted Duck in autumn and spring.
- 6.573. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold. As for other sites, this is not sensitive to the presence of breeding birds, particularly waders – Lapwing and Redshank – at this site.

**Table 5.23 – Summary of site evaluation for Grimley New Workings against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	<1%	<1%	<1%
European White-fronted Goose	low	<1%	<1%	Grey Plover	<1%	<1%	<1%
Bewick's Swan	none	none	none	Ringed Plover	<1%	<1%	low
Whooper Swan	low	low	<1%	Whimbrel	low	<1%	low
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	mod	high	mod	Black-tailed Godwit	low	<1%	low
Gadwall	high	high	high	Turnstone	<1%	<1%	<1%
Wigeon	low	low	<1%	Knot	none	none	none
Mallard	high	high	high	Ruff	mod	low	mod
Pintail	<1%	<1%	<1%	Dunlin	<1%	<1%	<1%
Teal	low	high	low	Snipe	mod	low	<1%
Pochard	low	high	low	Redshank	<1%	<1%	<1%
Tufted Duck	high	high	high	Spotted Redshank	low	<1%	low
Lapwing	low	low	<1%				

## 40090 Pirton Pool

### **Location and size**

- 6.574. The approximate centre of this site is at SO875471 and is 21ha in extent. It is located on high ground to the east of the Severn valley, 3km to the east of Clifton Pits.

### **History**

- 6.575. Pirton Pool is a historic artificial lake, created in the eighteenth century as part of the Croome Estate, which now belongs to the National Trust. The water is deep with fringing *Typha* beds and wooded islands, with open aspects on some sides; a number of footpaths allow access for observers.

### **Water levels and flooding**

- 6.576. Artificial lake created many years ago as a landscape feature in a large country estate, by damming of a small stream.

### **Water and flood conditions in winter 2019/20**

- 6.577. Not affected by Severn floods, being on high ground overlooking the river valley.

**Site coverage**

- 6.578. Pirton Pool is a long-standing WeBS site which has been covered (mainly in winter but also with many summer counts) since 1989/90. The survey team did not contact the current counter (Peter Butler) but made one visit to the site and spoke at length to the Worcestershire Local WeBS Organizer, Andy Warr.

**Accuracy of the counts**

- 6.579. Access to the pool is readily available by footpath, and the open aspect means that views of the whole lake can be obtained. The counts are believed to be accurate.

**Current importance of the site to SPA species and other notable wetland birds**

- 6.580. Winter (November-March): The deep water site attracts only modest numbers of surface-feeding ducks, mainly Mallard, with occasional Teal and Wigeon, and less often Gadwall or Shoveler. Numbers of diving ducks (Tufted Duck and Pochard) are also small, generally in single figures. There are few, if any, records of wintering waders.
- 6.581. Spring (April-June): Numbers of breeding birds are small, with few SPA breeding species other than Mallard. There are no records of breeding waders and on passage only Ruff have been found.
- 6.582. Autumn (July-October): The lake does not dry out but remains deep with no muddy edges to attract waders.

**Bird movement between the site and the SPA**

- 6.583. Few SPA species occur at Pirton Pool, and there is no evidence of movement between Pirton and the SPA. As at other Worcestershire sites, local bird-watchers are convinced that any such movements are insignificant.

**Connectivity between this and other non-SPA sites**

- 6.584. Movements of naturalised geese are regularly observed between Pirton and Clifton Pits, only a few kilometres away. It seems likely that any surface-feeding ducks which occur at Pirton come from Clifton but there is no empirical evidence of this.

**Current condition of the site**

- 6.585. The current state of the site lends itself to use more by wildfowl than waders and under current apparent management this situation is unlikely to change.

**Disturbance issues**

- 6.586. Footpaths pass close to the water's edge but the pool is fairly large and has a number of sites which offer refuge for waterbirds.

**Opportunities for enhancement**

- 6.587. None identified.

**Site evaluation against the 1% SPA population criterion**

- 6.588. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Pirton Pool is of high importance to Mallard in winter and Tufted Duck in autumn and spring.
- 6.589. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold.

**Table 5.24 – Summary of site evaluation for Pirton Pool against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	<1%	low	<1%	Golden Plover	none	none	none
European White-fronted Goose	<1%	low	<1%	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	none	none	none
Shoveler	low	low	<1%	Black-tailed Godwit	none	none	none
Gadwall	low	mod	low	Turnstone	none	none	none
Wigeon	<1%	<1%	<1%	Knot	none	none	none
Mallard	high	low	low	Ruff	low	<1%	<1%
Pintail	<1%	<1%	<1%	Dunlin	none	none	none
Teal	<1%	<1%	<1%	Snipe	none	none	none
Pochard	low	low	<1%	Redshank	none	none	none
Tufted Duck	high	mod	high	Spotted Redshank	none	none	none
Lapwing	none	none	none				

**40201 Beckford Nature Reserve****Location and size**

- 6.590. The approximate centre of this site is at SO976360. It covers 1.6ha and is adjacent to Beckford village, below Bredon Hill.

**History**

- 6.591. The site is a one of a series of three or four former gravel pits along the Carrant Brook, and 5km east of the former gravel pits near Kemerton. Gravel extraction ended many years ago, and tree cover has grown up around the edges and on the two islands, with *Typha* beds around the edges of the fairly deep water.

6.592. Beckford Nature Reserve was listed as an SSSI for geological reasons in 1993. The citation notes: *“This site is part of a large complex of gravel workings near Beckford. These workings are in fan gravels associated with run-off from Bredon Hill into the valley of the Carrant Brook, grading into the ‘Beckford Terrace’ of that river. These gravels have yielded mammalian remains and Palaeolithic artifacts, which reinforce the correlation of the Beckford Terrace with Avon Terrace 2 and the ‘Main Terrace’ of the Severn. All these are generally assigned to the mid-Devensian (last glacial period), as radiocarbon dates from Beckford confirm. These dates were obtained from plant remains in silt beds within the gravel sequence, beds which also yielded beetle and mollusc remains. The Beckford site is therefore of considerable importance to the Upper Pleistocene stratigraphy and chronology of the English Midlands.....The site illustrates particularly well the contribution of slope processes to valley sedimentation and the complex interaction of slope and fluvial processes”*. The site is managed by the local community. A series of footpaths circle the pool and the area is widely used as an amenity site by residents of the village.

6.593. The Ecoscope report (1999) does not cover the Carrant Brook.

### ***Water levels and flooding***

6.594. The site is fed by ground water and therefore experiences little in the way of fluctuations in water levels.

#### Water and flood conditions in winter 2019/20

6.595. Beckford Nature Reserve is not in a flood area, being sited on slightly higher ground above the course of the Carrant Brook which passes south of the village.

### ***Site coverage***

6.596. Counts were carried out occasionally between 1977 and 1985, then resumed in 2015 and have been carried out regularly since then. The project team made one visit to the site; they did not contact the current WeBS counter, Graham Huxley, but did discuss the site with the WeBS Local Organizer for Worcestershire, Andy Warr.

#### Accuracy of the counts

6.597. Being so small and accessible, there is no reason to suppose that the counts suffer from any inaccuracies.

### ***Current importance of the site to SPA species and other notable wetland birds***

6.598. Winter (November-March): Early counts in the 1970s and 1980s (when the pits were probably much more open with less tree cover), produced up to 300 Mallard (one count of 600), with occasional Shoveler, and diving ducks (Tufted and Pochard), generally found in single figures. Of late, counts of Mallard have often failed to reach double figures, while up to 20 Tufted still occur.

6.599. Spring (April-June): Few SPA species seem likely to nest at the site, possibly small numbers of Mallard and Tufted Duck. Little Grebe almost certainly nest in the *Typha* beds. Tree cover is too thick for waders.

6.600. Autumn (July-October): The lake does not dry out in autumn, but the site would not attract passing migrant waders.

***Bird movement between the site and the SPA***

- 6.601. Given the minimal numbers of SPA species occurring at Beckford, there is no indication of exchanges between the SPA and this site.

***Connectivity between this and other non-SPA sites***

- 6.602. Beckford is situated only about five kilometres from Kemerton, and it is likely that the small numbers of ducks occurring at Beckford actually originate from the much larger and more open reserve at Kemerton.

***Current condition of the site***

- 6.603. Given its size and the likely constraints to management, the condition of the site considered to be as good as it can be for SPA species.

***Disturbance issues***

- 6.604. The site is small and surrounded by footpaths, so there must be some disturbance, but visitors are enjoined to keep to the footpaths by signs. To a large extent, this appears to be respected.

***Opportunities for enhancement***

- 6.605. Regular upkeep and management of scrub is organized locally. No further enhancements are considered appropriate.

***Site evaluation against the 1% SPA population criterion***

- 6.606. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Beckford Nature Reserve is not of high importance to any SPA species.

**Table 5.25 – Summary of site evaluation for Beckford Nature Reserve against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	none	none	none	Curlew	none	none	none
Shoveler	none	none	none	Black-tailed Godwit	none	none	none
Gadwall	low	<1%	low	Turnstone	none	none	none
Wigeon	<1%	<1%	<1%	Knot	none	none	none
Mallard	low	low	<1%	Ruff	none	none	none
Pintail	none	none	none	Dunlin	none	none	none
Teal	<1%	<1%	<1%	Snipe	none	none	none
Pochard	<1%	low	low	Redshank	none	none	none
Tufted Duck	low	low	low	Spotted Redshank	none	none	none
Lapwing	<1%	<1%	<1%				

## 40203 Clifton Pits

### **Location and size**

- 6.607. The approximate centre of this site is at SO842465. The main site is approximately 48ha. This does not include the area within the current gravel works site or adjacent farmland on the floodplain of the River Severn.
- 6.608. The pits are situated in the Severn floodplain on the left (east) bank, between the village of Clifton and the river, and form one of a chain of Worcestershire Severnside gravel pits running from Grimley north of Worcester to Clifton, past Ryall to Bow Farm (Ripple Lakes), some 10 km to the south.

### **History**

- 6.609. Quinn's 1995 study was carried out before gravel extraction had begun and he calls it "Clifton Meadows". He notes that it was "...the only site of 84 surveyed in the Severn Vale that held breeding Snipe in 1995 and, hence, is of considerable value. The field in which they nested was wet and tussocky, now both rare features in the Severn Vale. However a similar study in 1982 indicated that far more waders used to nest here"; the "similar study" was the BTO Survey of Breeding Waders of Wet Meadows which in 1982 recorded eight pairs of Lapwing, nine of Curlew and seven of Redshank.
- 6.610. Excavation of sand and gravel began in the 1990s and was ongoing during the repeat BTO survey

in 2002; commenting on the larger area of meadowland from Clifton to Upton on Severn, Wilson and Smart (2003) wrote: “*In 2002 it was difficult to conceive that the area had held such large numbers of waders only 20 years ago, as most of the former meadows... had been converted to arable crops*”. Of the new Clifton Gravel Pits they wrote: “*These new pits, currently being excavated... have certainly contributed to lowering the water table in surrounding farmland, once prime wader-nesting habitat*”.

- 6.611. Excavation of sand and gravel was largely completed in the last few years (though some small scale extraction continues south of the present lakes where the gravel processing plant is situated). The pits outside of the area enclosed within the active quarry site have recently been re-landscaped to create one large lake and two smaller lakes (one of them with a low island), situated slightly above the low-lying east bank of the Severn floodplain, and facing higher ground on the west bank. The Severn Way winds its way past the lakes, which have become a popular site for local birdwatchers. As a newly completed site, the lakes have a broad open aspect since, as yet, trees have not grown up around them. The main lake at Clifton is fairly deep and so caters for diving ducks, but there are shallow edges and grassy banks which attract surface-feeding and grazing ducks too.
- 6.612. The present active working quarry site contains a further three pits – a former silt lagoon with vegetated margins, a deeper pool with mature scrub surrounding it and a very recently re-profiled lagoon. All of these waterbodies are above the floodplain of the River Severn. They were not accessible for survey during the study period of 2019/20 and they are not part of the WeBS counting area. However, parts of them were visible from the Severn Way and partial counts were carried out as part of this study.
- 6.613. Ecoscope (1999) assessed a large stretch of the Severn between Clifton and Upton in its study of sites with potential for wetland (re-)creation and improvement in the Severn and Avon Vales. Their study refers to Quinn’s reports and notes the presence of new gravel workings at Clifton “...*which could provide substantial opportunities for wetland re-creation in the future*”. It considers the whole stretch of river as of overall medium suitability for wetland re-creation, but of high suitability for breeding waders and wet grassland and medium suitability for wintering waterfowl.

### ***Water levels and flooding***

- 6.614. The pits are situated on a slight eminence overlooking the Severn floodplain, which is regularly subject to flooding. The pits themselves are fed from groundwater, and though they have sloping edges are quite deep in the central part.

### **Water and flood conditions in winter 2019/20**

- 6.615. winter 2019/20 was extremely wet, with high Severn levels from late September 2019 until mid-March. For much of this period, the lower ground to the west of the pits was flooded.

### ***Site coverage***

- 6.616. WeBS counts have been carried out regularly at Clifton Pits since 2010 until the present with a gap from June 2016 to December 2017. The data provided from the WDS includes a large number of ad hoc counts from various observers. In combination, the data available from WeBS and the WDS was for a period of 105 months between July 2011 and March 2020.

6.617. The current WeBS counter, Adam Holliday, was interviewed and his comments are incorporated into the text below. Some additional counts were made by the project team in winter 2019/20.

#### Accuracy of the counts

6.618. The principal access to the pits (apart from the Severn Way footpath) is by a footpath north of Clifton village starting at SO847466. This footpath gives good views of the main and the smaller pools, allowing accurate counts to be made.

#### ***Current importance of the site to SPA species and other notable wetland birds***

6.619. Winter (November-March): Clifton attracts both surface-feeding and diving ducks. The principal species of surface-feeding ducks are Teal (generally around 300, but 543 on 11/12/2019, A. Warr pers. obs.) and Wigeon (slightly fewer), with much smaller numbers of Gadwall (maximum 24), Shoveler (up to 14) and Pintail, the latter a scarce species in Worcestershire away from Longdon and occurring only in flood conditions. Diving ducks include Tufted Ducks (in recent years up to 300) and Pochard (maxima about 50), but with regular records of less numerous species such as Scaup, Goldeneye, Goosander or Smew and the occasional rarity like Long-tailed Duck.

6.620. Increasingly large numbers of wintering naturalised geese (Greylag and Canada, several hundred of each) also occur. Movement of flocks between here and Pirton Pools has been inferred by observers, indicating a linkage between the two sites for these non-SPA species.

6.621. Some waders winter, mainly small flocks of Lapwings (up to 100), Snipe (usually in single figures), Jack Snipe (now less common than before) and regular Green Sandpipers (ones and twos), plus small numbers of Golden Plover, usually solitary birds but sometimes up to 30. Early passage of Black-tailed Godwits (up to five birds) is noted in March, probably as in other Severn Vale sites on their way to Icelandic breeding places.

6.622. Spring (April-June): Up to three pairs of Shelduck breed; Shoveler may possibly breed. Small numbers of waders breed - a pair or two of Oystercatcher, up to three pairs of Lapwing and Little Ringed Plover, two pairs of Redshank in 2019. Clifton is well placed to record small but regular numbers of migrant waders on route to northern breeding sites – Dunlin (up to 34), Ringed Plover and less common species like Whimbrel (up to 14), Wood Sandpiper or Greenshank, and even waders normally preferring maritime habitats like the occasional single Bar-tailed Godwit, Grey Plover or Turnstone and two or three Knot.

6.623. Autumn (July-October): Since the pits are quite deep, they do not dry out in the autumn, so host waders after their northern breeding season, on the way back to wintering sites in the south, the same range of species seen in the spring, in particular Dunlin, Black-tailed Godwit and Ruff. Between 20 and 40 Lapwings are observed at this time of year.

#### ***Bird movement between the site and the SPA***

6.624. There is a notable record from 20th January 2013 of two Bewick's Swans at Bow Farm (Ripple Lakes) in the morning and Clifton in the afternoon. These birds may have come from the SPA. This is an unusual occurrence (no records at all in Worcestershire in 2014 or 2015, the one county record in 2016 was of three over Hollywood in February; very few records in the other counties covered by the West Midlands Bird Club – Staffordshire, Warwickshire and West Midlands), and may have related to birds departing early on migration back to their Arctic breeding grounds.

- 6.625. As noted at other sites in Worcestershire, experienced local bird-watchers consider that there is little or no movement of wintering ducks between Clifton and the SPA. They consider that wintering surface-feeding ducks arrive from the north west and (unless there is a prolonged spell of cold weather which might provoke onward movement) they remain on site throughout the winter with only small local movements. In the same way they consider that diving ducks arrive from the north (probably coming down the Severn) rather than coming up from the south. The relatively frequent and regular presence (compared to the situation in Gloucestershire) of species such as Scaup, Goldeneye, Goosander or Smew supports this view.
- 6.626. Breeding waders found on site will almost certainly have come from the SPA, as will the small but steady stream of waders which move through northwards in spring, returning in autumn.
- 6.627. Known and likely bird movements between the SPA and the area of study are described in the Species Accounts section of this report and presented in map form in Appendix 1. Passage waders are considered likely to have come from the SPA to Clifton Pits but there is no definitive data to prove this.

#### ***Connectivity between this and other non-SPA sites***

- 6.628. Local bird-watchers suggest that there is some movement between Clifton and other nearby sites, especially when other sites are affected by deep flooding. Thus in late October 2019, when the lake at Bow Farm (Ripple Lakes) was totally submerged by Severn flooding, Tufted Ducks and Pochard increased at Clifton and were considered to have arrived from Bow Farm (Ripple Lakes); similarly a Long-tailed Duck (a rare and unusual species in the area) had been observed at Bow Farm (Ripple Lakes) before the floods rose and one occurred at Clifton soon after Bow Farm (Ripple Lakes) was flooded (A. Warr pers. comm). Comparable movements have been recorded in other winters: thus in 2018 two first winter male Smew (also rare in the area and not observed every winter) stayed at Clifton until 21 November, after which two first winter males were seen until mid-January near Worcester, mainly at Holt; singles, almost certainly the same birds, were then at Grimley until late January and at Kemerton until mid-February.
- 6.629. Greylag and Canada Geese certainly move between Clifton and Pirton Pool (only three kilometres to the east) and Gadwall are also thought to do so.

#### ***Current condition of the site***

- 6.630. The site has clearly undergone a total transformation since the mid-1990s (when it was typified by natural floodplain meadows) and the present day when it has become an artificial waterbody, still of interest for water birds, but for a very different suite of species. Re-landscaping of the former gravel pits has only just been completed.

#### ***Disturbance issues***

- 6.631. The site is crossed by several footpaths, widely used by bird-watchers and walkers. There are signs calling on users to keep to the paths. If these signs are respected, which is generally the case, disturbance is not a major problem.

#### ***Opportunities for enhancement***

- 6.632. A restoration strategy dated 2014 indicates that the site owners, Lafarge Tarmac Ltd. have

proposed Clifton Pits to become a multi-use site, with “Recreation/ fishing/ nature conservation” indicated on the plan as the end use of the main pit, with “wet meadow” and “wet meadow grassland” shown around the other two smaller pits.

- 6.633. The South Worcestershire Development Plan<sup>49</sup> identifies an area of search for a strategic recreation asset, known as “Clifton Water Park”, a concept developed further by the Worcestershire Green Infrastructure Framework<sup>50</sup>, which shows a map that includes the existing pits and an area to the east side of the A38 where gravel extraction may take place in the future. There is as yet no formal proposal for this.
- 6.634. Whilst the attention drawn to the site by these strategies could provide long-term security for the nature conservation value of Clifton Pits, issues surrounding increased disturbance of waterbirds resulting from increased recreation in the area need to be addressed if the site is to maintain or increase its value for SPA Interest species. As a minimum, any strategy focused on this should aim to preserve the integrity of wintering populations of diving ducks and scarce breeding waders, principally Redshank. Given its previous value for this, and other now-scarce or locally extinct breeding waders (Curlew and Snipe), provision of undisturbed wet meadows and pools would arguably be of at least equal relevance to the maintenance of open water habitats for dabbling and diving duck species.

#### ***Site evaluation against the 1% SPA population criterion***

- 6.635. The assessment of this site’s importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Clifton Pits is of high importance to wintering Gadwall and Pochard, of high importance to Mallard in autumn and winter and of year-round importance to Tufted Duck.
- 6.636. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold. As for other sites, this assessment is not sensitive to the presence of SPA breeding birds, in this case Lapwing and Redshank. It is also clearly a stopover site for migrant waders in small numbers.

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<sup>49</sup> <https://www.swdevelopmentplan.org/>

<sup>50</sup> [http://www.worcestershire.gov.uk/downloads/file/3776/worcestershire\\_green\\_infrastructure\\_framework\\_3](http://www.worcestershire.gov.uk/downloads/file/3776/worcestershire_green_infrastructure_framework_3)

**Table 5.26 – Summary of site evaluation for Clifton Pits against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	<1%	low	<1%	Golden Plover	<1%	low	<1%
European White-fronted Goose	<1%	low	<1%	Grey Plover	<1%	<1%	<1%
Bewick's Swan	none	none	none	Ringed Plover	low	<1%	low
Whooper Swan	low	low	<1%	Whimbrel	low	<1%	low
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	low	mod	low	Black-tailed Godwit	low	<1%	<1%
Gadwall	mod	high	mod	Turnstone	<1%	<1%	<1%
Wigeon	low	low	<1%	Knot	none	none	none
Mallard	high	high	mod	Ruff	low	low	low
Pintail	low	low	<1%	Dunlin	<1%	<1%	<1%
Teal	<1%	mod	low	Snipe	low	mod	<1%
Pochard	mod	high	low	Redshank	<1%	<1%	<1%
Tufted Duck	high	high	high	Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%				

#### **40260 Bredon's Hardwick Gravel Pits, 40353 Avon Meadows – Twyning and Bredon's Hardwick, and 15305 Mitton (Tewkesbury)**

##### ***Location and size***

- 6.637. The approximate centre of Bredon's Hardwick Gravel Pits counting area, which covers a much larger area than simply the Pits themselves, is at SO902347 and it covers 60ha, whereas the flooded gravel pit within this area is at SO905349 and it covers approximately 8ha. The WeBS site numbered 40260 comprises only the largest and lowest-lying of three former gravel pits in the Avon floodplain, and the meadows surrounding it. This lies on the eastern (Worcestershire) bank of the Avon, just north of its confluence with the Severn at Tewkesbury.
- 6.638. The approximate centre of Avon Meadows – Twyning and Bredon's Hardwick (site 40353) is at SO906358 and it covers 52ha in extent. This is to the north of 40260, covering the two other gravel pits (lying on slightly higher ground above the floodplain) and the meadows between these pits and the Avon in the floodplain ('Fleet Lane Meadows'); the meadows extend beyond Fleet Lane to the M5 motorway at SO914368, but this northern sector is omitted from the WeBS site, and should ideally be added.
- 6.639. The approximate centre of Mitton is at SO898339 and it covers 7.5ha. This comprises a single meadow with several flashes that hold water, to the south of the Bredon's Hardwick Gravel Pits, separated from it by a single meadow (and the county boundary between Gloucestershire and Worcestershire); its importance has only recently been recognised and it has been established as

a separate WeBS site, because it is in a different county and because, at least since winter 2016/17, it has held good numbers of ducks under conservation management from the same farmer who manages the southern gravel pits comprising 40260 and surrounding meadows.

- 6.640. The present account covers Bredon's Hardwick Gravel Pits, Avon Meadows and Mitton WeBS sites, including not just the gravel pits but also the meadows in the floodplain between Mitton in the south up to the M5 in the north, since birds range across them and they form a single ecological unit, the Avon floodplain; a more appropriate name for the whole complex, sometimes used in county bird reports, might be "Avon Meadows". Quinn (1995) calls the whole site (but omitting the meadows north of Fleet Lane) "Bredon's Hardwicke [sic] East". The meadows on the western (Gloucestershire) bank of the Avon between Twynning and Tewkesbury are narrower and more heavily used by walkers, but may also be used at times by birds from the Worcestershire bank.
- 6.641. The main WeBS counter at Bredon's Hardwick Gravel Pits was interviewed, and his comments are included in the notes below. The project team made some additional counts in winter 2019/20.

### **History**

- 6.642. Gravel extraction began at Bredon's Hardwick in the early 1980s, with the first extractions being made at the northernmost pit at SO907357. The middle pit at SO906355 was the second to be excavated, and the largest at the southern end (now the counted WeBS site) at SO905350 was the last. By the mid-1980s, local bird watchers were visiting the pits regularly, and the first reference to Bredon's Hardwick in the West Midland Bird Club annual reports is in 1984. Gravel extraction had been completed before the turn of the century, and the subsequent use of the three pits varied. The middle and northernmost pits became part of the Croft Farm Leisure Park; the central pit is now heavily used for wind-surfing and other sports, and is hence too disturbed for birds: the northernmost pit became a fishing pool, sufficiently quiet to attract waterbirds at times, and deep enough for diving ducks. The southernmost pool has three islands, one of them today remains a gravel spit with no vegetation. There were in the 1990s plans to establish a nature reserve here, in collaboration with the West Midland Bird Club, but these never materialised. For many years this southernmost pool remained quiet, with little or no disturbance and, as a de facto nature reserve, attracted good numbers and varieties of waterbirds. Since gravel extraction ended, trees have grown up around the pool, so that it is very sheltered with tall fringing vegetation (which in some years attracts a large Starling roost). Over roughly the last five years the farmer has stocked the pool with fish and allowed small numbers of fishermen to operate around its shores, so that it is no longer as undisturbed as before. In combination with the increase in tree cover, this has resulted in a decrease in bird numbers.
- 6.643. The southernmost pit is situated at a lower level in the Avon floodplain than the northern and central pits, and in times of high flood it, Mitton and the surrounding meadows are totally submerged.
- 6.644. Mitton, at SO897340, is the southernmost of these floodable fields and is part of the same farm even though separated from the others by the county boundary; it is crossed by two channels which hold water until well into the summer, as the farmer has kept the flaps on the outflow ditches closed, to maintain water levels for waterbirds. Mitton is separated from a very recently completed housing estate on higher ground to the east by a thick hedge which seems for the moment to provide enough cover to make the birds feel safe.

- 6.645. At present the approach by the two farmers concerned contrasts sharply. The meadows south of Croft Farm are intensively farmed for sheep, with only a few meadows left for hay; there is heavy predator control, notably of foxes. Those north of Croft Farm are traditional hay meadows with a late hay crop and aftermath grazing. Both farmers are extremely friendly towards wildlife and have in the last two or three years delayed hay-making until breeding waders had finished raising chicks.
- 6.646. The Ecoscope report (Ecoscope 1999) deals with conservation and restoration of meadow and floodplain habitats, so does not refer to gravel pits like Bredon's Hardwick. The notes on the long section of river named "Site 17: River Avon from Eckington to Tewkesbury" refer to grassland at the two SSSIs at Upham Meadow and Rectory Farm, but make no reference to the meadows at Fleet Lane, even though Quinn (op. cit.) had drawn attention to their importance for breeding waders.

### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.647. Winter (November-March): From 1990 until about 2010 Wigeon occurred in good numbers at Bredon's Hardwick Pits with midwinter counts of at least 1000 and sometimes 2000; regular cannon-netting sessions were held, with the principal target species being Wigeon, from 1996 onwards. Hodson (2005) reported on the results to the end of 2003, though ringing of Wigeon continued until at least 2009. By 2003, 1826 Wigeon had been caught and 54 recoveries registered; other species caught were 356 Mallard, 38 Teal, 31 Coot, 27 Canada Geese and one each of Shelduck, Pintail and Red-crested Pochard (Hodson 2005).
- 6.648. From about 2010 numbers of Wigeon began to tail off at Bredon's Hardwick Pits, perhaps because the birds began to adopt the newly excavated Bow Farm (Ripple Lakes), and in the last few years numbers of Wigeon at Bredon's Hardwick have usually been much lower. However, when the meadows are flooded, Wigeon still appear at Bredon's Hardwick, with up to 150 on several dates in February and March 2020. By contrast, the smaller area of habitat at Mitton attracted up to 290 in the same period. Other surface-feeding ducks also occurred at the pit until about 2010, with Teal numbers in the low hundreds and much smaller totals of Shoveler and Pintail. In the last few years the importance of Mitton has increased as that of the pit has decreased. Small numbers of Shelduck also occur regularly at the pits and in riverine meadows.
- 6.649. In the early years (the early 80s) diving ducks also occurred on the deep waters of the southernmost gravel pits, mainly Tufted Ducks in the low hundreds, some Pochard (generally up to 50 in the 2000s, numbers often in single figures in the 2010s), and the occasional Goldeneye, Goosander or Smew; smaller numbers still occur there (mainly Pochard and Tufted), as they still do on the northernmost fishing pit, where in February 2020, a male Smew, after sitting on the muddy waters of the Avon for a few days, took up residence for several weeks on the clearer water.
- 6.650. In the 1990s and early 2000s, when larger numbers of Bewick's Swans and White-fronted Geese wintered on the SPA around Slimbridge, birds of both species moved from the SPA up the Severn and Avon, and were regularly observed in time of light flood, feeding on the Fleet Lane meadows; the swans sometimes roosted at night on the middle gravel pit, now transformed into Croft Farm Leisure Park. Thus for example in January 1988 up to ten Bewick's Swans were recorded, while in February of that year nearly 70 Bewick's fed in the fields and roosted on the middle pit (now Croft Farm) without returning to Slimbridge (MS pers. obs.). The occasional Whooper Swan sometimes joined them. But observations of wild swans have become very scarce in the last ten years.

- 6.651. The principal wintering waders within this complex of sites have always been Lapwings and Golden Plover, though numbers have decreased since the 1980s: for example in February 1988 500 Lapwings, 4 Golden Plover and 50 Dunlin were present (MS pers. obs.), probably moving between Bredon's Hardwick and Upham Meadow.
- 6.652. In recent years there has been a great increase in wintering naturalised geese, Canada first and in more recent years Greylags, plus the odd more exotic Barnacle or Bar-headed Goose or hybrid.
- 6.653. Spring (April-June): Small numbers of waterbirds breed on and around the wooded islands at Bredon's Hardwick, notably Tufted Ducks and Great Crested Grebes, plus in recent years ever-increasing numbers of Canada and Greylag Geese. The open gravel island has attracted breeding Oystercatcher and Little Ringed Plover, Common Tern, Lesser Black-backed Gull and even a single pair of Great Black-backed Gulls. Increasing numbers of naturalised geese breed around the pits, and the creches of adults attending goslings number several hundred each of Canada and Greylag Geese.
- 6.654. In his 1995 report Quinn (op. cit.) described the whole area from Mitton to Fleet Lane (but excluding the meadows north of Fleet Lane) "...one of the most important sites for breeding waders in the Severn Vale" and noted that "...only one other site held more Lapwing and two sites more Redshank than this one". He recorded 12 pairs of Lapwings, seven of Redshank and one each of Curlew, Oystercatcher and Little Ringed Plover; all of the Redshanks nested around the flooded gravel pits, while the Lapwing nested predominantly on spring sown crops, some of them on higher ground between Bredon's Hardwick village and Fleet Lane. He commented that "...the whole area deserves special attention and further consultation with wildlife advisory groups". At this same Bredon's Hardwick East site, the 2002 BTO survey of Breeding Waders of Wet Meadows (Wilson and Smart 2003) found a successful pair of Oystercatchers on the pits, two unsuccessful pairs of Curlews in the meadows, but no Lapwings and only a single pair of Redshank.
- 6.655. Nowadays, the meadows remain one of the strongholds of nesting Curlews in the vales (MS pers. Obs.), with up to five pairs between Mitton and the M5 above Fleet Lane (rather more than Quinn or the 2002 BTO survey found); it is probably significant that this area is only just across the Avon from Upham Meadow, the other main stronghold. Small numbers of Lapwings still nest, but in the lowland meadows, including Mitton, rather than on spring-sown crops. The Redshank have completely disappeared.
- 6.656. Small numbers of northbound migrant waders occur on the pits in spring, as at other former gravel pits along the Severn and Avon; a variety of species may occur – Dunlin and Ringed Plover, Common and Green Sandpiper, also less common species like Wood Sandpiper, with some gulls (including Little Gull) and Terns (notably Black and Arctic Tern).
- 6.657. Autumn (July-October): After hay-cutting in late June or July, the meadows dry out, and breeding waders depart for the coast. The pits however retain water so (as at other Worcestershire gravel pits) there remains a steady passage of small numbers of waders and terns on their way south.

### ***Water levels and flooding***

- 6.658. Water in the pits comes from the groundwater table, and levels vary only slightly in the course of the year. The southern end of the southernmost gravel pit is a good deal shallower than the rest of the pool, and in late summer some surface mud may be exposed, providing attractive conditions

for waders.

- 6.659. The picture is very different in time of Avon flooding, when the whole of the lower fields in the floodplain may be under water, and a sheet of water extends from one side of the valley to the other, broken only by the top of the Avon flood-bank and the hedges between the meadows, so that the presence of the southern pit is hidden. The middle and northern pits, being on higher ground, do not disappear beneath the floodwaters. This occurred on repeated occasions in 2019/20, as detailed below.

#### Water and flood conditions in winter 2019/20

- 6.660. As noted previously, winter 2019/20 was particularly wet, and on several occasions the whole of the Avon floodplain was under water, leaving both Bredon's Hardwick Gravel Pits and Mitton totally submerged. This was already the case from 28 October to 4 November, then after a drop in levels for a few days, the area was flooded again on 19 November. The first two weeks of December were free of flooding, but water was rising again on 13 December. Levels were lower in the last ten days of December and first two weeks of January, but there was heavy flooding across the whole of the Avon floodplain from mid-January; it had gone by the end of January but returned with a vengeance from mid-February until the first ten days of March; the meadows were largely free of floodwater by mid-March. However, the northernmost pit (the Croft 'fishing pool'), being above the level of the floodplain, was not affected by this floodwater, and continued to be used by diving ducks in February and March.

#### **Site coverage**

- 6.661. The counts for site 40260 date back to October 2000, practically all carried out by the same observer, with a short gap in 2018/19 and the first part of winter 2019/2020, when numbers of birds recorded were declining. Core Counts resumed in early 2020. Site 40353 has been largely neglected, probably because the pits are now managed for recreational activities in the Croft Farm Leisure Park, though the northernmost fishing pit does still hold waterbirds; there are a few counts from 1987 to 1990 by an unknown counter and one count from February 2020.
- 6.662. Mitton has been covered under WeBS since January 2019 but only intermittently.

#### Accuracy of the counts

- 6.663. There is no public access to the Bredon's Hardwick pits, though the farmer is willing to allow occasional visits to the pits and meadows by bird-watchers. WeBS counts at this site are generally carried out from a vantage point on the B4080 Tewkesbury-Bredon Road which overlooks the pits and gives good views, though some birds on the meadows behind may be hidden by hedges around the pools and omitted from the counts. The meadows on either side of Fleet Lane can be seen well from the lane, and the northernmost fishing pool can be surveyed from a footpath which leaves the B4080 at Bredon's Hardwick village at SO914357. The whole of Mitton can easily be seen from a gateway at the southern end of the field, although permission for access is needed to allow a full count.

#### **Bird movement between the site and the SPA**

- 6.664. As noted in the accounts for Bow Farm (Ripple Lakes), Longdon and Upham Meadow, wintering Wigeon have varied their preferred wintering area around the confluence of Avon and Severn over

the years, as conditions have changed at the different wetlands, all within a radius of about five kilometres. Until the early 1980s Upham Meadow was the preferred site, from the mid-1980s Bredon's Hardwick came into favour, from about 2010 Bow Farm (Ripple Lakes) has been the most frequently used site. At times of shallow flooding, which provides good feeding, these birds may return to the previously favoured sites and to Mitton.

- 6.665. Ringing recoveries give insights into movement of ducks between the SPA and the Severn and Avon Vales, but need to be treated with caution, as they tend to map the distribution of hunters and ringers. Nevertheless, it is fortunate that a long-term cannon-netting operation, focussed on Wigeon, was carried on at Bredon's Hardwick from 1996 until about 2009; cannon-netting sessions for ducks have also been held twice at Ashleworth Ham (in 2004 and 2006) and twice in winter 2018/19 at Bow Farm (Ripple Lakes) (235 Wigeon caught). Furthermore, one of the major duck-ringing centres in the UK is sited at Slimbridge in the SPA; (it should be noted however that Wigeon are mainly caught at Slimbridge in the swan pipe or the decoy, sites little used by Wigeon, so relatively few Wigeon have been ringed at Slimbridge; furthermore Slimbridge may not be typical of the SPA as a whole since it is virtually predator-free, and offers artificial grain feeds to ducks). Wigeon have also been caught at the Axe estuary in south Devon. So far, all ringing has been with metal rings only, and no colour-ringing (which allows individual to be recognised in the field without the need for recapture) has been practiced.
- 6.666. Thus, care has to be taken in interpreting ringing results: only movements within the same winter can be taken as an indication of movement within the Vales; a bird ringed one winter in the SPA and found in a later winter in the Vales (or, of course, vice versa), cannot be taken as a sign of movement between the SPA and the Vales. Birds may well spend one winter in one site, then the following winter in a different site (as demonstrated by many of the ringing recoveries below). More reliable evidence of same-winter movements would be provided by telemetry and GPS tagging of ducks; as yet this has only been carried out on a small scale, and the results are not yet available; but it is surely a technique for the future.
- 6.667. The ringing operations at Bredon's Hardwick, like the catches at Bow Farm (Ripple Lakes), offer no sign at all of Wigeon moving between the SPA and the Severn and Avon Vales (Hodson, op. cit; S. Brown pers. com.): up to 2003 the 1,826 Wigeon ringed at Bredon's Hardwick had produced 54 recoveries, about 20 of them in the Russian breeding area in summer (plus one in Iceland); winter recoveries show Wigeon choosing different wintering sites in years following capture (e.g. northern France, other parts of UK including a single bird in the Cleddau estuary in south Wales, two in the Irish Republic, one even in Italy). There are 97 retraps at Bredon's Hardwick of birds ringed in previous catches, and a single recovery of a bird shot near Bow Farm (Ripple Lakes). All of these recoveries come from birds shot by wildfowlers, but up to 2003 there is not a single recovery of Wigeon, whether shot or retrapped by ringers, on the Bristol Channel, Severn estuary, or anywhere else in southwest England. There is no lack of wildfowlers in the Bristol Channel and Severn Estuary, and if movements from Bredon's Hardwick to the estuary existed, some birds would surely have been reported.
- 6.668. The BTO website mentions seven recoveries in Gloucestershire of Wigeon ringed in Worcestershire. Six of the seven are known to be local movements (post 2003) from Bredon's Hardwick to Ashleworth Ham, where they were caught during cannon-netting sessions; only one of these recoveries is in the same winter – from Bredon's Hardwick on 22 January to Ashleworth Ham on 29 January 2006; the seventh is of a Wigeon shot at Ashleworth. One bird ringed at Bredon's

Hardwick was recovered in 2019 at Bow Farm (Ripple Lakes). Thus there is a complete absence of recoveries of Bredon's Hardwick birds on the SPA. There are no recoveries up to 2003 of Wigeon ringed at Slimbridge and recovered at Bredon's Hardwick. These recoveries give strong support to the view of local bird-watchers that there is little, if any, movement of Wigeon between the SPA and Worcestershire sites.

- 6.669. The BTO website mentions a single recovery from Gloucestershire to Worcestershire, which was a bird ringed at Ashleworth in 2006 and recovered at Bredon's Hardwick in 2010. The Ashleworth cannon-netting sessions did on the other hand produce a single, same-winter recovery from Slimbridge: a bird ringed at Slimbridge on 30 November 2005 was caught at Ashleworth on 29 January 2006, providing evidence of at least one same-winter movement from the estuary to the Severn Vale.
- 6.670. The small number of Teal caught at Bredon's Hardwick showed no movement to the SPA (John Hodson, pers. comm) either. The BTO website mentions nine Teal ringed in Gloucestershire and recovered in Worcestershire; details are given in the species account for Teal. The website mentions single records, one each, of a Gadwall and a Shoveler ringed at Slimbridge and recovered inland in the Severn Vales, both near Droitwich, one at Westwood Pool, but neither was in the winter of ringing. Again, experienced local ornithologists consider that any such movements of other duck species are rare in Worcestershire. Pintail are in any case not frequently recorded at Bredon's Hardwick.
- 6.671. The small numbers of Shelducks which occur on the other hand are considered to originate on the estuary, probably having first migrated to the Helgoland Bight in Germany to undergo late summer moult (Werham et. al. 2002), before reappearing in the Severn and Avon Vales from December onwards. The BTO website gives details of four Shelducks ringed at Bredon's Hardwick and retrapped at Slimbridge: remarkably, the four, all caught as flying birds at Bredon's Hardwick on the same February day in 2009, were retrapped at different dates over the next nine years at Slimbridge.
- 6.672. Diving ducks, as at other sites in the area, are considered to arrive from the north, moving down the Severn and Avon from the Midlands. Numbers of all diving ducks are much higher in the north of the Severn and Avon Vales and diminish rapidly towards the south; if these ducks were coming up from the SPA, the gradient would surely be in the opposite direction. There are unfortunately few ringing records of diving ducks which might substantiate this view.
- 6.673. Wintering flocks of waders, mainly Lapwing and Golden Plover, probably also remain all winter in the same general area, with little sign of movement up from the SPA.
- 6.674. Breeding waders undoubtedly arrive from the coast, both the Oystercatchers and Little Ringed Plovers which nest on the pits and the Lapwings and Curlews which nest in the meadows. Migrant waders in spring undoubtedly move inland from the SPA to the Avon, and are often recorded at the other small wetlands created along the Avon in recent years; since the gravel pits retain water all through the year, migrant waders occur in larger numbers here in autumn than on floodplain wetlands which dry out in this period of the year.

#### ***Connectivity between this and other non-SPA sites***

- 6.675. Wigeon clearly move between Bredon's Hardwick, Bow Farm (Ripple Lakes) and Ashleworth, and

it is likely that other surface-feeding ducks do the same. There may also be similar movements of diving ducks, particularly in time of flood. Wintering flocks of Lapwings are also likely to wander to other nearby sites. Field observations and the GPS-tagged Greenland Whitefront in December 2018 show that the large flocks of naturalised geese certainly move between these sites and Kemerton Lake (KCT).

### ***Current condition of the site***

- 6.676. Bredon's Hardwick Pits are not recognised as an SSSI, but the surrounding meadows have been in agri-environmental schemes sponsored by Natural England, though one farmer has withdrawn in the last year or two because he was unwilling to cut back trees in the surrounding hedges, as required by breeding wader regulations to limit crow nests. His farm is a very intensive sheep farm, so that shade for the sheep is a major concern; the botanical quality of the meadows is not high. The plans for a formal nature reserve at the gravel pit fell through but, as there are no public footpaths, the site remains largely quiet with only occasional visits by small numbers of fishermen.
- 6.677. Fleet Lane Meadows, both north and south of the Lane and farmed by a second farmer, are under a different agri-environmental agreement, and are of some botanical merit; there are some footpaths (dating from the time when the ferry across the Avon to Twyning was still operational).
- 6.678. Mitton, despite its proximity to a very new housing estate, remains largely undisturbed thanks to the thick hedge along the east side of the site.

### ***Disturbance issues***

- 6.679. Disturbance is not a major issue at Bredon's Hardwick Gravel Pits, despite the decrease in numbers of birds. There are no footpaths in the area of the gravel pits, and those at Fleet Lane are not heavily used. The situation is very different around the central pool, where there is a leisure park with sporting activities, and boating on the Avon. On the far bank on the Gloucestershire side there is a very heavily used footpath "Shakespeare's Avon Way".

### ***Opportunities for enhancement***

- 6.680. It is surprising that Ecoscope (1999) did not comment on the value of the meadows along the Avon between Mitton and the M5, the more so as Quinn (1995) had drawn attention to their importance for breeding waders. These meadows remain very important for breeding waders, notably Curlews, and any future agri-environmental schemes or environmental land management regulations, should provide for grants to farmers who take measures to promote successful breeding by waders.
- 6.681. The pits, especially the southernmost one, provide pools of water for waterbirds, but they are at present rather overshadowed by trees; provision of more open water through scrapes, like the flashes at Mitton, might attract more waterbirds (though it seems that surface-feeding ducks currently prefer the more open conditions at Bow Farm (Ripple Lakes), and it might be argued that the floods already provide plenty of water, in winter at least). As long as sheep-rearing remains the main activity in the southern sector it will be difficult to thin out the trees.

### ***Site evaluations against the 1% SPA population criterion***

- 6.682. The assessment of the importance of site 40260 Bredon's Hardwick Gravel Pits to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full

explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that the site is of high importance to Mallard through the year and to Tufted Duck in winter. It should be noted, of course, that the assessment criteria are not sensitive to the value of such sites for small numbers of breeding birds, such as the Curlew that occur there.

6.683. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold. As for other sites, the assessment is not sensitive to the importance of the site to breeding waders, with clear importance for Curlew and Lapwing.

**Table 5.27 – Summary of site evaluation for Bredon’s Hardwick Gravel Pits against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	<1%	low	<1%	Golden Plover	<1%	low	<1%
European White-fronted Goose	<1%	low	<1%	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	<1%	low	<1%	Black-tailed Godwit	none	none	none
Gadwall	<1%	mod	low	Turnstone	none	none	none
Wigeon	low	mod	<1%	Knot	none	none	none
Mallard	high	high	high	Ruff	none	none	none
Pintail	<1%	low	<1%	Dunlin	<1%	<1%	<1%
Teal	<1%	low	<1%	Snipe	low	low	<1%
Pochard	low	low	<1%	Redshank	<1%	<1%	<1%
Tufted Duck	mod	high	low	Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%		<1%	low	<1%

6.684. The assessment of the importance of site 40353 Avon Meadows – Twyning and Bredon’s Hardwick to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that the site is of high importance to Mallard through the year and to Tufted Duck in winter.

6.685. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold. . As for other sites, the assessment is not sensitive to the importance of the site to breeding waders, with clear importance for Curlew and Lapwing.

**Table 5.28 – Summary of site evaluation for Avon Meadows – Twyning and Bredon’s Hardwick against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	<1%	low	low	Golden Plover	<1%	low	<1%
European White-fronted Goose	<1%	low	low	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	<1%	<1%	<1%
Whooper Swan	none	none	none	Whimbrel	<1%	<1%	low
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	<1%	low	<1%	Black-tailed Godwit	<1%	<1%	<1%
Gadwall	low	mod	low	Turnstone	none	none	none
Wigeon	low	mod	<1%	Knot	none	none	none
Mallard	high	high	high	Ruff	low	low	<1%
Pintail	<1%	low	<1%	Dunlin	<1%	<1%	<1%
Teal	<1%	low	<1%	Snipe	low	low	<1%
Pochard	low	low	<1%	Redshank	<1%	<1%	<1%
Tufted Duck	mod	high	low	Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%				

- 6.686. The assessment of the importance of site 15305 Mitton (Tewkesbury) to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that the site is not of high importance to any of the listed species, although this is probably due to the small data set upon which this assessment was based.

**Table 5.29 – Summary of site evaluation for Mitton against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	none	none	none	Curlew	none	none	none
Shoveler	<1%	mod	<1%	Black-tailed Godwit	none	none	none
Gadwall	<1%	low	<1%	Turnstone	none	none	none
Wigeon	<1%	mod	<1%	Knot	none	none	none
Mallard	low	low	<1%	Ruff	none	none	none
Pintail	none	none	none	Dunlin	none	none	none
Teal	<1%	mod	<1%	Snipe	<1%	<1%	<1%
Pochard	none	none	none	Redshank	none	none	none
Tufted Duck	<1%	low	<1%	Spotted Redshank	none	none	none
Lapwing	<1%	<1%	<1%				

#### **40304 Longdon Marsh (north of Marsh Lane)**

##### ***Location and size***

- 6.687. The approximate centre of this site is at SO826364 and it covers 284ha.
- 6.688. Longdon Marsh is the area east west of Longdon village and north of Marsh Lane, which bisects the basin roughly from east to west. It is treated separately here from Hill Court Farm Reserve (WeBS site 40305) which lies south of Marsh Lane.

##### ***History***

- 6.689. The following applies to both Longdon Marsh North and Hill Court Farm, which is described in the next section of this report:
- 6.690. As early as 1834, Hastings, commenting on drainage in Worcestershire, wrote: *“From the draining of the bogs which formerly overspread the county, there are now no accumulations of water, or pools of any extent. Perhaps the only one deserving notice is Longdon Marsh, which, after heavy rains, still presents the appearance of a considerable lake”*. Harthan (1947), quoting the 19th century author Edwin Lees refers to reedbeds with Bearded Tits, Bittern and Marsh Harriers. Ecoscope (1999) provides the following commentary on the site: *“One of the last great wetlands to be lost was that of Longdon Marsh. This was formerly referred to as “The Great Marsh of Worcestershire”*. In the 17th century the marsh extended over 10000 acres and was the remains of the great tidal estuary of the Severn above Gloucester (Green and Westwood 1991). The area was

difficult to drain but by 1872 it had been enclosed and drained. Over the subsequent 100 years the drainage has been improved [sic] by various schemes, including the recent deepening of Longdon Brook in 1986.

- 6.691. At present the Longdon Marsh basin is mainly devoted to agriculture, with some areas of arable (particularly maize), sheep farming, and some fields still managed as hay meadows.
- 6.692. Longdon Marsh as a whole was one of the 18 sites identified in the Ecoscope Report (Ecoscope, 1999) as having potential (High Overall Suitability) for wetland (re-)creation and improvement in the Severn and Avon Vales.

### ***Water levels and flooding***

- 6.693. The following applies to both Longdon Marsh North and Hill Court Farm, which is described in the next section of this report:
- 6.694. The Longdon Marsh basin in its entirety is 2.5km from east to west and 3.6km from north to south. It is low-lying and almost closed hydrologically. It is drained by Longdon Brook, which flows westwards through a gap in the surrounding hills and (after changing its name to Bushley Brook) joins the Severn just above Bushley village at SO868363.
- 6.695. The Longdon basin floods when the Severn at Bushley is high and the Bushley/Longdon Brook is unable to discharge, so backs up, flooding fields throughout the low flat basin. The fields most frequently flooded are those closest to the brook in the northern part of the basin. The flooding is rather shallow and usually occurs when other floodplain sites downriver (like the Severn Ham at Tewkesbury, Coombe Hill Meadows or Ashleworth and Hasfield Hams) have absorbed the first flush of floodwater; in some winters it barely floods at all. In wet winters like 2019/20 or 2013/14 however the flooding extends back up to the top of the catchment towards Hill Court Farm, flooding some of the arable fields and making Marsh Lane impassable.

### **Water and flood conditions in winter 2019/20**

- 6.696. There was an early flood in late October, perhaps too early for surface-feeding ducks which had not yet arrived, dropping a little by 1 November but still extensive on 4 November, rising again and very high on 16 and 19 November, levels lower on 30 November and flooding almost gone by 13 December, but very high again on 21 December. The December floods had gone by 9 January, but were re-established by 16 January, lower again on 28 and 30 January, rising again from 13 February, very high from 15 February to early March, dropping by 9 March, nearly gone by 14 March.

### ***Site coverage***

- 6.697. The Longdon Marsh WeBS site covers the northern half of the basin. Its importance has been overlooked until recent winters, and there is not a long history of WeBS counts here. Indeed, Core Counts only began in 2020, and most records for the site are Casual Counts, carried out at the time of occasional flood episodes since February 2014.
- 6.698. Interviews were carried out with the observers who have contributed all of the Core and Casual WeBS counts, Andy Warr and Mike Smart; additional records from the site in winter 2019/20 were provided by other observers, notably Mick Woodward.

- 6.699. The Worcester Curlew Group aims to liaise with farmers in order to protect nesting Curlews so there is interest and conservation activity within the area during the breeding season.

#### Accuracy of the counts

- 6.700. The flooded area can be reached by the public footpath which goes north from Marsh Lane at SO818356 through Access Land under the CROW Act; but the view from ground level is often obscured by hedges. Instead, counts are normally made from the Worcestershire Way northwest of Longdon Village which overlooks the basin from the northeast at SO833365, providing excellent if slightly more distant views of the open floodwater, and generally allowing accurate counts to be made. During periods of strong westerly winds, however, birds may seek shelter in the lee of hedges, making accurate counts more difficult.
- 6.701. Exploitation of flooded sites by a number of important species, particularly Pintail (see further comment below) is opportunistic and therefore may not necessarily always be picked up by WeBS counts. This high degree of variation means that caution is advisable when interpreting and evaluating data.

#### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.702. Winter (November-March): The principal importance of Longdon Marsh is as a refuge for surface-feeding ducks (probably coming from sites like Coombe Hill and Ashleworth and - since its creation in the last ten years - nearby Bow Farm (Ripple Lakes)) when water at these sites becomes too deep for the ducks to feed there. Since Longdon floods later than these sites it is well placed to act in this way, but does not do so every year, and the birds may only stay for a few days for as long as the shallow flooding lasts there. It seems in particular to attract Pintail (usually a scarce species in Worcestershire) whose numbers sometimes exceed not just the UK level of 250 for national importance but also the level for international importance set at 600 in northwest Europe (Frost *et al* 2020). This generally occurs relatively late in the Winter, after the new year. This accounts for older records in the West Midland Bird Club archives and for the WeBS Casual Counts of up to 1500 Pintail in February 2014 and 1270 Pintail in February 2016; numbers of Pintail in heavy flooding in January and February 2020 peaked at 250 in late February.
- 6.703. Wigeon also regularly occur in flocks of up to 3500 on the Longdon Marsh floods, and up to 1000 Teal are recorded (though they are generally more numerous in the more heavily vegetated Hill Court Farm reserve); smaller numbers of Shoveler and Gadwall are also noted. Shelducks in flocks of up to 20 also appear on the floodwater. Longdon Marsh also attracts large wintering flocks of up to 2000 Lapwings and less often 1000 Golden Plover; at times it seems that all of the wintering birds of these two species from the surrounding vales are present.
- 6.704. At time of high flood the first birds to exploit the floodwater are gulls: Lesser Black-backed and Herring Gulls which can no longer find food at the Throckmorton Landfill Site north of Pershore loaf in numbers (many hundreds); numbers of Black-headed Gulls feeding in the shallow may number a thousand.
- 6.705. Spring (April-June): In spring the principal SPA species present is Curlew, at least one pair of which regularly breeds on the remaining drier hay meadows. Other waders are more likely to be found on the Hill Court Reserve which holds water into the summer.

- 6.706. Autumn (July-October): The area becomes fairly dry before the arrival of the autumn rains and few SPA species are noted.

***Bird movement between the site and the SPA***

- 6.707. The occasional large concentrations of Pintail in winter at time of high flood must come from outside the Severn and Avon Vales. Some Longdon Pintail are undoubtedly birds driven out of nearby sites like Coombe Hill and Ashleworth by high flooding there, but the numbers are at times so large that there must be other sources. The monthly maximum counts of Pintail in WeBS counts on the whole of the very large Severn Estuary in recent years were: 382 in 2013/14, 932 in 2014/15, 1074 in 2015/16, 663 in 2016/17, 643 in 2017/18. It is hard to imagine that the whole Severn Estuary wintering Pintail population would suddenly move to take advantage of favourable conditions in the Severn Vale, so some of these birds may come from other major Pintail wintering sites, perhaps in Wales (Burry Inlet or Dovey) or northwest England (Dee, Mersey).
- 6.708. Local observers consider that there is little evidence of any influx of Wigeon to the area from the SPA. They believe that Wigeon arrive from northern Europe in autumn and spend the following months around Longdon and Ripple Lakes (or formerly Bredon's Hardwick). The flocks of several thousand Wigeon that occur at Longdon in time of extensive flood seem most likely to come from Ripple Lakes, only a few kilometres off.
- 6.709. The Teal that occasionally occur in their hundreds on the open water are probably birds dispersed (by a hunting Peregrine or human disturbance) from their preferred habitat further south in the Longdon basin at Hill Court.
- 6.710. The small number of nesting Curlews at Longdon certainly come from the coast, arriving in February or March, very probably coming from the SPA.

***Connectivity between this and other non-SPA sites***

- 6.711. Longdon Marsh is only about 4km from the Severn and Ripple Lakes, with which there must be some exchange of birds. The large flocks of Lapwing and Golden Plover regularly observed at Longdon Marsh may well represent a massing together of all the wintering birds of these species in the Severn and Avon wetlands, which move around the various floodplain sites but probably do not have much connection with the SPA before they depart in February for nesting grounds, probably in central and northwest Europe. The small numbers of Lapwing that breed in the Longdon basin may well be quite separate from these wintering flocks.

***Current condition of the site***

- 6.712. None of the site is designated as an SSSI. The ephemeral nature of flooding within the site is a reflection of the main priority for agricultural drainage, where watercourses are managed to maximise the removal of surface water when flooding does occur. However, there are several agri-environmental agreements in place, one covering the hay meadows, another covering the area between Marsh Lane and the very straight bridleway that runs diagonally from Marsh Lane at SO809367 to Longdon Village at SO835364. These may benefit SPA species but there is little detail on public record.

**Disturbance issues**

6.713. In winter the area used by the birds is largely inaccessible in time of flood. There is a public footpath which runs northward from SO819361 through the hay meadows where the Curlews nest in the summer but it is not heavily used.

**Site evaluation against the 1% SPA population criterion**

6.714. The assessment of this site’s importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Longdon Marsh North is of high importance to wintering Wigeon and Teal, although due to the intermittent occurrence of Pintail in large numbers, the assessment has failed to identify the site as being of importance to this species. It should also be noted, of course, that the assessment criteria are not sensitive to the value of such sites for small numbers of breeding birds, such as the Curlew that occur there.

6.715. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold.

Table 5.30 – Summary of site evaluation for Longdon Marsh North against the 1% SPA population threshold

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	<1%	low	<1%
European White-fronted Goose	<1%	low	<1%	Grey Plover	none	none	none
Bewick’s Swan	none	none	none	Ringed Plover	<1%	<1%	<1%
Whooper Swan	<1%	low	<1%	Whimbrel	<1%	<1%	low
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	low	mod	low	Black-tailed Godwit	<1%	<1%	<1%
Gadwall	low	low	low	Turnstone	none	none	none
Wigeon	low	high	<1%	Knot	none	none	none
Mallard	<1%	low	low	Ruff	low	low	<1%
Pintail	<1%	mod	low	Dunlin	<1%	<1%	<1%
Teal	mod	high	low	Snipe	low	low	<1%
Pochard	<1%	low	<1%	Redshank	<1%	<1%	<1%
Tufted Duck	<1%	low	low	Spotted Redshank	none	none	none
Lapwing	<1%	mod	<1%				

## **40305 Hill Court Farm Reserve (Longdon & Eldersfield Marshes)**

### ***Location and size***

- 6.716. The approximate centre of this site is at SO827349 and it covers approximately 98ha.
- 6.717. Hill Court is in the southern sector of the basin, on the eastern side of Longdon Brook, and comprises an area of grassland below Hill Court Farm which overlooks the reserve from high ground to the south west; unlike the Longdon Marsh WeBS site, there is no arable.
- 6.718. Interviews were carried out with some of the observers who have carried out WeBS counts, and their views are included in the following account. Additional counts were made in winter 2019/20 by the project team.

### ***History***

- 6.719. Longdon Marsh as a whole was one of the 18 sites identified in the Ecoscope Report (Ecoscope, 1999) as having potential (High Overall Suitability) for wetland (re-)creation and improvement in the Severn and Avon Vales.
- 6.720. In 2001 Worcs WT purchased land at Hill Court and began creation of a nature reserve. Pools and scrapes were later excavated on the main field. The grassland is grazed by Belted Galloway Cattle.

### ***Water levels and flooding***

- 6.721. Hill Court is at the top of the Longdon Brook catchment, and one of the Worcs WT management aims is to maintain water levels on the reserve, so the main field generally holds water until well into the summer. To facilitate this, water flows down into the reserve from a reservoir, and in the last few years Worcs WT has installed control structures which improve control of water levels within the reserve.
- 6.722. Like the rest of the Longdon basin, Hill Court floods when the Severn at Bushley is high and the Bushley/Longdon Brook is unable to discharge into the Severn, so backs up, flooding fields throughout the low flat basin. In time of high winter levels, Marsh Lane itself may be impassable and the whole of the reserve is then flooded.

### **Water and flood conditions in winter 2019/20**

- 6.723. Like other Severn and Avon wetlands, Hill Court was deeply flooded on several occasions in winter 2019/20. As early as 27 October the reserve was not accessible from Marsh Lane because of flooding, the screen was accessible by 7 November, then another period of high water occurred in mid-November; the screen was accessible again on 30 November and 13 December but completely flooded on 21 December. Light flooding occurred in early and late January (with heavy flooding in mid-January) and again in early February; massive flooding rose again from the end of the first week of February, beginning to drop on 22 February, but then rising again, making the reserve inaccessible until 14 March.

### **Accuracy of the counts**

- 6.724. A permissive footpath runs from the bridge over Longdon Brook on Marsh Lane at SO826366 to a screen which overlooks the main scrape and wetland area at SO828351; there is no access to other

parts of this area, in order to avoid disturbance. The reserve is more regularly covered by bird-watchers and naturalists than the northern half of the Longdon basin.

- 6.725. Hill Court is a difficult site to count: from the screen overlooking the main field and scrape, the observer is looking southwards into the sun, and there is a considerable amount of rank vegetation in which ducks, especially a small bird like Teal, can hide. If the site is approached from the high ground near Hill Court Farm a better overview is obtained, but some birds are still concealed behind hedges and in thick vegetation. Better counts (especially of Teal) can be obtained if the birds fly up, when of course it is more difficult to be accurate, or if the surface water is iced over when the birds become easier to see.

### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.726. Winter (November-March): Hill Court complements the northern part of the Longdon basin since, while the northern flooded area provides open water, the reserve is more thickly vegetated and more attractive to species requiring some vegetation cover such as Teal, Gadwall or Shoveler. Teal numbers on the reserve may reach 1000 individuals, Gadwall up to 15; in winter 2019/20 totals of Shoveler were high, with up to 170 birds in late winter, some perhaps displaced from Coombe Hill and Ashleworth. Wigeon occur in much smaller numbers and clearly prefer the open water of Longdon Marsh; up to 150 Pintail have been noted, probably also birds from the northern sector. Large numbers of up to 2000 Lapwing and 500 Golden Plover are recorded, probably the same flocks as those observed at Longdon Marsh north.
- 6.727. Spring (April-June): In spring the principal SPA species present are breeding waders, notably Lapwing with a very few pairs of Redshank. Little Ringed Plover has bred on the scrape, and pairs of Oystercatchers often occur. Curlews do not currently breed on the reserve, but occasionally the birds from the northern sector may drop in to feed.
- 6.728. Autumn (July-October): The area becomes fairly dry before the arrival of the autumn rains and few SPA species are noted.

### ***Bird movement between the site and the SPA***

- 6.729. There is no evidence of within-winter movement between Hill Court and the SPA. Breeding waders in spring and summer, on the other hand (Lapwing, Redshank, Oystercatcher and Little Ringed Plover), must originate in coastal sites, including the Severn Estuary SPA.

### ***Connectivity between this and other non-SPA sites***

- 6.730. At Hill Court Farm, most wintering ducks concentrate on a relatively small part of the site, the main reserve field with its scrape and surface water. This habitat is highly favourable for Teal, which concentrate here in large numbers, and appear to stay on site throughout the winter (e.g. there were still 220 in icy conditions on 19 January 2020). Counts of Teal throughout the winter varied considerably (from 90 to 900 between January and March 2020), either because this species hides in dense vegetation and is easily overlooked, or because they occasionally occur in large numbers on open water at Longdon Marsh. It seems likely that, once arrived in autumn, Teal remain on site throughout the winter, possibly with additional influxes from Coombe Hill and Ashleworth at periods of deep flooding there.

6.731. Numbers of Pintail and Shoveler reached almost 100 in the first three months of 2020, and may have represented overflows either from nearby Longdon Marsh or from Coombe Hill or Ashleworth, in time of high flood there. Wigeon occur in only small numbers, generally less than a hundred but occasionally up to 300, coming perhaps from nearby Longdon Marsh; Gadwall appear in single figures. The large counts of Lapwing and Golden Plover undoubtedly refer to the flocks also noted nearby at Longdon Marsh.

#### ***Current condition of the site***

6.732. The site is not an SSSI, but is entirely included in an agri-environment agreement with Natural England. The long-term aim of the Worcs WT is to restore the former character of the ancient Longdon Marsh, and the conservation of grassland and restoration of former water systems are important steps towards this aim. The condition of the site is constantly improving.

#### ***Disturbance issues***

6.733. Access and non-access zones are clearly marked on the reserve, and the pathways are well respected by the relatively small number of visitors. Those viewing the reserve from high ground at Hill Court Farm are some distance away and cause little or no disturbance.

#### **Opportunities for enhancement**

6.734. Worcs WT is constantly aiming to improve and extend the reserve. To this end, a second scrape on the most northerly field and restoring the reservoir by removing built up silt and vegetation and replacing the water supply system are two important aspirations for the site (Rob Allen<sup>51</sup> pers. comm.).

#### ***Site evaluation against the 1% SPA population criterion***

6.735. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Hill Court Farm is of high importance to wintering Teal. Moderate value for other wintering surface-feeding ducks is notable and supports the notion that the site provides a valuable and semi-permanent shallow water feeding and roosting area.

6.736. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold. As for other sites, the assessment is not sensitive to the importance of the site to breeding waders, with clear importance for Lapwing and Redshank.

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<sup>51</sup> Reserves Team Leader, Worcestershire Wildlife Trust

**Table 5.31 – Summary of site evaluation for Hill Court Farm Reserve against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	<1%	low	<1%
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	none	none	none	Curlew	none	none	none
Shoveler	<1%	mod	<1%	Black-tailed Godwit	none	none	none
Gadwall	<1%	mod	<1%	Turnstone	none	none	none
Wigeon	<1%	mod	<1%	Knot	none	none	none
Mallard	<1%	low	<1%	Ruff	none	none	none
Pintail	<1%	low	<1%	Dunlin	<1%	<1%	<1%
Teal	<1%	high	<1%	Snipe	<1%	low	<1%
Pochard	<1%	<1%	<1%	Redshank	none	none	none
Tufted Duck	<1%	low	<1%	Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%				

## 40363 River Severn Northwick to Diglis Lock

### **Location and size**

6.737. This is a very long WeBS counting site measuring more than 4km from north to south. The approximate central point is at SO845549 and it covers an area of 105ha. The site follows the course of the River Severn through urban Worcester, albeit with semi-natural habitats available to wetland birds being located at the north end and (less so) at the south end, where the land use either side of the river is predominantly grassland and arable.

### **History**

6.738. Exactly how long this area has had the character it now displays is uncertain. However, certain land uses along the length of the Severn can be traced back in time. The Racecourse, for instance, has been in place for 300 years<sup>52</sup>. The city of Worcester was once a port, with warehouses and other structures associated with this trade having been built many years ago. The weir and canal lock at Diglis date from 1844, so water control for navigation has been in place since at least this time.

6.739. The counting area includes Northwick Marsh SSSI, at SO835579. This is a 5ha site and was designated for its open marsh habitat that resulted from the abandonment of old brick pits and subsequent grazing by cattle. This is a habitat that must once have been more widespread in the

<sup>52</sup> <https://www.worcester-racecourse.co.uk/worcester-racecourse/>

area. The citation refers to ornithological interest, with wintering Teal, Snipe and Jack Snipe notable. However, none of these species appears on the database supplied by the Worcestershire Bird Recorder for the period 2012 to 2018.

### ***Water levels and flooding***

#### Water and flood conditions in winter 2019/20

- 6.740. The River Severn in Worcester has a long history of flooding the urban area. Most recently, this occurred in February 2020. The more natural floodplain to the north and south of the city presumably did also flood but this was not investigated under the current project.

### ***Site coverage***

- 6.741. Coverage by the current counter has been consistent for the last 6 years, although not all months of the year were covered. Given the restricted number of species found within the counting area, it is thought likely that the counter only recorded birds on the river itself.
- 6.742. The project team did not visit the entirety of the site due to a lack of time and then the restrictions that were imposed during the Coronavirus lockdown.

#### Accuracy of the counts

- 6.743. With the river accessible from so many public rights of way, the accuracy of the counts is considered likely to be high, although as noted above it is likely that the floodplain area within the counting area has not been visited.

### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.744. For the limited number of SPA species recorded at this site, a seasonal pattern of use is difficult to infer. There is only a single record of Shoveler (two birds) and 28 of Tufted Duck in the six years' worth of data provided. Of the counts of this latter species, only five are of numbers of birds exceeding one. The majority of records (66 in total) are of Mallard, most counts of which exceed the 1% population criterion for importance (24 birds). Numbers of this species tend to be higher in autumn through winter, probably a reflection of the need for birds to congregate in areas where a ready food supply is present and where birds are relatively safe from predators – both are likely to be available to this adaptable and human-tolerant species in the urban section of the WeBS counting area.
- 6.745. The only bird of note that was seen during the one site visit made in the winter of 2019/20 was a Common Sandpiper near to the racecourse.

### ***Bird movement between the site and the SPA***

- 6.746. There have been no documented movements of this nature, although it is not a well-watched site.

### ***Connectivity between this and other non-SPA sites***

- 6.747. There have been no documented movements of this nature, although it is not a well-watched site.

**Current condition of the site**

- 6.748. Whilst natural and semi-natural habitats are present, the river and floodplain in this WeBS counting area are not currently of major interest to SPA species other than Mallard, probably due to the levels of disturbance associated with their proximity to a centre of population.

**Disturbance issues**

- 6.749. Signs of heavy use by the public along, and away from the public rights of way are found throughout the area, suggesting that disturbance would be a big issue if riverside habitats were to be populated by larger numbers and diversity of SPA Interest species.

**Opportunities for enhancement**

- 6.750. None identified.

**Site evaluation against the 1% SPA population criterion**

- 6.751. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that the River Severn Northwick to Diglis Lock is of high importance to Mallard throughout the year. All other species, if present, are represented by numbers not meeting or exceeding the 1% threshold.

**Table 5.32 – Summary of site evaluation for River Severn Northwick to Diglis Lock against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	none	none	none	Curlew	none	none	none
Shoveler	<1%	<1%	<1%	Black-tailed Godwit	none	none	none
Gadwall	none	none	none	Turnstone	none	none	none
Wigeon	none	none	none	Knot	none	none	none
Mallard	high	high	high	Ruff	none	none	none
Pintail	none	none	none	Dunlin	none	none	none
Teal	none	none	none	Snipe	none	none	none
Pochard	none	none	none	Redshank	none	none	none
Tufted Duck	low	<1%	<1%	Spotted Redshank	none	none	none
Lapwing	none	none	none				

## **Severn Ham, Tewkesbury**

### ***Location and size***

- 6.752. The approximate centre of this site is at SO885325 and it covers approximately 68ha.
- 6.753. The Ham is an area of riverside meadows, at the confluence of the Severn and the Avon, and is only separated from the town of Tewkesbury by the Mill Avon.

### ***History***

- 6.754. The Ham, situated alongside the town, has always been widely used by local people. In the 19<sup>th</sup> century horse-racing took place on the Ham and regattas took place on the rivers.
- 6.755. The Ham is designated as an SSSI for its hay meadow vegetation and breeding birds. The land belongs to the Tewkesbury Town Council (TTC) and management is supervised by a Ham Committee. Hay-cutting and harvesting rights are auctioned each year in May and the successful bidders cut and remove the hay, with any profits going to rights holders resident in Tewkesbury.
- 6.756. The Severn Ham was not mentioned in the Ecoscope Report (Ecoscope, 1999) as having potential for wetland (re-)creation and improvement in the Severn and Avon Vales, although the stretches of the Severn from Uckinghall downstream to Tewkesbury and from Tewkesbury downstream to Longford (near Gloucester) were mentioned.

### ***Water levels and flooding***

- 6.757. The confluence of the Avon and Severn occurs at the northwest corner of the Ham, so the site is surrounded by rivers: the Severn to the west, the Avon to the north, and the Mill Avon, with its tributary the Swilgate, along the eastern side before it flows into the Severn at the southern tip. When the Severn level is high, the Avon and Mill Avon back up and gradually flood the Ham. Such flooding occurs regularly in winter, and may also happen in summer, as was spectacularly the case in 2007 and more modestly in 2019.
- 6.758. The Mythe water treatment plant situated just north of the Avon/Severn confluence supplies much of northern Gloucestershire with water via a large water main which runs directly under the Ham and then crosses the Mill Avon by a pipe bridge. For the last four or five years the aged water main has been subject to repeated leaks which cause surface flooding on the Ham.

### **Water and flood conditions in winter 2019/20**

- 6.759. Though not quite as severe as the summer flooding of 2007, water levels on the Ham in winter 2019/20 were extremely high for long periods. The Ham was totally flooded in late October, levels dropping by 4 November, but totally submerged again by 16 November, still under water on 13 December, no flooding from mid-January to early February, but the Ham was a lake again from mid-February to mid-March.

### ***Site coverage***

- 6.760. The Severn Ham, Tewkesbury, is not registered as a WeBS site, largely because its importance to waterbirds is mainly through the waders that breed there in the spring and summer. At that time, intensive study and protection of the breeding Curlews present on site has been carried out by

volunteers and, latterly, under the auspices of a WWT project.

#### Accuracy of the counts

- 6.761. The Severn Ham is not a WeBS site, so there are no systematic counts available. However, observations from the Gloucestershire Bird Recorder's data base, and those made in 2019/20 by the project team confirm only minimal numbers of wintering birds.

#### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.762. Winter (November-March): In time of heavy flooding, common species like Mallard or Mute Swan may appear in small numbers, together with the occasional Shelduck or Teal. Snipe are found in small numbers in the lower, wetter grassy areas when water levels are lower.
- 6.763. Spring (April-June): Up to three pairs of Curlews regularly attempt to nest in the grassland in the centre of the Ham. Until about ten years ago, Redshank still bred on the Ham, but no recent nesting attempts are known. Oystercatchers, known to nest nearby, are occasionally recorded, generally flying over, but have not as yet attempted to nest on the Ham. Small numbers of waders occur on northward passage, in particular Common Sandpiper along the Severn and Mill Avon and (usually in flight) passing Whimbrel.
- 6.764. Autumn (July-October): When the hay has been cut (by 14 July according to local bye-laws) the Ham becomes very dry, with considerable numbers of sheep and cattle introduced to graze the "aftermath", usually until October/November or the first winter flood, whichever is earlier. Few waterbirds are found in these conditions.

#### ***Bird movement between the site and the SPA***

- 6.765. Given the low numbers of wintering birds, there is little sign of movement to and from the SPA in winter. The breeding Curlews and formerly breeding Redshanks undoubtedly originate from a wintering area on an estuary or coastal site, in all likelihood the Severn estuary SPA.

#### ***Connectivity between this and other non-SPA sites***

- 6.766. Observations in 2020 and at other times have indicated that breeding Curlew will fly between this site and those upstream on the Avon, such as Bredon's Hardwick and perhaps as far as Upham Meadow. How frequent exchanges are between these sites has not been determined.

#### ***Current condition of the site***

- 6.767. There has been much concern over the current state of the Severn Ham SSSI, with methods to control certain plants in order to maintain the notified plant species assemblage not being possible, or severely constrained by the prescriptions of Higher Level Stewardship. While the main plant species Sulphurwort (*Oenanthe silaifolia*) is still present in quantity, as are other typical hay meadow plants, much of the grassland has become overgrown with docks and Reed Canary Grass (*Phalaris arundinacea*), making the hay crop of low value and difficult to sell at auction. This could, in time, result in a lack of management appropriate to supporting breeding Curlew. There are ambitious plans for restoration of the SSSI but little certainty of how to finance them. Severn Trent Water have a major infrastructure project due to commence in 2021 which will include grassland restoration using green hay, but this will only be along the line of a water main replacement, resulting

in grassland restoration in a strip approximately 1km long and 40-50m wide.

### ***Disturbance issues***

- 6.768. The Severn Ham is Access Land under the 2000 CROW Act, and is widely used for recreational purposes (walking, jogging) by the people of Tewkesbury. The only access to the Ham used to be by the footbridge near Abel Fletcher's Mill (SO888325); since the construction in the 1980s or 1990s of a much larger footbridge by Healing's Mill, the number of people visiting the Ham is thought to have increased considerably. Recreation undoubtedly causes some disturbance to ground-nesting birds, however most visitors to the Ham keep to the footpaths and control their dogs. In cooperation with the Gloucestershire Naturalists' Society, signs requesting visitors and especially dog-walkers to take account of ground-nesting birds have been erected in summer for the last three years and have generally been well respected.

### ***Opportunities for enhancement***

- 6.769. Some kind of wardening system, possibly operated by authorised volunteer townspeople, might help further influence the behaviour of visitors to ensure the security of ground-nesting birds.
- 6.770. Interventions to improve the botanical value of the SSSI, such as control of plant species that are becoming dominant to the detriment of a more diverse sward and which could reduce the appeal of the hay and aftermath grazing to farmers, are likely to benefit breeding Curlews. The impact of further management or capital works to improve the site for SPA bird species would need to be carefully considered against the existing and potential value of the site for its original botanical interest, but some positive measures could be instigated if funding were to become available.

### ***Site evaluation against the 1% SPA population criterion***

- 6.771. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that the Severn Ham is not of high importance to any species. It should be noted, of course, that the assessment criteria are not sensitive to the value of such sites for small numbers of breeding birds, such as the Curlew that occur there.

**Table 5.33 – Summary of site evaluation for the Severn Ham at Tewkesbury against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	<1%	low	<1%	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	<1%	<1%	<1%	Black-tailed Godwit	none	none	none
Gadwall	none	none	none	Turnstone	none	none	none
Wigeon	<1%	<1%	<1%	Knot	none	none	none
Mallard	none	none	none	Ruff	none	none	none
Pintail	<1%	<1%	<1%	Dunlin	none	none	none
Teal	none	none	none	Snipe	none	none	none
Pochard	none	none	none	Redshank	<1%	<1%	<1%
Tufted Duck	<1%	low	<1%	Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%				

## Upham Meadow & summer Leasow, with Rectory Farm Meadows

### Location and size

- 6.772. The approximate centre of Upham Meadow is at SO917376 and it is 110ha in extent. The approximate centre of Rectory Farm Meadows is at SO921381 and it covers an area of 16.2ha. These two sites are described here together because they form a single unit in terms of their similar characters and close proximity.
- 6.773. Upham Meadow is a huge (1km<sup>2</sup>) and unique hay meadow (one of its local names is “The Great Hay Meadow”) on the Gloucestershire bank of the Avon. It is split in two by the M5 motorway. It regularly floods in winter.
- 6.774. Rectory Farm Meadows comprises two fields on the east (Worcestershire) bank of the Avon, immediately opposite Upham Meadow, between the railway and the river (at SO922382). It too floods in winter and holds small numbers of breeding waders, but is not a WeBS site either.

### History

- 6.775. Upham Meadow is an extremely large Lammas Meadow, i.e. it is managed on a historical strip system, dating back to medieval times, like some other riverside meadows in the area (e.g. nearby Asham Meadow at Eckington and the Lugg Meadows in Herefordshire). The strips are owned by different individuals who would in former times each have cut their own strips; nowadays there has

been consolidation of strips, and mowing is carried out by a small number of local farmers under the supervision of the Hay Warden. All hay has to be harvested by Lammas Day in early August. At Twyning, after Lammas Day, those with commoners' grazing rights could release their animals to graze onto the meadow, until the first winter floods appeared, at which point animals would be taken through the village to higher ground at Brockeridge Common (SO885379), where they would spend the winter. Because of its liability to flooding, the site has never been ploughed.

- 6.776. Summer Leasow is a large pasture field on higher ground between Upham Meadow and the east side of the M5, centred at approximately SO913378.
- 6.777. Upham Meadow and Summer Leasow was designated a SSSI in 1991, largely on ornithological grounds (breeding waders and over-wintering waders and wildfowl), though "*significant botanical interest*" is mentioned.). The site is classed as Access Land under the 2000 CROW Act but public access has been formally suspended from 1 March to 31 July, in order to minimise disturbance of breeding birds.
- 6.778. Rectory Farm Meadows was notified as an SSSI in 1994, as one of Worcestershire's group of Severn Valley Grasslands. The citation mentions a variety of typical meadow flowers, and highlights Narrow-leaved Water Dropwort. The citation does not make any reference to birds.
- 6.779. The Ecoscope Report (Ecoscope, 1999) – considered the long section "*River Avon – Eckington Bridge to Tewkesbury*" - as having medium overall suitability for wetland (re-) creation and improvement. Upham Meadow is specifically mentioned and judged to have high suitability for restoration for MG13 grassland, breeding waders and wintering waterfowl.

### ***Water levels and flooding***

- 6.780. The Avon on the Upham side has a very low flood-bank, created (according to local farmers) quite recently and almost accidentally some years ago when the river was dredged. The Avon only very occasionally comes over this flood-bank. Floodwater on Upham Meadow normally derives from backing up of the north/south ditch which separates the meadow from summer Leasow and drains both, joining the Avon at the southern end of the meadow. Flooding normally occurs from late autumn onwards. Once water is on the meadow, it tends to flow very gradually southwards, and the M5 motorway embankment acts as a dam, holding up the water and creating a shallow lake. Flooding normally occurs during the winter months, but can also occur in summer (as in July 2007 or on a much less serious level in June 2019). There is a natural shallow depression in the meadow, north of the M5 and opposite Mill End, centred on SO918374, which is the main focus point for nesting Curlews.
- 6.781. Rectory Farm Meadows are also inundated at times of high river level.

### **Water and flood conditions in winter 2019/20**

- 6.782. Flooding at Upham Meadow and Rectory Farm Meadows in 2019/20 was unusually high and prolonged, with very high levels experienced in mid-November and then again from mid-February to the first few days of March; on both occasions the whole of the area was submerged, and only a small area of the grassy top of the Avon flood-bank interrupted the sheet of water stretching from Bredon Dock to summer Leasow.

**Site coverage**

- 6.783. Upham Meadow, Twynning, is not registered as a WeBS site, largely because (like the Severn Ham at Tewkesbury, 3km down the Avon) its current importance to waterbirds is mainly through its breeding waders rather than wintering birds.
- 6.784. Both areas have been regularly surveyed for breeding waders and for wintering geese (predominantly naturalised Canada and Greylag Geese) for many years, and these records have been considered and added to by observations made in winter 2019/20 by the project team.

**Accuracy of the counts**

- 6.785. There are no formal WeBS counts at either site. Most of the counts carried out in winter in recent years have been made by local ornithologists and not submitted under the WeBS scheme. Upham Meadow can be surveyed from high vantage points in the summer Leasow, or from the grassy embankment which carries the M5. A more easily accessible vantage point is available from the east bank of the Avon at Dock Road, Mill End (SO923375), although the view here is restricted.
- 6.786. Rectory Farm Meadows can be easily approached, with the owner's permission, by a bridge under the railway embankment. Counting breeding waders in summer is more difficult as the grass becomes very long by May or June. There are no counts from this site in winter.

***Current importance of the site to SPA species and other notable wetland birds***

- 6.787. Winter (November-March): The Upham Meadow SSSI citation mentions overwintering wildfowl but for the last twenty years the numbers of swans, geese and ducks recorded have been minimal – with the notable exception of naturalised goose flocks, essentially Greylag and Canada Geese. Numbers of wildfowl and waders at Upham were higher in the 1980s (e.g. 450 Golden Plover and over 1200 Lapwings on 10.01.88, 190 Dunlin on 17.01.88, MS pers. obs.) and flocks of many hundreds of Wigeon occurred in time of shallow floodwater (M. Greening pers. com.). This was before the excavation of the gravel pits at Bredon's Hardwick, 2km down the Avon on the left (Worcestershire) bank from the mid-1980s, which created large areas of open water attractive to ducks, and no doubt attracted these birds away from Upham. The massive flooding of February/March 2020 may have re-created the original winter conditions; with Bredon's Hardwick Pits and Bow Farm (Ripple Lakes) deeply flooded. Only a small grassy area of the Avon flood-bank at Upham Meadow emerged from the floodwaters in late February 2020 and this held up to 700 Wigeon with Gadwall, Teal, Shoveler and Pintail all present in single figure totals, plus 30 Curlews, while Tufted Ducks and Pochard sat on the deeper open water. In the heavy flood of November 2019 too, about 40 Wigeon were present.
- 6.788. Nowadays, large numbers of Canada Geese (many hundreds of individuals) with smaller numbers of Greylags (perhaps a few dozen) graze by day throughout the winter at Upham, often roosting at night at Kemerton Lake, just over 2km to the south east. These birds are winter visitors and are thought to breed in the Midlands, rather than in the SPA; in June and July they undertake a northward moult migration and spend this period at Windermere in Cumbria, as shown by readings at Upham of colour rings put on the birds in the Lake District. These naturalised birds occasionally attract passing wild geese to join them. In December 2018 they were joined by a wild Greenland White-fronted Goose marked with a satellite tag, allowing its every movement to be traced.
- 6.789. Numbers of wintering waders have also declined. The major flocks of Lapwings and Golden Plover

in the 1980s have not been recorded in recent years. While Lapwings do still winter in numbers in the Severn and Avon Vales, changes in management techniques at Slimbridge have attracted many thousands of Lapwings to winter on the estuary; Golden Plover too are numerous at Slimbridge, though flocks still occur in inland sites, more commonly in Worcestershire than in north Gloucestershire. Numbers of wintering birds at the much smaller Rectory Meadows site are very small.

- 6.790. Spring (April-June): The main SPA species now occurring at Upham are breeding waders. Upham is the main site in the whole of the Severn and Avon Vales for breeding Curlews; up to six or seven pairs regularly nest on the vast meadow, more than anywhere else, probably because of the lack of disturbance. Quinn *et al* (1995) recorded nine pairs of Redshank in 1995, but numbers of this species decreased to a single pair by 2017 and have not been found since. Quinn *et al* also recorded five pairs of Lapwings in 1995, but there has only been a single pair in one year in the last decade; they did not make any reference to Rectory Farm Meadows, where at least one pair each of Curlew and Redshank have nested until recently, while three to four pairs of Lapwings nest on arable fields immediately to the north of the SSSI.
- 6.791. Small numbers of migrant waders may occur at both Upham and Rectory Meadows on northward passage in spring, notably Common Sandpipers along the Avon.
- 6.792. Autumn (July-October): Once the hay has been cut by early August, the site generally becomes very dry and unsuitable for waterbirds until the arrival of the first autumn rains. Few SPA species appear at this time, though the Canada Geese are already returning from their moult sites from August onwards.

#### ***Bird movement between the sites and the SPA***

- 6.793. There is no definite evidence of within-winter movements of birds between these two sites and the SPA. The breeding waders on the other hand undoubtedly winter in coastal sites and a female Curlew, colour ringed in the SPA at Wibdon Warth between Lydney and Chepstow in September 2011, has been recorded at Upham Meadow, where she clearly breeds and indeed usually in exactly the same part of the meadow, in every spring and summer from 2015 to 2019; she has been seen back on the SPA very close to the ringing site every winter from 2012/13 to 2019/20.

#### ***Connectivity between this and other non-SPA sites***

- 6.794. The satellite-tagged Greenland White-fronted Goose already mentioned above provided detailed insight into what may be more regular goose movements between sites. After its flight from Iceland via the Dutch and French coasts, then from the Thames estuary to the Severn, this bird clearly moved around with the Canada Goose flock and showed a wide pattern of movement in search of suitable grazing grounds: during the month of December the flock travelled to Longdon and Bow Farm (Ripple Lakes) but on occasion as far west as Hereford, south into Gloucestershire (not just Coombe Hill, but south of Gloucester to Quedgeley and Walmore, and eastwards to Gretton and Bishop's Cleeve) before the tagged bird finally returned to Ireland on 1 January 2019. How representative such movements are can only be speculated upon, and only really shows the ranging behaviour of non-SPA species.

**Current condition of the sites**

- 6.795. In purely ornithological terms, Upham Meadow is in a poorer condition than it was formerly. Although Curlews are (just) holding their own, numbers of breeding waders have fallen.
- 6.796. The loss of wintering wildfowl and waders since the 1980s is probably due to the emergence of more attractive habitats in the vicinity (first Bredon's Hardwick, then Bow Farm (Ripple Lakes), plus Slimbridge for Lapwing and Golden Plover).
- 6.797. The loss of recent breeding birds (among waders first Snipe, more recently Redshanks, but also Yellow Wagtail and Corn Bunting, typical hay meadow breeding species) is a matter of great concern. The late hay cutting and the gradual progressive cutting, strip by strip, means that the area is cut in a patchwork fashion, leaving some uncut areas as refuges for the chicks until late in the season; This and the sheer size of the site mean that this is the best area for nesting Curlews, which seem to be more successful in raising chicks here than at other sites. The minimal disturbance must be a factor in the Curlews' success.
- 6.798. Rectory Farm Meadows SSSI is under an agri-environmental agreement which means that the hay is cut late in the season (generally mid-July) to allow breeding waders to bring off their young. But here too, the breeding Redshank seem to have disappeared in the last two or three Summers.

**Disturbance issues**

- 6.799. Upham Meadow is remote, with few access roads and is only reached with some difficulty. Access on foot is not allowed during the breeding season, and few people visit the site in wet winter conditions. There are some risks of disturbance from the Caravan Park which overlooks the site at its southeast end at SO908369, but signs warning of the presence of ground-nesting birds were erected at all entrances to the meadow in 2019. Rectory Farm Meadows remain equally undisturbed as there are neither footpaths nor public access.

**Opportunities for enhancement**

- 6.800. While there is plenty of floodwater in winter, there is a lack of permanent water on both sites which might attract waterbirds, especially in spring and summer. But, as Ecoscope (1999 op.cit.) already noted: "*An increase of flooding frequency and duration would extend the area suitable for inundation grassland and reedbed although this could be detrimental to the flood meadows especially since the river in this location is high in phosphates and oxidised nitrogen*". Any extended flooding on the hay meadow would not be favourable to the continued agricultural practices that have brought about both the ornithological and botanical interest of the sites in the first place.
- 6.801. In spite of the declines noted above, both of these meadows remain very important for breeding waders, notably Curlews, and any future agri-environmental schemes or environmental land management regulations, should provide for grants to farmers who take measures to promote successful breeding by waders.

**Site evaluation against the 1% SPA population criterion**

- 6.802. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Upham Meadow is not of

high importance to any SPA species. It should be noted, of course, that the assessment criteria are not sensitive to the value of such sites for small numbers of breeding birds, such as the Curlew that occur there. As noted above, this is one of the most important locations for Curlew in the Vales.

**Table 5.34 – Summary of site evaluation for Upham Meadow against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	<1%	low	<1%
European White-fronted Goose	<1%	low	<1%	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	none	none	none	Whimbrel	none	none	none
Shelduck	none	none	none	Curlew	<1%	<1%	<1%
Shoveler	<1%	low	<1%	Black-tailed Godwit	none	none	none
Gadwall	<1%	low	<1%	Turnstone	none	none	none
Wigeon	<1%	low	<1%	Knot	none	none	none
Mallard	<1%	<1%	<1%	Ruff	none	none	none
Pintail	<1%	low	<1%	Dunlin	<1%	<1%	<1%
Teal	<1%	<1%	<1%	Snipe	<1%	low	<1%
Pochard	<1%	<1%	<1%	Redshank	<1%	<1%	<1%
Tufted Duck	<1%	<1%	<1%	Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%				

## Upton Ham

### **Location and size**

- 6.803. The approximate centre of this site is at SO860397 and it covers 118ha. Upton Ham is a large riverside meadow, between the town of Upton-on-Severn and the River Severn, comparable in many ways to the Severn Ham at Tewkesbury.

### **History**

- 6.804. Upton Ham is an SSSI notified in 1989 under the 1981 Act. It is an unimproved flood meadow that is traditionally managed with a late hay cut and aftermath grazing. According to the SSSI citation, it “...has been selected as the largest example of this nationally scarce habitat in Worcestershire”.
- 6.805. The SSSI covers the Upper Ham, north of the disused railway embankment; the Lower Ham, south of the embankment, which is used for cattle raising and is not of high botanical value, is not included in the SSSI. To the south-west of the Upper Ham, around Buryend Farm, are some arable fields with a small pool.
- 6.806. Unlike the Severn Ham at Tewkesbury, Upton is not owned by the local authority, but is owned and

farmed by a group of local farmers. Being sited alongside the town of Upton, it is heavily used for recreational purposes by local people (ramblers, joggers, dog-walkers) and visitors from further afield.

- 6.807. The Ecoscope report (1999) gives a general rating of “*Medium?*” for overall suitability, with a rating of high for potential improvements for breeding waders and medium for wintering waterfowl.

### ***Water levels and flooding***

- 6.808. The Ecoscope report (1999) states that “*The area is generally flat with a small area shallowly sloping into the central drain. Inundation grassland occurs in the vicinity of the drain where water is held back in the drain by a small rise in the ground level. A levee separates the SSSI from the River Severn. The site floods approximately once a year.*” This situation has remained the same since the time of writing, but often with more frequent flooding.

### Water and flood conditions in winter 2019/20

- 6.809. In the very wet winter of 2019/20, the site flooded deeply on several occasions and certainly more than once: major floods covered most of the Ham in late October/early November, again in mid-November, mid-December and especially heavily from mid-February to mid-March.

### ***Site Coverage***

- 6.810. Upton Ham, like Tewkesbury, is not a WeBS site because, although it floods, it has no pools of open water and does not normally attract any numbers of wintering waterbirds.
- 6.811. Several visits were made by the project team to the site, largely to confirm the absence of waterbirds, in the course of winter 2019/20.

### Accuracy of the counts

- 6.812. Unless the site is flooded, access is not impeded so any counts carried out at Upton Ham should be expected to be accurate.

### ***Current importance of the site to SPA species and other notable wetland birds***

- 6.813. Winter (November-March): Upton Ham does not, in the view of experienced local bird watchers, normally attract any numbers of wintering waterbirds, and visits in winter 2019/20 showed no major assemblages of waterbirds, other than gulls, which save themselves the long flight back to the estuary when flood conditions provide a safe roosting area. At such times of flood, small numbers of ducks, notably Shelducks, may appear, with Lapwings and sometimes other waders. The SSSI document refers to large numbers of overwintering Snipe but there are no recent records of this.
- 6.814. Spring (April-June): The SSSI citation refers to breeding Curlew on the Upper Ham. Quinn (1995) reported three pairs of Redshank and one of Curlew. Wilson and Smart (2003) referred to one pair each of Redshank and Curlew. Surveys in the last five years have regularly recorded two pairs of breeding Curlews and (rather surprisingly, given their steep decline elsewhere) still up to three pairs of Redshanks.
- 6.815. Some passage waders are recorded in spring on the pool which forms a low patch of an arable field at Buryend Farm SO855395, including Little Ringed Plover and Greenshank.

- 6.816. Autumn (July-October): The Ham dries out after hay making, so there are very few records of southward moving waders in autumn.

***Bird movement between the site and the SPA***

- 6.817. The breeding Curlews and Redshanks undoubtedly move in from coastal sites, very probably the Severn estuary SPA. Any spring passage waders will probably also have come from wintering areas within the SPA.

***Connectivity between this and other non-SPA sites***

- 6.818. There have been no recorded movements of birds between sites in this part of the river catchment.

***Current condition of the site***

- 6.819. Upton Ham is of very limited value for wintering birds that also visit the SPA. Given its proximity to other sites where more favourable conditions already exist (notably Bow Farm and Longdon Marsh North/ Hill Court Farm) this is hardly surprising.
- 6.820. The site maintains its importance for breeding Curlew and Redshank, albeit in small numbers.

***Disturbance issues***

- 6.821. Disturbance is a major issue because of the proximity of the town of Upton, and the regular use of the Ham for recreational purposes by local people (and also by many tourists who visit the area for various summer music and folk festivals). There are marked footpaths around the edges and one across the centre. In general, visitors and dog-walkers keep to those footpaths, and for several years now, signs have been erected at entry points asking visitors and dog-walkers in particular to keep to the paths.

***Opportunities for enhancement***

- 6.822. There is no foreseeable likelihood of the situation regarding wintering birds changing, unless perhaps more permanent water bodies are established on the Ham to provide habitat when it is not in flood. If this were to be contemplated, it would be appropriate to confine such enhancements to the area to the south of the railway line in order to protect the botanical value of the SSSI.

***Site evaluation against the 1% SPA population criterion***

- 6.823. The assessment of this site's importance to SPA species, under criteria outlined in Section 4 of this report, is presented in full in Appendix 3, where a full explanation of terms used is also provided. A summary table of the results is given below. The assessment shows that Upton Ham is not of high importance to any SPA species. It should be noted, of course, that the assessment criteria are not sensitive to the value of such sites for small numbers of breeding birds, such as the Curlew and Redshank that occur there.

**Table 5.35 – Summary of site evaluation for Upton Ham against the 1% SPA population threshold**

SPA species	Site importance			SPA species	Site importance		
	autumn	winter	spring		autumn	winter	spring
Pink-footed Goose	none	none	none	Golden Plover	none	none	none
European White-fronted Goose	none	none	none	Grey Plover	none	none	none
Bewick's Swan	none	none	none	Ringed Plover	none	none	none
Whooper Swan	<1%	low	<1%	Whimbrel	none	none	none
Shelduck	<1%	<1%	<1%	Curlew	<1%	<1%	<1%
Shoveler	<1%	<1%	<1%	Black-tailed Godwit	none	none	none
Gadwall	none	none	none	Turnstone	none	none	none
Wigeon	<1%	<1%	<1%	Knot	none	none	none
Mallard	none	none	none	Ruff	none	none	none
Pintail	<1%	<1%	<1%	Dunlin	none	none	none
Teal	none	none	none	Snipe	none	none	none
Pochard	none	none	none	Redshank	<1%	<1%	<1%
Tufted Duck	<1%	low	<1%	Spotted Redshank	none	none	none
Lapwing	<1%	low	<1%				

## 7.0 Preliminary identification of additional sites of importance

### Overview

- 7.1. This section briefly considers the locations of sites not already considered within the Severn and Avon Vales but also areas outside of the Vales and within the counties of Gloucestershire and Worcestershire that have the potential to be of importance to SPA Interest Species. As for the evaluation of the Vales sites given above, counts meeting or exceeding the 1% SPA population criterion (hereafter referred to as the 1% threshold) are taken to indicate possible importance if a site had more than one record of the species concerned (i.e. the records are more likely to be of bird(s) found in habitat suitable for their needs); however no further evaluation was entered into other than a brief commentary, as this should be subject to a separate detailed study. If the 1% criterion was not met at any location for a species within this wider area, no further consideration is given to it and it is omitted from the accounts given below.
- 7.2. This part of the study is based upon a review of data provided in the County data sets for the periods given in Section 3 of this report i.e. within the last 10 years. No consideration is given to records pre-dating this period.
- 7.3. The review here is divided into regions as defined by the National Character Area profiles<sup>53</sup> as the most appropriate biogeographical boundaries relevant to decision making in England<sup>54</sup>. Maps showing the locations of records for each of the SPA Interest species can be found in Appendix 2.
- 7.4. Unless otherwise described, all counts referred to below are of birds reaching or exceeding the 1% threshold.

### National Character Area

#### ***Severn and Avon Vales (sites not considered in detail elsewhere in this report)***

##### Bewick's Swan

- 7.5. There are only three sites within this NCA where Bewick's Swans have been recorded outside of the core areas already covered elsewhere in this report. These consist of the following:
  - A single record of two birds on the Awre peninsula in 2010. This is immediately adjacent to the SPA and on the other side of the estuary from WWT Slimbridge.
  - Two records in 2010 of the same family party five days apart at a location 1.6km to the south east of Walmore Common and on the left (east) bank of the Severn.
  - A single record, also from 2010, of six adults feeding on a field between the A38 and M5 on the floodplain of the River Frome.
- 7.6. These records are considered to be indicative of infrequent dispersive movements that are of little consequence to the identification of Functionally Linked Land.

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<sup>53</sup> <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making>

<sup>54</sup> <https://data.gov.uk/dataset/21104eeb-4a53-4e41-8ada-d2d442e416e0/national-character-areas-england>

### Whooper Swan

- 7.7. Whooper Swans have been recorded in areas just outside of those already considered within the Vales, notably between the upstream end of the SPA and Gloucester. These locations are not considered to be sufficiently distant from, or different in character to the sites already mentioned so they are unlikely to constitute additional Functionally Linked Land.

### Gadwall

- 7.8. There is a scatter of records of Gadwall numbers reaching or exceeding the 1% threshold at sites around the SPA including Purton Timber Ponds (between Sharpness and Purton village), the River Frome between the A38 and M5 Jnt13, as well as locations upstream of it, around Hempsted (opposite Minsterworth and Corn Hams) Maisemore Court Lake (in the village) and Sandhurst (both just upstream of Maisemore Ham), Barrow Ponds (just upstream of Chelt and Leigh Meadows), Strensham Lagoons (on the Avon just upstream of Upham Meadow) and Ryall Court (just upstream of Upton on Severn). All of these could be Functionally Linked Land.

### Wigeon

- 7.9. The only site within the Vales that has not so far been described is Portway Farm Pool, near to Kington which has five counts meeting or exceeding the 1% threshold. This is located to the east of Worcestershire and is relatively isolated from other sites that are host to larger numbers of this species.

### Mallard

- 7.10. There are over 550 counts of Mallard that meet or exceed the 1% threshold at sites within the Vales that are outside of the main study sites covered in this report, although many are immediately adjacent to them. As for other NCAs, for such a ubiquitous species, it is not possible to draw any inference from the counts alone about the likely importance of such sites to the SPA population.

### Teal

- 7.11. There are only four counts of Teal that met or exceeded the 1% threshold – the River Frome between the M5 and A38 had one count of 75, Sandhurst brick pits had one count of 90, Innsworth near Gloucester had a count of 50 (probably during a flood within the Horsbere Brook catchment) and Abberton a record of 55. These counts may be evidence of excursive movements from the main sites already identified but as has been identified for this species, wintering sub-populations north of the SPA are considered unlikely to commute to it during the same winter.

### Tufted Duck

- 7.12. There are 199 counts of this species meeting or exceeding the 1% threshold at sites within the Severn and Avon Vales that are outside of the areas already described. 165 of these counts are from Pittville Park in Cheltenham, with the rest of the records from 9 other sites. This distribution of records suggests that the Vales sites already reviewed are the most important locations for Tufted Duck. There could be interchange between Pittville Park and the SPA but any movements of birds are more likely to be to Vales sites such as Coombe Hill (just under 9km distant) or Bredon's Hardwick (12km away).

### Lapwing

- 7.13. There are 37 counts of Lapwing that meet or exceed the 1% threshold within Severn and Avon

Vales sites that have not already been considered. Flocks between 120 and (exceptionally, it would appear) 1080 have been recorded. The flocks recorded were at a scatter of sites to the east side of Worcester across to and beyond Pershore, between Tewkesbury and Winchcombe, and the area adjacent to WWT Slimbridge. Given their mobility, it is likely that birds do fly regularly between these areas and the SPA and the Vales sites considered in detail earlier in this report.

#### Golden Plover

- 7.14. Records of this species are widely scattered across the Vales outside of the main sites under review in this report, with 159 counts of flocks meeting or exceeding the 1% threshold at 46 locations. Within Worcestershire and north Gloucestershire, there are a large scatter of sites east of a line between Tewkesbury and Worcester. Outside of this area, there are a small number of records from just south of Tewkesbury and the area around Slimbridge and Frampton on Severn. All of these areas are likely to be within easy commuting distance for wintering Golden Plover.

#### Curlew

- 7.15. There are no sites within the Severn and Avon Vales outside of those already covered under this report where numbers of this species have met or exceeded the 1% threshold other than a site at Ryalls Lane, Cambridge – this has two records from the floodplain of the River Cam. The site is less than 2km from the SPA and could be used more frequently but go un-noticed due to lack of attention from local ornithologists.
- 7.16. There are no additional breeding areas for Curlew either.

#### Ruff

- 7.17. There is one record of 2 birds feeding with Lapwings in a stubble field on the Awre peninsula. It is possible that this area serves as Functionally Linked Land for this species and that the lack of data is due to the fact that it is not visited frequently enough by local ornithologists for the data to be a true reflection of frequency of use. However, Phase 4 of this work (Palmer 2017) did not identify the Awre peninsula as having significance for this species.

#### Snipe

- 7.18. There are 161 counts of Snipe meeting or exceeding the 1% threshold at 28 sites in the Vales that have not been covered by the review. Given that Snipe can be found in a range of habitats during winter, and they are not often seen unless flushed, this is considered likely to be unrepresentative of the real distribution of the species within the Vales at that time and none of the records are considered to be a reliable indicator of specific additional areas of Functionally Linked Land for this species. As indicated in the species account section of this report, Snipe is now extirpated as a breeding species, although birds will be found on passage on their way to other wintering areas or back to breeding habitat elsewhere in the UK and Europe.

### **Arden**

#### European White-fronted Goose

- 7.19. There are six records of this species meeting or exceeding the equivalent of 1% of the SPA population within Arden, at Upper Bittell Reservoir, but these records are of the same two birds over a three week period in 2016. These are not considered likely to indicate the presence of Functionally Linked Land because there are too few records for the site.

### Whooper Swan

- 7.20. There are three records of this species meeting or exceeding the equivalent of 1% of the SPA population within Arden, at Upper Bittell Reservoir. These could represent excursive movements of the birds using the Severn Vale within the study area, although one record from December 2018 notes that the four birds concerned were from Upton Warren. These birds had been at the latter site since October that year, when an initial flock of 8 reduced to 4 by the end of the month and remained on site until early December at least.

### Shoveler

- 7.21. There are three sites in Arden which have records of this species meeting or exceeding the equivalent of the 1% SPA population threshold. Arrow Lake in Redditch and Hewell Lake, between Bromsgrove and Redditch, have just 7 records each. Upper and Lower Bittell Reservoirs have 47 records.

### Gadwall

- 7.22. Upper and Lower Bittell Reservoirs have 44 counts meeting or exceeding the 1% threshold for this species.

### Wigeon

- 7.23. Upper Bittell Reservoir has 1 record meeting the 1% threshold, although numbers lower than 1% have been recorded a further 88 times, in numbers varying between 1 and 46.

### Mallard

- 7.24. Again, Bittell reservoirs feature prominently for records of this species, with 61 counts meeting or exceeding the 1% threshold. The only other site achieving this is Arrow Lake in Redditch, with 8 counts.

### Pintail

- 7.25. Upper Bittell Reservoir is the only site within this NCA to have a record of Pintail meeting the 1% threshold, on a single occasion. It is not thought likely that this represents evidence of Functional Linkage with the SPA of any importance, if at all.

### Teal

- 7.26. Upper Bittell Reservoir is the only site within this NCA to have records of Teal meeting the 1% threshold, on seven separate dates. It is not thought likely that this represents evidence of Functional Linkage with the SPA of any importance, if at all. This site appears to be well watched so the counts are thought to be representative, whilst as has been identified for this species, wintering sub-populations north of the SPA are considered unlikely to commute to it during the same winter.

### Pochard

- 7.27. There are 36 counts of this species that meet or exceed the 1% threshold at Bittell Reservoirs and two at Hewell Lake. As described in the Species account for this diving duck, there is a large gap between locations on and near to the SPA that are host to Pochard and those in the Severn and Avon Vales upstream of it, so it seems unlikely that wintering populations further north would spend much or any time on the SPA, particularly given the number of gravel pits and reservoirs there are

in the area around Birmingham that probably provide better habitat.

#### Tufted Duck

- 7.28. There are 72 records of Tufted Duck meeting or exceeding the 1% threshold within this NCA, with all but one of them at Bittell Reservoirs, the other at Hewell Lake.

#### Lapwing

- 7.29. Upper Bittell Reservoir is the only site in Arden where this species has been recorded at or above the 1% threshold.

#### Golden Plover

- 7.30. There are five records for this species exceeding the 1% threshold at Upper Bittell Reservoir, with a further two at a site just south of there called Frankley Beeches. Birds occurring in these areas are probably mobile enough to move frequently to surrounding areas, including the northern-most of the main locations considered in this report. Functional Linkage with the SPA, at over 75km to the south, seems unlikely.

#### Ringed Plover

- 7.31. There is a single count of Ringed Plover at Upper Bittell Reservoir achieving the 1% threshold, although lower numbers do pass through with regularity.

#### Whimbrel

- 7.32. There are three records for this species exceeding the 1% threshold at Upper Bittell Reservoir and a single count at a location south of the Reservoirs.

#### Curlew

- 7.33. There are no sites within Arden outside of those already comprehensively covered where this species has occurred in numbers meeting or exceeding the 1% criterion. However, there are records of small numbers of birds on passage at Upper Bittell Reservoir and Inkberrow.

#### Black-tailed Godwit

- 7.34. There are a small number of records of this species at Upper Bittell Reservoir, all during autumn passage, but none were of more than two birds and all but one were probably of the same individual seen over a number of days in September 2016.

#### Ruff

- 7.35. There are 8 counts of Ruff meeting the 1% threshold at Upper Bittell Reservoir.

#### Snipe

- 7.36. There are only six counts of Snipe in Arden where the 1% threshold was met or exceeded, with four of those counts at Upper Bittell Reservoir. As explained above, these counts are likely to be unrepresentative.

***Bristol, Avon Valleys and Ridges***

- 7.37. This NCA crosses a border between the recording areas for Gloucestershire and South Gloucestershire so the records highlighted here are unlikely to be representative of all records that could be available. Given the proximity to the SPA, examination of a full set of data for this area would be an essential first step in the determination of Functional Linkage with the protected area.

Lapwing

- 7.38. There are two records from the Charfield area of numbers of Lapwing exceeding the 1% threshold. This could be evidence of an important Functional Linkage of the area with the SPA, which is just over 9km away.

Golden Plover

- 7.39. There is one record from the Charfield area of a flock of Golden Plover exceeding the 1% threshold. This could also be evidence of an important Functional Linkage.

***Cotswolds***Pink-footed Goose

- 7.40. There are three records of this species meeting or exceeding the equivalent of 1% of the SPA population within the Cotswolds, at Bourton on the Water North (gravel) Pit, but these records are of the same bird in late 2018. This is not considered likely to indicate the presence of Functionally Linked Land because there are too few records for the site.

European White-fronted Goose

- 7.41. There are three records of this species meeting or exceeding the equivalent of 1% of the SPA population within the Cotswolds, at Bourton on the Water North Pit, but these records are of the same bird in late 2018. This is not considered likely to indicate the presence of Functionally Linked Land because there are too few records for the site.

Shoveler

- 7.42. Bourton on the Water South and North Pits have had six records of this species reaching or exceeding the 1% threshold.

Gadwall

- 7.43. There are 42 records in total featuring 30 at North and South Pits at Bourton on the Water and 5 from Gatcombe Water near to Nailsworth. Other sites at Lower Swell, Bibury, Fairford, Sherborne are considered unlikely to be important.

Wigeon

- 7.44. There are 117 records from South Pit at Bourton on the Water (20 records) and Sherborne (97). This suggests that Sherborne could be another important site for this species that could be Functionally Linked to the SPA.

Mallard

- 7.45. As has been the case for the Severn and Avon Vales, this species is so widespread and relatively abundant that there are a very large number of counts of birds meeting or exceeding the 1%

Threshold. For this NCA, many of these 282 counts centre on Bourton on the Water area, including North and South Pits (104), the Sherborne area (71) and the Cotswold estate lakes. As for other NCAs, for such a ubiquitous species, it is not possible to draw any inference from the counts alone about the likely importance of such sites to the SPA population.

#### Teal

- 7.46. There are 11 counts of Teal that met or exceeded the 1% threshold within the Cotswolds NCA in Gloucestershire, from Huntsman's Quarry near to Naunton (6 counts), Sherborne area (4 counts) and Eyeford Park, Upper Slaughter. It is not thought likely that this represents evidence of Functional Linkage with the SPA of any importance, if at all, but largely because, as has been identified for this species, wintering sub-populations north of the SPA are considered unlikely to commute to it during the same winter.

#### Pochard

- 7.47. Once again, Bourton on the Water North and South Pits feature highly for this species, with 62 of the 67 counts in the NCA at or above the 1% threshold. Other sites with very low numbers of counts of this size are Dowdeswell Reservoir near to Cheltenham (one record) and Huntsman's Quarry (4 records). Dowdeswell is the nearest of these sites to the SPA and is just over 9km from Witcombe Reservoir. However, it appears to be relatively isolated and may not present good habitat for Pochard. There is more likely to be interchange between Bourton pits and the CWP, where much larger numbers of Pochard are found, than between the Cotswolds and the SPA.

#### Tufted Duck

- 7.48. There are 336 counts of Tufted Duck that met or exceeded the 1% threshold in this NCA, centred on the Bourton on the Water area (including North and South Pits), Dowdeswell Reservoir, Woodchester Park, the Avening valley, Ozleworth and Alderley (both near to Wotton under Edge). The latter sites are close to the SPA (between 10 and 20km) and could be Functionally Linked to it. As for other diving ducks, the Bourton area is more likely to be linked to the CWP.

#### Lapwing

- 7.49. There are 58 counts of Lapwing in the Cotswolds that met or exceeded the 1% threshold. These are within areas located at a hilltop area between Uley and Wotton under Edge centred at ST793967 and the wider Cotswold escarpment between Cirencester and Moreton in the Marsh. Notable areas within this are at Hawling, Shab Hill (near to Birdlip) and a triangle of land between Northleach, Bourton on the Water and Burford. These areas are between 35 and 50km from the SPA and between 22 and 35km from the nearest significant sites in the Severn Vale, such as Ashleworth and Coombe Hill. They are closer to the CWP. It is thought possible that birds could commute over this wide area but there is no evidence to prove this, as noted in previous sections of this report.

#### Golden Plover

- 7.50. There are 429 counts of Golden Plover that met or exceeded the 1% threshold within the Cotswolds NCA, scattered across the entirety of the escarpment. This is a reflection of the importance of the area for these wintering birds. Locations where there are large numbers of records include a hilltop area between Uley and Wotton under Edge centred at ST793967 (also highlighted for Lapwing), an area between Tresham and Leighterton, Chapmans Cross near to Frampton Mansell, Elkstone, Shab Hill, Hawling, and an area between Bourton on the Water and Burford. How far these birds

will commute to the SPA has not been investigated but, as suggested in the species account for Golden Plover, birds may gravitate to the estuary from a wide area, as they may also do to the Vales.

#### Curlew

- 7.51. There are no sites within the Cotswolds outside of those already comprehensively covered where this species has occurred in numbers meeting or exceeding the 1% criterion. However, there are records of small numbers of birds on passage at in a notable east-west line across an area between Bourton on the Water and Cleeve Common, indicating (but not proving) a migration route.
- 7.52. There are also records within the past 10 years of breeding or possible breeding from sites such as Bourton on the Water, Clapton on the Hill, Hawling, and Little Rissington. The origins of breeding pairs are unknown but they may have spent the winter on the SPA.

#### Ruff

- 7.53. There are just two records of Ruff in the Cotswolds. Although neither state that these were of flyover birds, the habitat in which they were recorded was not suitable for this species.

#### Snipe

- 7.54. There are 45 records from 16 sites scattered across the Cotswold escarpment. For reasons given above, these counts are not considered representative of the real distribution and numbers of this species in winter so conclusions on site importance and Functional Linkage cannot be drawn.

### ***Forest of Dean and Lower Wye***

#### Gadwall

- 7.55. There are 18 records of counts meeting or exceeding the 1% threshold. Most are from Cannop Ponds but also include Woogreens and Flaxley Pond.

#### Mallard

- 7.56. There are only six sites within this NCA where the 1% threshold was reached or exceeded, at Cannop Ponds, Cinderford Linear Park, Flaxley Lake, Lower Lydbrook, Mallards Pike and Soudley Ponds. This may be due to a reduced recording effort in an area where birdwatchers tend to concentrate on the Forest “specialities” away from waterbodies. As for other NCAs, for such a ubiquitous species, it is not possible to draw any inference from the counts alone about the likely importance of such sites to the SPA population.

#### Tufted Duck

- 7.57. There are 77 counts of this species that met or exceeded the 1% threshold, at a similar number of open-water sites in the Forest of Dean as was found for other duck species – Woogreens, Flaxley, Cannop Ponds and Mallards Pike, with a few smaller waterbodies. The proximity of these sites to WWT Slimbridge suggests that there may be interchange with the SPA.

#### Curlew

- 7.58. There are no sites within the Forest of Dean NCA outside of those already comprehensively covered where this species has occurred in numbers meeting or exceeding the 1% criterion. However, there are a small number of records of apparent breeding attempts centred around the Wyegate Green/

Stowe area north of St. Briavels. It is likely that the birds concerned wintered on the SPA so this could constitute Functionally Linked Land.

#### Snipe

- 7.59. There are 11 records from 6 sites scattered across the Forest, including Woorgreens Lake and a number of woodland clearfell areas. For reasons given above, these counts are not considered representative of the real distribution and numbers of this species in winter so conclusions on site importance and Functional Linkage cannot be drawn.

#### **Herefordshire Lowlands**

- 7.60. No areas of importance for any SPA Interest species were found in this NCA.

#### **Herefordshire Plateau**

##### Lapwing

- 7.61. A single record of 152 Lapwing at Clifton upon Teme was recorded by the observer as “unusual” so it is not thought likely that this is a Functionally Linked area of any importance.

#### **Malvern Hills**

##### Tufted Duck

- 7.62. The single count of Tufted Duck meeting the 1% threshold at British Camp (presumably the reservoir on the east side of this monument) is not thought likely to indicate an important area for this species, although it may be the case that this is an overlooked site.

#### **Mid Severn Sandstone Plateau**

##### Mallard

- 7.63. There are only four sites within this NCA where the 1% threshold was reached or exceeded. This is probably due simply to the fact that the area of this NCA within Gloucestershire is so small rather than a lack of importance of sites within it as a whole. As for other NCAs, for such a ubiquitous species, it is not possible to draw any inference from the counts alone about the likely importance of such sites to the SPA population.

##### Tufted Duck

- 7.64. Trimpley Reservoir, north of Bewdley, is the only site in this NCA to have more than one record of Tufted Duck numbers reaching or exceeding the 1% threshold.

##### Golden Plover

- 7.65. There are two locations within this NCA with counts of Golden Plover in excess of the 1% threshold, at Shenstone and Mustow Green, with single counts for both. This is thought likely to indicate a lack of importance but equally the area could be under-watched. This is within commuting distance (less than 20km) of other more obviously well-used wintering areas but is nearly 70km from the SPA.

**South Herefordshire and Over Severn**Gadwall

- 7.66. There are only 4 counts exceeding the 1% threshold in this NCA, from 3 sites – Boyce Court Lake near Dymock, Oxenhall Lake in Newent and Poolhill on the River Leadon catchment.

Mallard

- 7.67. There are only six sites within this NCA where the 1% threshold was reached or exceeded. This is probably due simply to the fact that the area of this NCA within Gloucestershire is so small rather than a lack of importance of sites within it as a whole. As for other NCAs, for such a ubiquitous species, it is not possible to draw any inference from the counts alone about the likely importance of such sites to the SPA population.

**Teme Valley**Mallard

- 7.68. There is one site within this NCA where the 1% threshold was reached or exceeded, at Stanford Lake. This is probably due simply to the fact that the area of this NCA within Worcestershire is so small rather than a lack of importance of sites within it as a whole. As for other NCAs, for such a ubiquitous species, it is not possible to draw any inference from the counts alone about the likely importance of such sites to the SPA population.

**Upper Thames Clay Vales (including the Cotswold Water Park)**

- 7.69. It should be noted for this section that only records for the Gloucestershire part of the Upper Thames were examined, because those were the records obtained for the purposes of this report, which focuses on the Severn and Avon Vales. A full data set for the Cotswold Water Park (CWP), which also straddles parts of Wiltshire, was not obtained. The following should therefore be considered an incomplete review and for most species, particularly those for which the equivalent of 1% of the SPA population is a low number of individuals, conclusions about the value of the CWP cannot be drawn and it is considered misleading to make even a tentative suggestion as to the value of the CWP as Functionally Linked Land on the basis of Gloucestershire records alone. Commentary on this is therefore either omitted or heavily caveated.

European White-fronted Goose

- 7.70. There are five records of this species in the Gloucestershire part of this NCA, within the CWP East area. With the exception of a flock of 28 in February 2011, these records are of very small numbers.

Bewick's Swan

- 7.71. This is the only area outside of the Severn and Avon Vales with records of Bewick's Swans. Sites within CWP East where birds have been found include Pits 104, 114, 116 and 130. They have also been noted near to Kempford and Lechlade. Sites within CWP West include pits 57 and 65. Of the 13 records reviewed, dates of recording suggest both movements on migration and excursive movements within winter.

Whooper Swan

- 7.72. There are eight records of this species within the last 10 years within the Gloucestershire part of

this NCA, from Water Park pits 130 and 132 at Kempsford. Three of the records are of consecutive days in October/ November 2017.

#### Shoveler

- 7.73. As should be expected for the CWP, there are 351 records of this species meeting or exceeding the equivalent of 1% of the SPA population within the Gloucestershire part of this NCA, spread across both East and West CWP.

#### Gadwall

- 7.74. The importance of CWP to this species is reflected in the records, where 96 separate locations have monthly counts (a total of 1531 counts in the last 10 years) meeting or exceeding the equivalent of 1% of the SPA population within the Gloucestershire section alone.

#### Wigeon

- 7.75. There are 206 counts of Wigeon meeting or exceeding the 1% threshold from 19 locations within CWP, at Pits 4, 9, 41, 43, 57, 65, 67, 75, 79, 87, 99, 104, 114, 116, 129, 131, 135, Shorncombe Nature Reserve and the Horcott Hill area. If these birds follow a similar pattern to that observed in the Vales, i.e. they remain in a small area for the duration of their winter stay, then they are unlikely to travel to the SPA and therefore the land is unlikely to be Functionally Linked to it.

#### Mallard

- 7.76. As has been the case for the Severn and Avon Vales, this species is so widespread and relatively abundant that there are a very large number of counts of birds meeting or exceeding the 1% Threshold. For this NCA, most of those counts centre, predictably, on the CWP.

#### Pintail

- 7.77. There have been 19 counts of this species within the CWP that met or exceeded the 1% threshold, spread between Pits 41, 43, 58, 104, 114 and 132, largely in the months of December and January. Numbers have not exceeded 47, so do not indicate influxes as have been noted for Longdon Marsh in the Vales.

#### Teal

- 7.78. There have been 158 counts of Teal that met or exceeded the 1% threshold, spread between locations including pits 23b, 41, 43, 57, 61, 79, 84, 85, 85b (Shorncombe Nature Reserve) 87, 104, 111, 114, 116, 119, 119a, 125-132 and Whelford Pools Nature Reserve. As for other locations, the evidence for movement within the Vales area suggests that these birds are probably fairly sedentary once they have reached their wintering area at the Water Park.

#### Tufted Duck

- 7.79. There are over 2600 counts of Tufted Duck within the CWP and nearby area, over more than 95 separate sites, where the 1% threshold was met or exceeded, indicating how important the site is for this species (and how well-watched it is). Sites listed as hosting such numbers include Pits 2-4, 6-17, 19, 22, 23a and b, 31-34, 41-44, 46-48, 50a, 54-58, 55a, 61, 63, 65, 71, 75, 77, 79, 84, 85, 85a and b, 87, 89, 91, 99, 101, 101a and b, 102a, 103-107, 110a, 111, 111a and b, 112, 114-117, 119, 119a, 120, 122-132, 129a, 130a and b 202 and 202b and Whelford.

- 7.80. Broadwater at Fairford has also supported relatively large numbers of birds.

### Lapwing

- 7.81. There are 127 counts of Lapwing within the Thames NCA, almost exclusively within the CWP, where numbers have met or exceeded the 1% threshold. The list of locations includes Pits 41, 57, 75, 79, 84 and 85 (Shorncote Nature Reserve), 87, 99, 104, 111, 111b, 125-127, 129-132, Fairford Park, Hannington Bridge, Kempsford, Marston Meysey and Lechlade. There may be a localised population in this area, with exchange with sites in the Cotswolds but equally birds could occasionally commute from here to the SPA and the Vales, although there is no evidence to support this.

### Golden Plover

- 7.82. Perhaps surprisingly, there are only 45 counts of this species that met or exceeded the 1% threshold within this NCA, at only 11 sites, including only a few of the CWP Pits (31, 70 and 84/85 – Shorncote Nature Reserve) plus open farmland and one airfield around Driffield, Fairford, Harnhill, Hatherop, Poulton, Siddington and South Cerney. There is likely to be connectivity with the core populations in the Cotswolds and onward connectivity to the SPA and the Vales but this is unproven.

### Migratory Waders not meeting the 1% threshold

- 7.83. This includes Grey Plover, Curlew, Black-tailed Godwit, Turnstone, Knot, Dunlin and Redshank. Small numbers of these species pass through the Cotswold Water Park on passage and there are a very small number of records of some species during the winter period. None of the counts are of numbers meeting or exceeding the 1% criterion but these records indicate that the Thames valley is a major flyway for such species on passage, albeit in small numbers at any one time.

### Migratory Waders that did meet the 1% threshold

- 7.84. Pit 132 in the CWP has been host to numbers of Ringed Plover exceeding the 1% threshold on four dates in 2016.
- 7.85. There are four records of Whimbrel meeting or exceeding the 1% threshold, at CWP Pits 43, 79, 132 and at Cleveland Farm (Pits 68a and b/ 74).
- 7.86. There are three records of Spotted Redshank in the Cotswold Water Park, all during spring and autumn passage.
- 7.87. These records could indicate the existence of Functional Linkage with the SPA but on the basis of so few records, any such link would be of low significance.
- 7.88. There are 22 records of Ruff meeting or exceeding the 1% threshold, at CWP Pits 68/74 (Cleveland Farm), 75, 84/85 (Shorncote Nature Reserve), 87, 126 and 132.

### Snipe

- 7.89. There are 136 counts meeting or exceeding the 1% threshold for Snipe over 23 sites in the CWP area. Sites include 11 Pits (including Shorncote NR) plus farmland and other habitats at another 12 locations.

### ***Summary of possible additional sites of importance***

- 7.90. The additional sites in each Natural Character Area are as follows:

- Severn and Avon Vales (minimum 14): Awre peninsula; area south of Walmore; River Frome floodplain; Purton Timber Ponds; Hempsted; Maisemore Court Lake; Sandhurst; Barrow Ponds; Strensham Lagoons: Ryall Court; Portway/ Abberton; Innsworth; Pittville Park; Ryalls Lane; plus various other areas frequented by Lapwing, Golden Plover and Snipe.
- Arden (5): Upper and Lower Bittell Reservoirs; Arrow Lake; Hewell Lake; Frankley Beeches; Inkberrow.
- Bristol, Avon Valleys and Ridges (1): Charfield
- Cotswolds (minimum 18): Bourton on the Water Pits; Sherborne; Cotswold Estates lakes; Huntsman's Quarry; Eyeford Park, Upper Slaughter; Dowdeswell Reservoir; Woodchester Park, the Avening Valley; Ozleworth; Alderley; Hawling; Shab Hill; triangle between Northleach, Bourton and Burford; Uley to Wotton; Tresham to Leighterton; Chapmans Cross; Elkstone; plus various other areas frequented by Snipe and Golden Plover.
- Forest of Dean and Lower Wye (minimum 8): Cannop Ponds; Woorgreens; Flaxley Pond; Cinderford Linear Park; Lower Lydbrook; Mallards Pike; Soudley Ponds; Wyegate Green; plus various other areas frequented by Snipe.
- Herefordshire Lowlands: 0
- Herefordshire Plateau: 0
- Malvern Hills: 0
- Mid Severn Sandstone Plateau (3): Trimpey Reservoir; Shenstone; Mustow Green.
- South Herefordshire and Over Severn (3): Boyce Court Lake; Oxenhall Lake; Poolhill.
- Teme Valley: 0
- Upper Thames Clay Vales (including Cotswold Water Park (minimum of 100): All the multiple pits in the Cotswold Water Park (both in Gloucestershire and Wiltshire), probably over 100 pits, plus various other areas used by Golden Plover.

7.91. The total number of possible additional sites is therefore at least 52 (not including the Cotswold Water Park, which would mean a minimum of another 100 sites).

## 8.0 Discussion

- 8.1. Two main lines of enquiry were entered into within the remit of this study – (i) gathering evidence for movements of birds (both SPA Interest Species and others) between the SPA and sites upstream of it in order to determine the existence of Functional Linkage with the SPA and (ii) the apparent value of sites in relation to numbers of birds found at those sites compared to the published numbers found on the SPA in order to characterise them in relation to the European protected site.
- 8.2. It became apparent from this study that knowledge of linkages between the SPA and other sites is far from complete and much of the evidence of movements, other than for a relatively limited number of ringing recoveries, was based on incidental observations of apparent displacements between sites. Given that no intensive study of this nature has been instigated before now, it is hardly surprising that it has been necessary to “piece together” the evidence. The actual and implied movement of birds found from this study is summarised and discussed in the first section below.
- 8.3. A precautionary approach to site evaluation, irrespective of evidence of Functional Linkage but assuming that there is at least some linkage to the SPA, has been applied to the data available. This has led to what must be considered a preliminary assessment of the likely value of the sites under consideration. This value can be compared directly with that of the SPA itself but it can also form a basis upon which the value of the sites in themselves should be viewed. There are other criteria for valuation of such sites, as set out in this report (National and International Importance) which can also be applied and for which very few sites would qualify. Neither would many sites that are not already SSSIs fulfil SSSI selection criteria for birds (Drewitt *et. al.* 2020). Nevertheless, in combination, these sites are likely to provide a vital function for the survival of certain populations and sub-populations of SPA Interest Species. This topic is explored in the second part of this section of the report.

### Functional Linkage

- 8.4. In this section, the evidence for Functional Linkage between the Severn and Avon Vales and the SPA is reviewed and discussed for each site under consideration, where clear evidence of linkage has been found for at least one species. The role or “function” of the sites in supporting the populations for which the SPA was designated is considered further from the evidence gathered. This is done with reference to the definition of Functionally Linked Land as given in Section 2 of this report, whereby a site is, or is highly likely to be essential for the SPA species to complete its life cycle.

### ***Proven Functional linkage between the SPA and areas of study***

- 8.5. Of the sites originally identified for study, 10 appear to be, or have been Functionally Linked to the Severn Estuary SPA, as shown by regular or intermittent movements of individual birds and/or identifiable flocks in the last 10 years. These sites are as follows:

#### Ashleworth (including Hasfield) Ham, Coombe Hill and Chelt and Leigh Meadows complex

- 8.6. In the past, but less so now, flocks of White-fronted Geese and Bewick’s Swans have been documented travelling between these three sites and WWT Slimbridge. The importance of these sites to the SPA populations of these two species is diminishing as their populations dwindle due to “short-stopping” on traditional migration routes. With grazing resources at Slimbridge under less

pressure now from either species, there is less of a need for them to travel around the area and they tend to remain in or near the WWT Reserve boundary. A number of other SPA Interest Species (principally ducks) appear, from ringing returns and from anecdotal evidence, to remain within a cluster of sites outside of the SPA. However, little is known of the origins and movements of wintering waders such as Lapwing and Golden Plover whilst notable influxes of Shelduck do occur and are thought to originate from the Severn Estuary population, albeit via moulting grounds on the Wadden Sea in the Netherlands. The Functional Linkage between this complex of sites and the SPA must therefore be considered, on the basis of evidence to date, to be diminishing for two of the main species (White-fronted Goose and Bewick's Swan) and is at best unproven for most other SPA Interest Species that occur within them.

- 8.7. Functional Linkage between the SPA and Ashleworth/ Coombe Hill for Black-tailed Godwit is proven by observations of colour-ringed birds, whereby these sites provide habitat, albeit briefly visited, that is essential for the life cycle of the wintering population found on the SPA. As is most clearly demonstrated for movements between WWT Slimbridge and Maisemore Ham (see below), the birds wintering on the SPA undertake excursive movements to find additional feeding opportunities outside of the SPA just prior to migration back to Iceland. Observations of birds at Ashleworth and Coombe Hill in spring are more frequently made than at Maisemore but the concurrence of these observations with a departure from WWT Slimbridge has been less well documented. As at Upham Meadow (see below) a Curlew colour-ringed in winter on the SPA regularly breeds at Ashleworth, occasionally moving to Coombe Hill to join communal roosts before and after the breeding season.

#### Bredon's Hardwick with Fleet Lane

- 8.8. Movements of Bewick's Swans between these near-contiguous sites and WWT Slimbridge, as well as other sites in the Vales, have been recorded in the past, but less so now for reasons given under the Ashleworth/ Coombe Hill/ Chelt and Leigh Meadows complex above. Other SPA Interest Species appear, from ringing returns and from anecdotal evidence, to remain within a cluster of sites outside of the SPA. The Functional Linkage between Bredon's Hardwick and the SPA must therefore be considered, on the basis of evidence to date, to be diminishing or perhaps no longer occurring for Bewick's Swans and for all other SPA Interest Species, except Shelduck (all four of those ringed at Bredon's Hardwick having been later recaptured at Slimbridge), there is no evidence of linkage.

#### Frampton Pools

- 8.9. It is highly likely that there is regular exchange of both surface-feeding and diving ducks between this site and WWT Slimbridge as well as the rest of the SPA. However, compelling evidence for this is restricted to a few ringing recoveries and observations of flights of certain SPA species, notably Tufted Duck and Pochard. Other less abundant and notable non-SPA species have been found at both sites, including Scaup and Goldeneye, providing some incidental evidence to support this.
- 8.10. The close proximity of Frampton Pools to the SPA and the overall lack, within the SPA as a whole except for within the grounds of WWT Slimbridge, of deeper fresh waters should mean that it comes as no surprise that there should be interchange of SPA Interest Species between these sites, particularly the diving ducks. The next nearest waterbodies of similar character are Lydney Harbour Pools (covered in Phase 4), only a short (approximately 9km) flight down the Severn Estuary, then Cotswold Water Park, some 32km away, followed by Bow Farm (Ripple Lakes) at 35km distance. There are several waterbodies in the Forest of Dean (see below) that are closer to the SPA than

these sites and which are host to wintering Tufted Duck, but they are much smaller than the gravel pit sites and they do not support Pochard.

#### Maisemore

- 8.11. Ring recoveries via shooting returns in this general area suggest that there is movement of SPA duck species between the SPA and Maisemore, but the regularity of this, and the actual locations used, are uncertain. Unusually for the type of evidence available, observations in spring 2020 of Black-tailed Godwit numbers at WWT Slimbridge and then at Maisemore Ham indicate strongly that these birds undertake excursive movements to find additional feeding opportunities outside of the SPA just prior to migration back to Iceland. This is likely to constitute evidence of a strong Functional Linkage whereby Maisemore Ham is an area, albeit briefly visited, that is essential for the life cycle of the wintering population found on the SPA. Use of this area is, however, very much subject to the availability of foraging habitat generated by flooding, which is relatively unusual at Maisemore Ham at the critical time of year in spring. Such movements occur more regularly at Ashleworth and Coombe Hill, sometimes to Bow Farm (Ripple Lakes) but the concurrence of observations between those sites and the SPA has been less well documented.

#### Upham Meadow

- 8.12. The proven Functional Linkage with the SPA for this site is based on observations of a ringed individual breeding Curlew that has been observed on the SPA in winter. It is thought likely that most or all of the breeding Curlew in the Severn and Avon Vales do spend the winter on the SPA but this, and two other Curlews nesting respectively at Ashleworth and Queenhill Rough/Ripple, are the only known examples that can be definitely traced between sites.

#### Upton Warren

- 8.13. There is very limited evidence, from very old shooting recoveries, of a Functional Link between the SPA and Upton Warren for Mallard, although quite how important this link is cannot be determined for a species as wide-ranging as this. Ringing returns from other sites suggest that dispersal of this species around the SPA has no clear pattern. This is not surprising given its generalist habits.
- 8.14. Upton Warren clearly lies on a migration pathway up the Severn catchment, mainly for migrant waders on their way further north or, in the case of Avocet, birds wintering on the estuary that are considered likely to breed at Upton Warren. There is no evidence for this other than observations of birds migrating northward at sites between here and the SPA.

#### Walmore Common

- 8.15. Movements of colour-ringed Bewick's Swans between this SPA site and WWT Slimbridge have been recorded in the past, but less so now for reasons given under the Ashleworth/ Coombe Hill/ Chelt and Leigh Meadows complex above. Other SPA Interest Species clearly do move between here and the SPA, as evidenced by observations of both ornithologists and wildfowlers.
- 8.16. Given their low numbers and therefore identifiable movements, Whooper Swans show a relatively clear pattern of movement that includes Walmore Common but seldom takes in the SPA itself.

#### Wilmore Common

- 8.17. Movements of Bewick's Swans between this site and WWT Slimbridge have been recorded in the past, but less so now for reasons given under the Ashleworth/ Coombe Hill/ Chelt and Leigh

Meadows complex above. Other SPA Interest Species appear, from anecdotal evidence, to come from the SPA in times of flood, but this cannot be proven on the basis of the evidence so far available. The Functional Linkage between Wilmore and the SPA must therefore be considered, on the basis of evidence to date, to be diminishing for Bewick's Swans but is likely to be continuing for other species.

#### Cotswold Water Park

- 8.18. Although outside of the core area of study, recoveries in the Cotswold Water Park of birds ringed at WWT Slimbridge have occurred, although these are restricted to three individual Pochard and one Teal. Given the difficulties in capturing diving ducks and the infrequency of capture events, the records of Pochard at least could be an indication of a much more regular interchange (and therefore a clear Functional Link) between the Severn Estuary SPA and the Thames Valley. This is deserving of further study.
- 8.19. Given the restricted home range of wintering Bewick's Swans, the occurrence of birds in the Water Park suggests, but does not prove, a Functional Linkage with the SPA for this species. Most of the 13 records available for this species in the Water Park are from mid-winter (December/ January) so they may be representative of excursive movements from WWT Slimbridge and/or they could be of birds on their way to WWT Slimbridge during cold spells further east in continental Europe. It is likely that the main appeal of the Water Park to this species is as a safe roosting location on large lakes.

#### Other sites with specific importance for Bewick's Swans

- 8.20. This includes Over (Linton and Moorcroft Farms, in the area covered by 1km squares SO7918, 8018 and 8019) and The Moors at Slimbridge (SO729032). Movements of Bewick's Swans between these sites and WWT Slimbridge, as well as other sites in the Vales, have been recorded in the past, but less so now for reasons given under the Ashleworth/ Coombe Hill/ Chelt and Leigh Meadows complex above.

#### ***Unproven Functional Linkage between the SPA and areas of study***

- 8.21. Of the core areas and additional sites identified in the course of this work, a further nine within the Vales were identified as having actual or likely Functional Linkage with the SPA, as follows:

#### Curlew breeding sites

- 8.22. In addition to Ashleworth, Upham and Ripple (mentioned above) sites from where breeding Curlew are thought likely to spend the winter on the SPA include Asham Meadow, Chaceley, Longdon Marsh, the Severn Ham at Tewkesbury and Upton Ham, but there is no definite indication of this from ring recoveries or any other means of identifying individual birds.

#### Bow Farm (Ripple Lakes)

- 8.23. Functional Linkage between the SPA and this site for Black-tailed Godwit is highly likely, whereby it provides habitat, albeit briefly visited, that is essential for the life cycle of the wintering population found on the SPA. As is most clearly demonstrated for movements between WWT Slimbridge and Maisemore Ham (see above), the birds wintering on the SPA undertake excursive movements to find additional feeding opportunities outside of the SPA just prior to migration back to Iceland. Observations of birds at Ripple in spring are infrequently made and the concurrence of these

observations with a departure from WWT Slimbridge has not been documented, but is considered likely. As at Ashleworth and Upham Meadow a colour-ringed Curlew ringed in winter on the SPA bred regularly at Queenhill Rough (on the opposite bank of the Severn from Ripple) and flew across the river to bathe and rest at Ripple.

#### Longdon Marsh North

- 8.24. Although within-winter movements of most wildfowl present at this site are thought to be from sites outside of the SPA, the enigmatic influxes of Pintail during some periods of shallow flooding almost certainly include birds from the SPA. Quite how many of these are from the Severn and how many are from elsewhere in England and/or Wales is unknown.

#### Minsterworth and Corn Hams

- 8.25. Anecdotal observations suggest that a nightly exodus of considerable numbers of ducks from the SPA takes place. It has been suggested that these birds use Minsterworth and Corn Hams as their feeding area during times of shallow flooding but this cannot be proven on the basis of evidence to date. Regular connectivity such as this should be subject to further investigation because at the time of writing the site enjoys no protection at all. Proving connectivity could require some considerable effort, for instance involving a number of observers strung out along the flight line between the SPA and the Hams. However, poor light levels and problems associated with deploying enough observers on enough nights to gather sufficient data to answer this question could present difficulties that would be hard to overcome.

### **Site importance on the basis of the 1% Criterion**

- 8.26. On the basis of assessment criteria chosen to provide an element of comparison with sites identified in Phases 1-4, the study identified a total of 21 sites within the Vales which are considered likely to have a “High” importance to at least one species for which the SPA and/or SSSI were designated. For each of these sites, count data suggest that they hold more than the equivalent of 1% of the SPA population of one or more of these species for 50% or more of months within one or more of the three WeBS counting seasons. These sites are:
- Ashleworth Ham – of high importance for Shoveler, Gadwall, Wigeon, Mallard, Pintail, Teal, Lapwing and Snipe.
  - Avon Meadows – Twyning and Bredon’s Hardwick – of high importance for Mallard and Tufted Duck.
  - Bow Farm (Ripple Lakes) – of high importance for Shoveler, Gadwall, Wigeon, Teal, Pochard, Tufted Duck and Whimbrel.
  - Bredon’s Hardwick Gravel Pits – of high importance for Mallard and Tufted Duck.
  - Clifton Pits – of high importance for Gadwall, Mallard, Pochard and Tufted Duck.
  - Coombe Hill Meadows – of high importance for Shoveler, Gadwall, Wigeon, Mallard, Pintail, Teal and Snipe.
  - Frampton Pools – of high importance for Shoveler, Gadwall, Mallard, Pochard and Tufted Duck.

- Great Pool Westwood Park – of high importance for Shoveler, Gadwall, Mallard, Pochard and Tufted Duck.
- Grimley New Workings – of high importance for Shoveler, Gadwall, Mallard, Teal, Pochard and Tufted Duck.
- Gwen Finch nature reserve – of high importance for Shoveler, Gadwall, Mallard, Teal, Tufted Duck and Snipe.
- Hill Court Farm Reserve (Longdon & Eldersfield Marshes) – of high importance for Teal.
- John Bennett Nature Reserve – of high importance for Shoveler, Wigeon, Mallard, Teal, and Snipe.
- Kinsham Pool (Kemerton Lake NR) – of high importance for Gadwall, Wigeon, Mallard, Pochard, Tufted Duck and Snipe.
- Longdon Marsh (north of Marsh Lane) – of high importance for Wigeon and Teal.
- Pershore Wetland Meadows – of high importance for Mallard.
- Pirton Pool – of high importance for Mallard and Tufted Duck.
- River Severn – Gloucester to Maisemore – of high importance for Gadwall.
- River Severn Northwick to Diglis Lock – of high importance for Mallard.
- Upton Warren LNR (Moors) – of high importance for Shoveler, Gadwall, Mallard, Teal, Pochard and Tufted Duck.
- Walmore Common – of high importance for Whooper Swan, Gadwall, Mallard, Teal and Snipe.
- Witcombe Reservoir – of high importance for Mallard and Tufted Duck.

8.27. It should be noted, however, that a number of limitations to this assessment were identified, including:

- Above all, the habitats present on the estuarine SPA and those on inland river floodplain wetlands are very different, so that the numbers of waterbirds present and the use made of these habitats by these waterbirds, are very different. The SPA naturally attracts large numbers of wintering waterbirds; the inland floodplain wetlands do indeed attract large numbers of waterbirds in winter, but their role in spring for breeding waders (especially declining species like Lapwing, Curlew and Redshank) and in spring and autumn for migrant waders (particularly Black-tailed Godwits or Whimbrel en route to Iceland, but also a wide range of other Arctic nesting waders) is just as important, even if small numbers of birds are involved.
- It could well be argued that *any* inland site regularly hosting (or even having in the recent past hosted) nesting Lapwing, Curlew or Redshank should be considered of high importance, given the sharp decline of all these species<sup>55</sup>.

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<sup>55</sup> See for example <https://www.bto.org/our-science/publications/peer-reviewed-papers/decline-population-farmland-breeding-waders-twenty>

- As suggested in the Phase 4 Report, the use of the 1% criterion for the assessment of sites could result in over-valuation of sites for some species and under-valuation for others. For instance, two of the sites (Persnore Wetland Meadows and River Severn – Northwick to Diglis Lock) were identified as having “High” value only for Mallard, a widespread and abundant species. This does not provide a useful comparison with many of the other sites with “High” value for multiple species or for species that are much scarcer.
- The use of only the 1% criterion could also result in under-valuation of sites. The lack of importance assigned to Longdon Marsh for Pintail and to Maisemore Ham, Ashleworth, Coombe Hill and Bow Farm (Ripple Lakes) for Black-tailed Godwit are good examples of this. Although the 1% criterion is not met for Pintail at Longdon Marsh, this site could potentially qualify as a SSSI for this species on the basis of *Selection Requirement 3.4 - Localities used by birds in particular conditions* – as set out in Drewitt *et. al.* (2020).
- The assessment is not sensitive to the number of records upon which it is based. Low numbers of records can produce an erroneous measure of importance. This in itself has been evaluated and is presented in Appendix 3 in the final columns of each table (Reliability of assessment) and it is highlighted in the relevant section(s) of the report.
- As a result of the uncertainties concerning whether or not count data other than for WeBS counts was complete (i.e. an absence of a count = an absence of birds) the reliability of the assessment was considered to be variable for different sites and between different seasons within sites. However, inclusion of casual counts was considered necessary in order to capture the likely intermittent value of sites due to fluctuating conditions, principally floodwater extent and depth.

### **Sites outside of the Severn and Avon Vales**

- 8.28. There are a large number of sites elsewhere in the two Counties that regularly or intermittently hold important numbers of birds which could have functional linkages with the SPA.
- 8.29. It is already recognised that the Cotswold Water Park is currently host to nationally important winter populations of four SPA Interest Species – Shoveler, Gadwall, Pochard and Tufted Duck<sup>56</sup> and numbers of other wildfowl in combination exceed 20,000 individuals<sup>57</sup>, so its intrinsic value (irrespective of any Functional Linkage with the SPA) is clear.
- 8.30. For the above reasons, a separate review of the value of the CWP on actual or possible Functional Linkage with the SPA is needed should give a much better indication of the value of the area to SPA Interest Species than can be provided here.

## **9.0 Recommendations**

- 9.1. More research on the linkage between the SPA and the sites upstream of it, as well as further afield, needs to be done, preferably with GPS tracking of individual birds in sufficient numbers as to provide more compelling evidence of the existence and importance of linkages, Functional or otherwise. Mapping of home ranges for a number of individuals of key species (we suggest Pintail, Lapwing, Golden Plover, Wigeon, Teal and Shoveler) would help with determining likely regular and excursive movements between the SPA and sites actually visited by the tagged birds. However, the application of such findings to other individuals or populations, and/or between different sites within

<sup>56</sup> <https://app.bto.org/webs-reporting/>

<sup>57</sup> <https://waterpark.org/what-we-do/conservation/>

the area of study would need to be modelled carefully using a number of variables that may explain why birds move between sites. Such variables could include availability of foraging areas based on land use mapping, frequency of flooding, frequency of disturbance events, predation risks etc.

- 9.2. In the absence of further information to the contrary, the precautionary approach to wetland site evaluation and conservation would be to assume that there is Functional Linkage between the SPA and a wide area around it, with the most important sites being host to a significant proportion of the SPA populations (or the equivalents of them). We suggest here that, at least for comparison with Phases 1-4 of the work on high tide roosts, the 1% SPA population criterion is an appropriate means of evaluating sites in spite of the limitations of the method set out in the Discussion section of this report. It is clear, however, that even if some sites or clusters of sites within this study are only infrequently linked to the SPA, or indeed not linked to it at all, their importance for the conservation of wintering waterbirds within the Midlands/ South West England is very great and worthy of protection and enhancement.
- 9.3. Given that development pressure within and around Gloucestershire and Worcestershire is increasing, and the human population is likely to increase as housing allocations are permitted, it seems inevitable that a number of pressures will be brought to bear on the sites that have been subject to the study reported on here. Such pressures are likely to include land take that could impact on areas used by SPA Interest Species (either within or next to the sites) and disturbance effects from recreational users and other traffic. Good examples of this are recent proposals for development on virgin farmland adjacent to Walmore Common, the northward expansion of the Gloucester conurbation, the expansion of Tewkesbury and Worcester and numerous proposals on greenfield and brownfield sites for Stroud District. In response to this, we recommend that a detailed evaluation of the need to protect the study sites from increased footfall and inappropriate/unauthorised uses should be made. It would be appropriate to rank the sites according to their apparent importance to the SPA Interest Species, as indicated by known movements and the 1% assessment criterion, with specific attention paid to the existing issues facing them as listed in the site accounts. The outcome of such an evaluation should be a list of measures designed to mitigate the impacts of development effects, including (but not necessarily restricted to) the following:
- Establishment of appropriate buffer zones around key sites, to shield bird populations using them from the effect of noise, light, traffic (pedestrian or vehicular) etc.
  - Establishment or enhancement of visitor management infrastructure such as fencing, screens, plantings etc.
  - Habitat management to maximise the appeal of the sites to important bird assemblages.
- 9.4. This study has shown that, as is only to be expected, the status of species listed as Qualifying, or contributing to the make-up of the species Assemblage of the SPA, or included in SSSI citations has changed over the last twenty years. One of the reasons for these changes is global climate change: some more northerly species (in particular Bewick's Swan and White-fronted Goose, but also Lesser Whitefront and Pink-footed Goose) now "short stop".in continental Europe and visit the Severn Estuary in much smaller numbers. Other species which used to winter further to the south (such as Shoveler, Black-tailed Godwit or Ruff, are now appearing much more regularly in winter.
- 9.5. The status of other species varies for reasons other than climate change: for example, Curlew has

undergone a sharp decline throughout north-western Europe, and its status simply as a contributor to the species assemblage merits review. It should be considered as deserving of greater importance within the SPA than as an Assemblage Species only.

- 9.6. It is therefore suggested that a review should be undertaken of the birds listed as SPA Qualifying Species and those contributing to the species Assemblage, as well as those listed in SSSI citations.

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  - David Anderson (Coombe Hill Meadows)
  - Gordon Avery (Horsbere Brook Flood Alleviation Area and Witcombe Reservoir)
  - John Belsey (JB), (Upton Warren LNR)
  - Roger Blackmore (RB), (Grimley New Workings)
  - Wayne Dutton (WD), (Great Pool Westwood Park)
  - Terry Evans (Frampton Pools)
  - Andrew Godden (Coombe Hill Meadows)
  - Adam Holliday (AH), (Clifton Pits)
  - Andy Jayne (Walmore Common, also a regular visitor to Minsterworth Ham and other important sites)
  - Peter Kirmond (Elmore Marsh)
  - Kevin Kingscott (River Severn – Gloucester to Maisemore)
  - Rob Prudden (Kemerton Lake, Gwen Finch and John Bennett NRs)
  - Mike Smart (Ashleworth Ham, Chelt & Leigh Meadows and Coombe Hill)
  - Richard Stott (Pershore Wetland Meadows)
  - Neil Tappin (Wilmer Common at Rodley)
  - Andy Warr (Bow Farm, Bow Farm (Ripple Lakes) and Bredon's Hardwick Gravel Pits, Longdon Marsh North)
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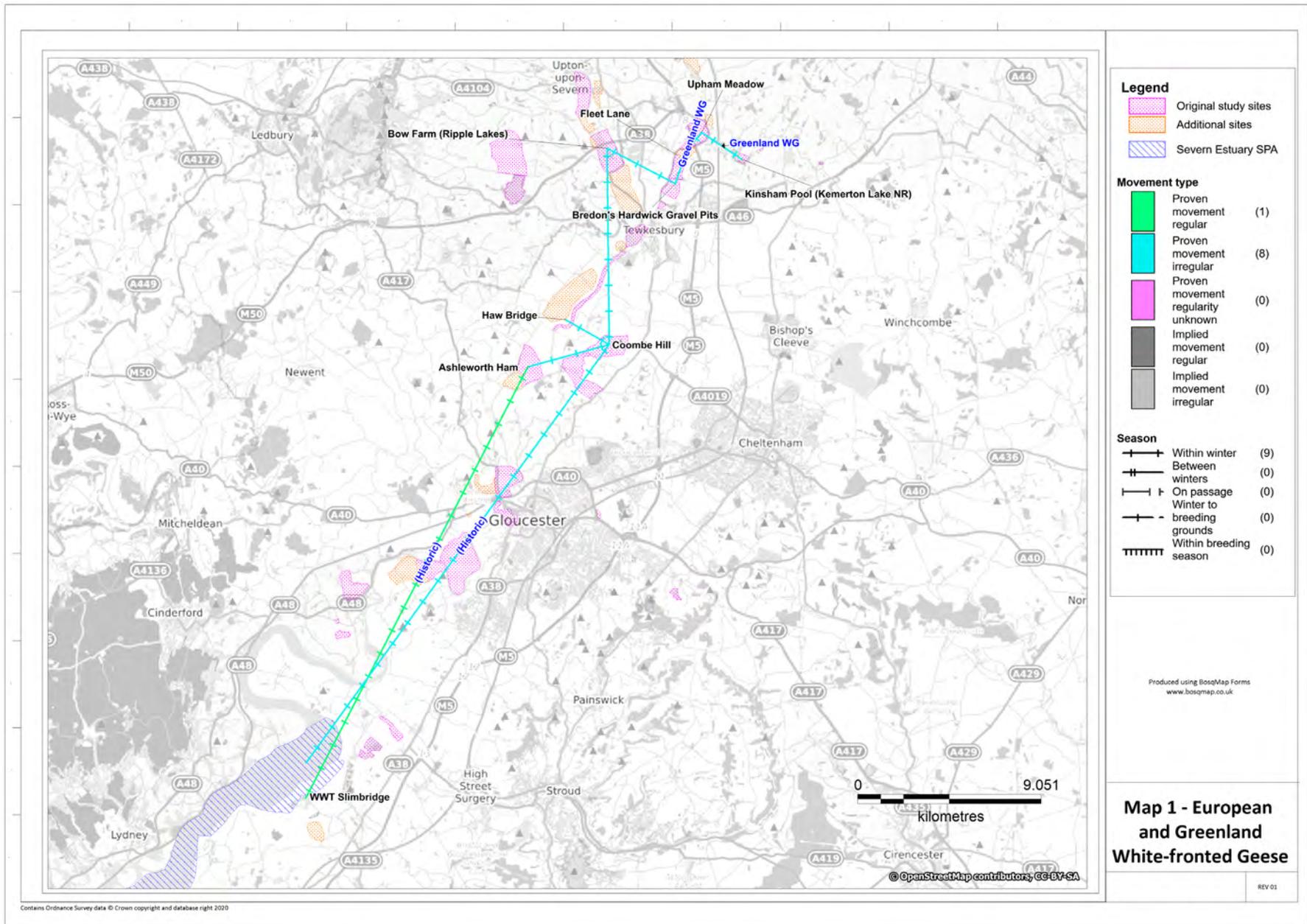
## **Appendices**

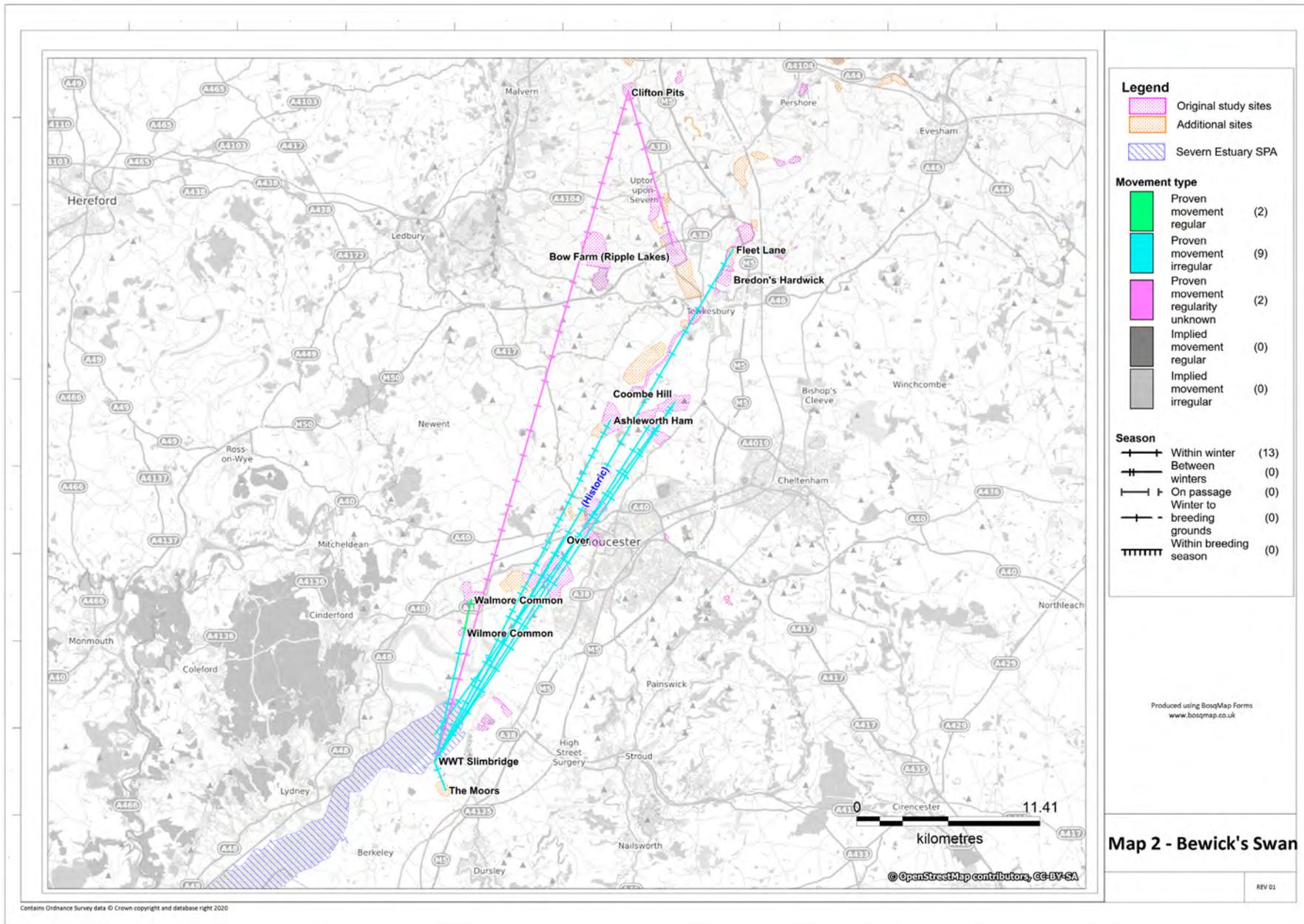
### **Appendix 1 – Maps showing known bird movements**

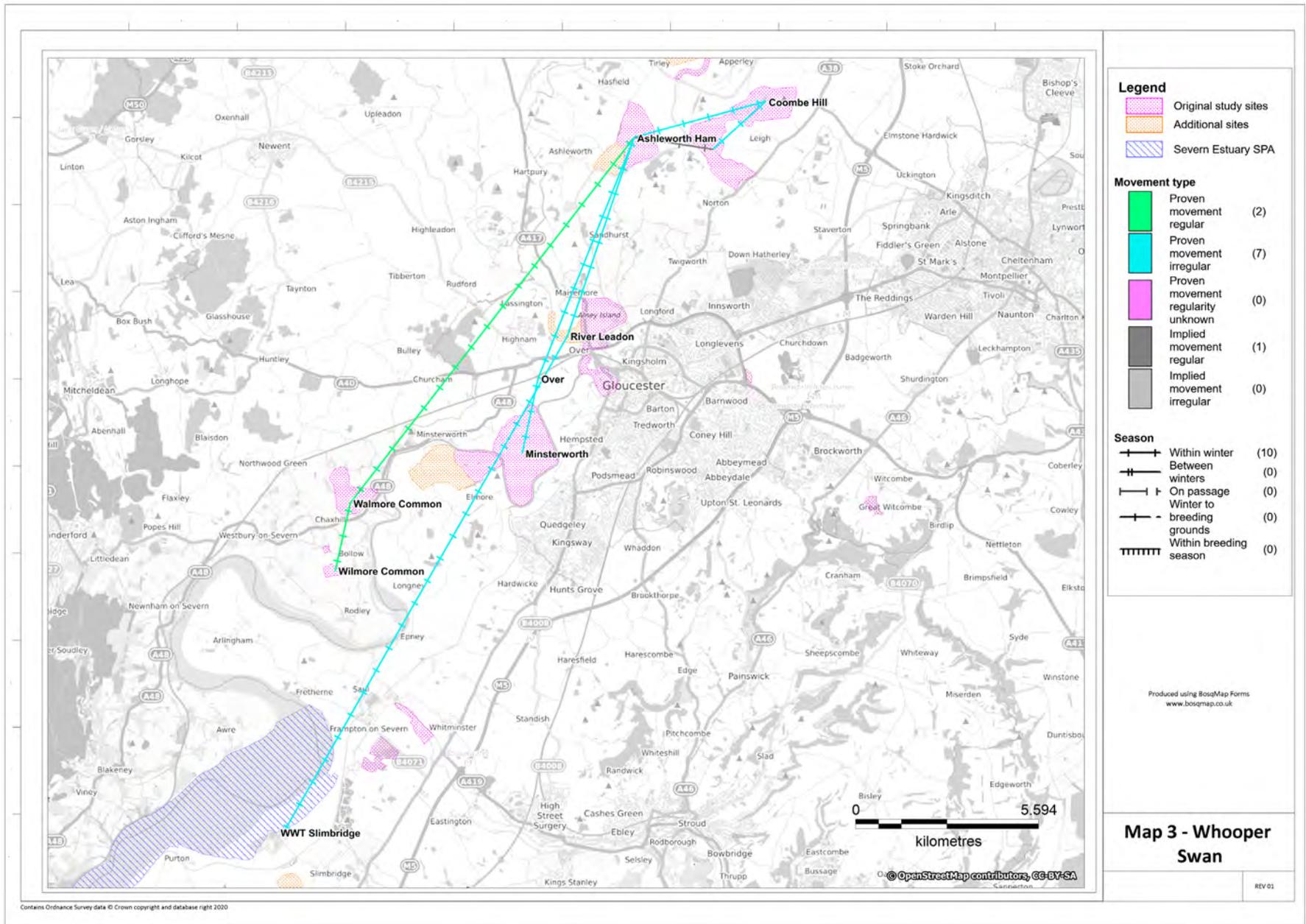
The following maps provide a cartographic representation of the known movements of SPA Interest Species between the SPA and inland Vale sites, as well as between inland sites. Full descriptions of these movements are provided in Section 4 of this report. Movements of birds outside of the study area but within Great Britain are shown, where considered relevant. There are other recorded movements between GB and other countries, but these are not shown.

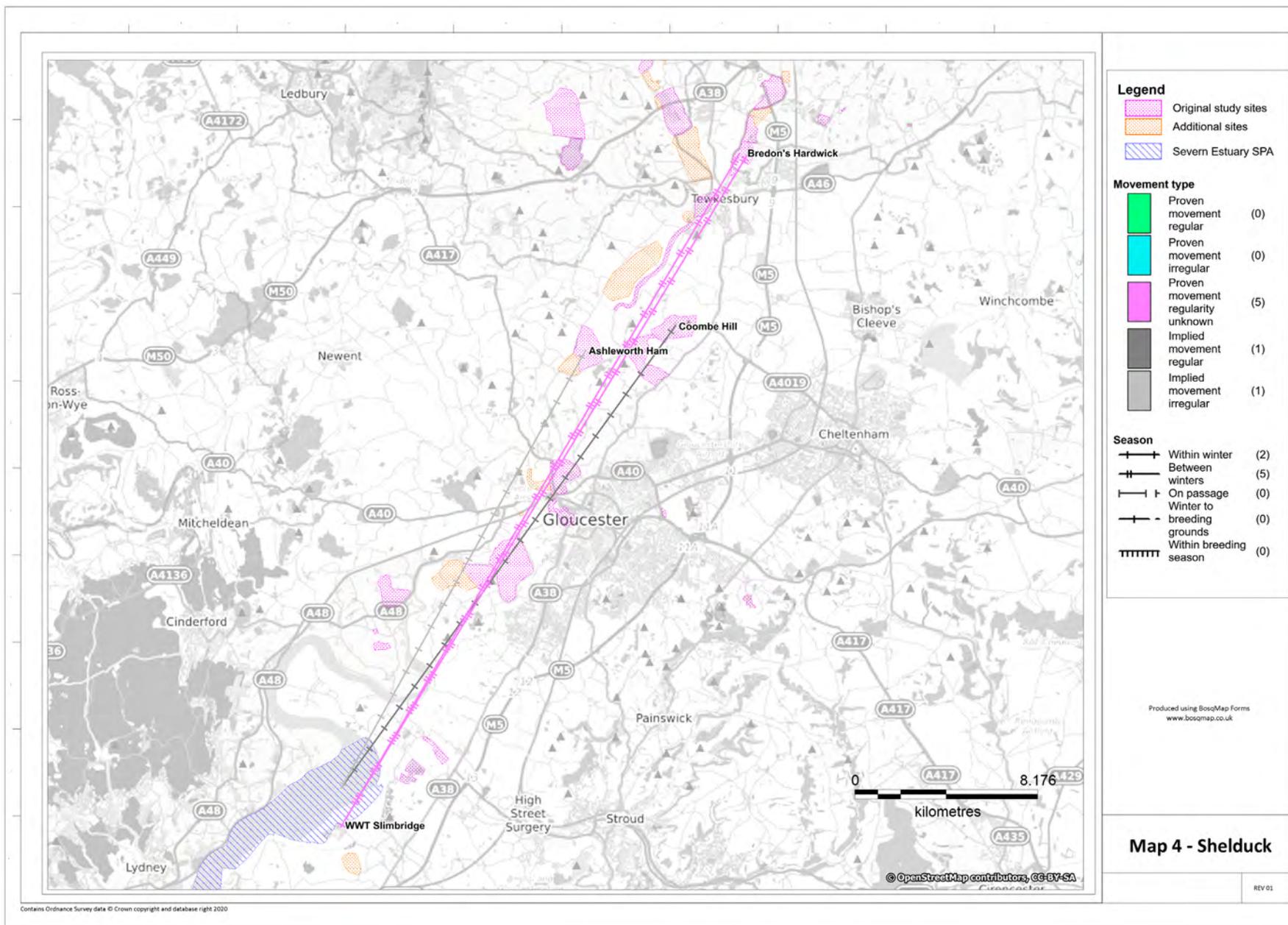
Movements that cannot be attributed to exchanges between the SPA and the inland sites, or between the sites (e.g. birds have been recorded at those sites but their origins are not known) are not shown. This means that some species, notably Pink-footed Goose and some of the migratory waders are not represented.

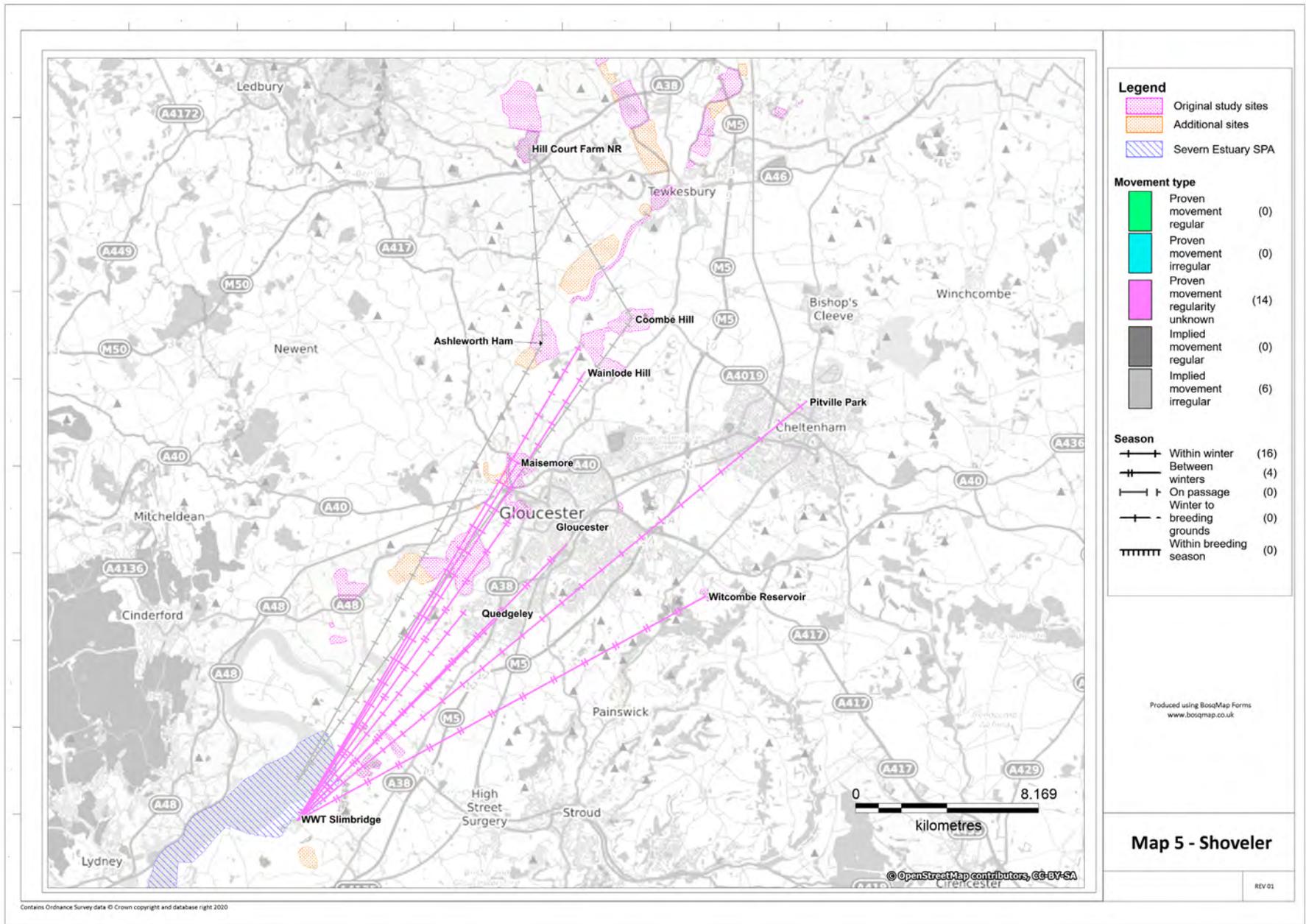
Movements outside of the UK are not shown.

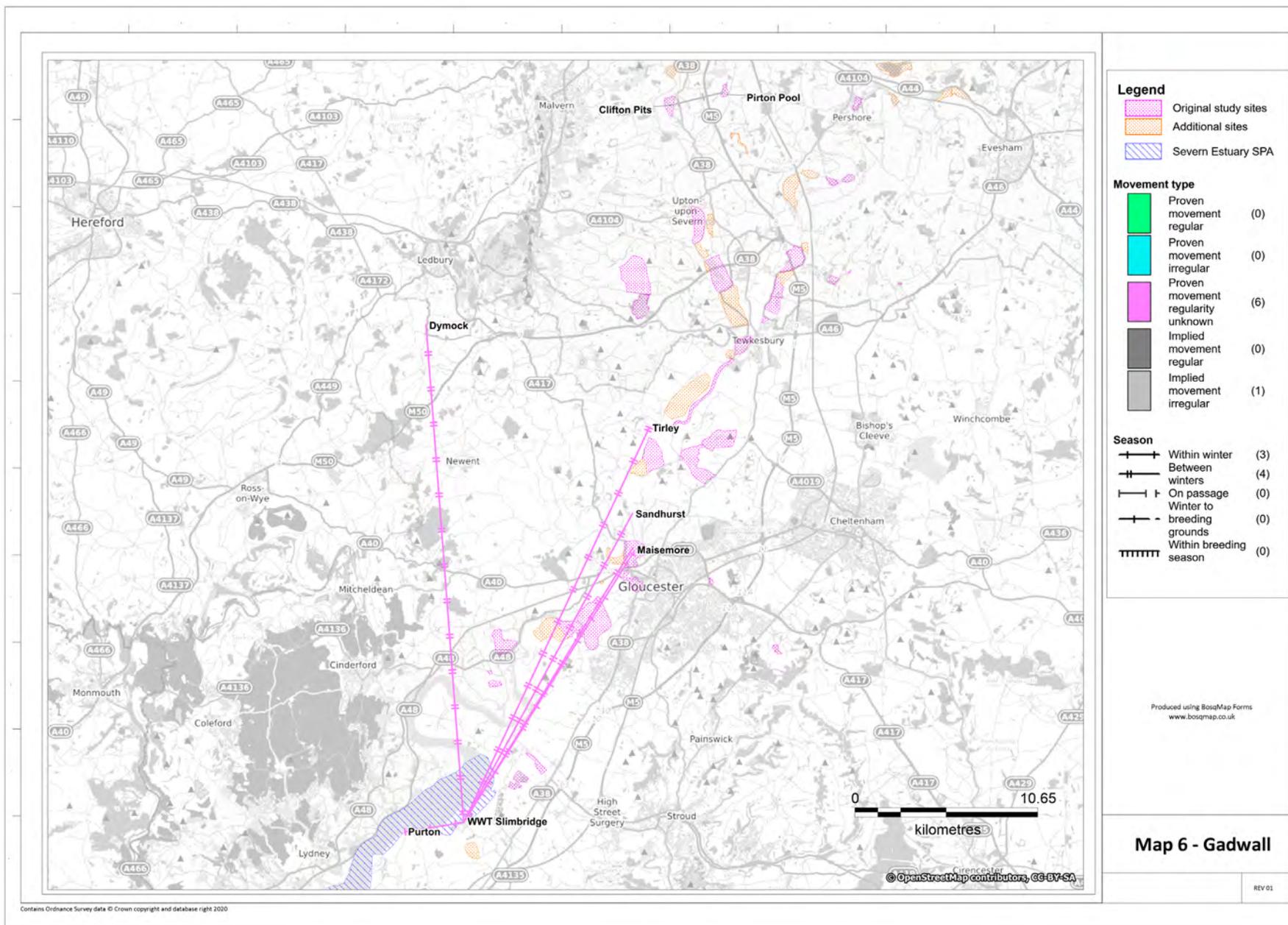


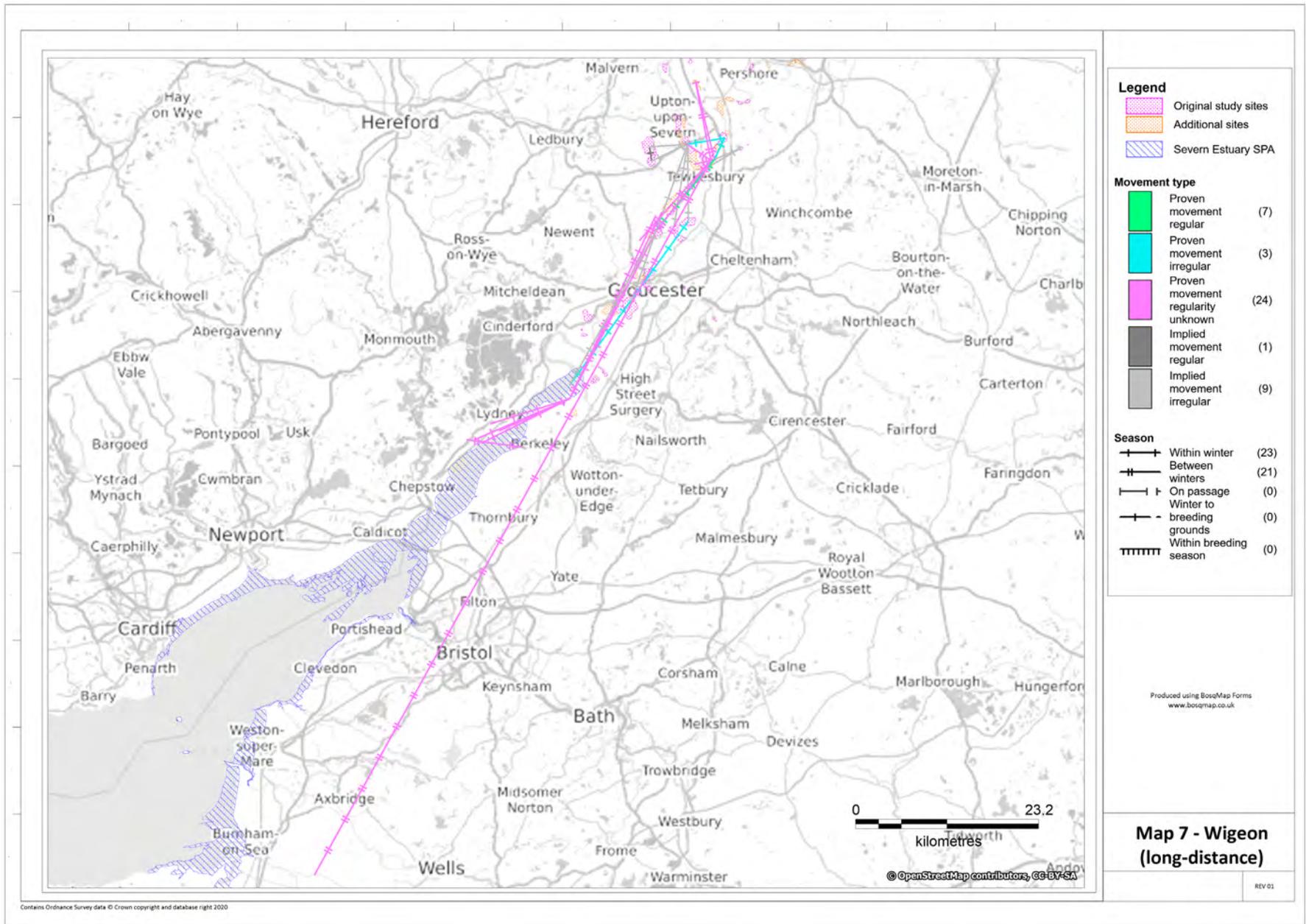


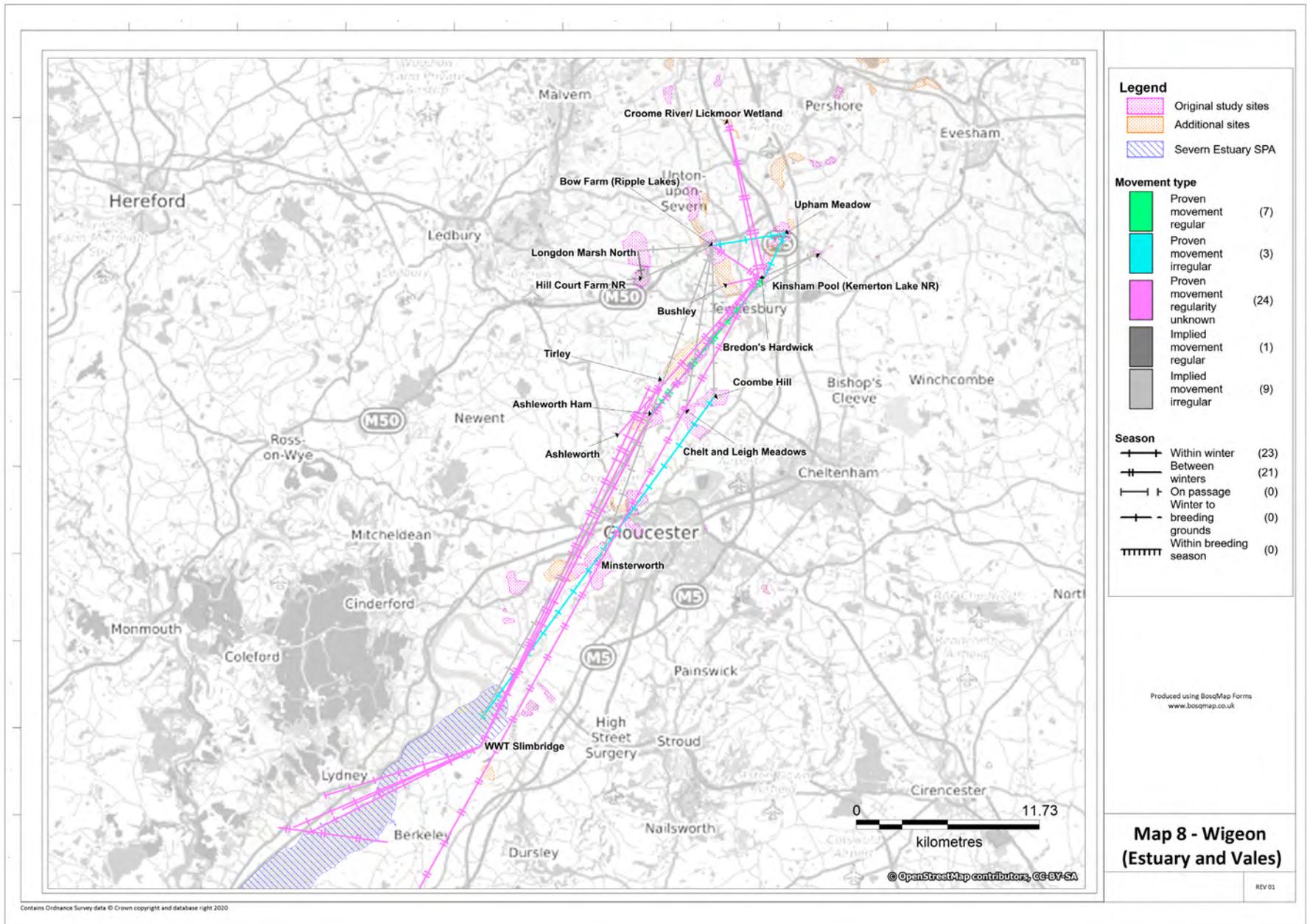


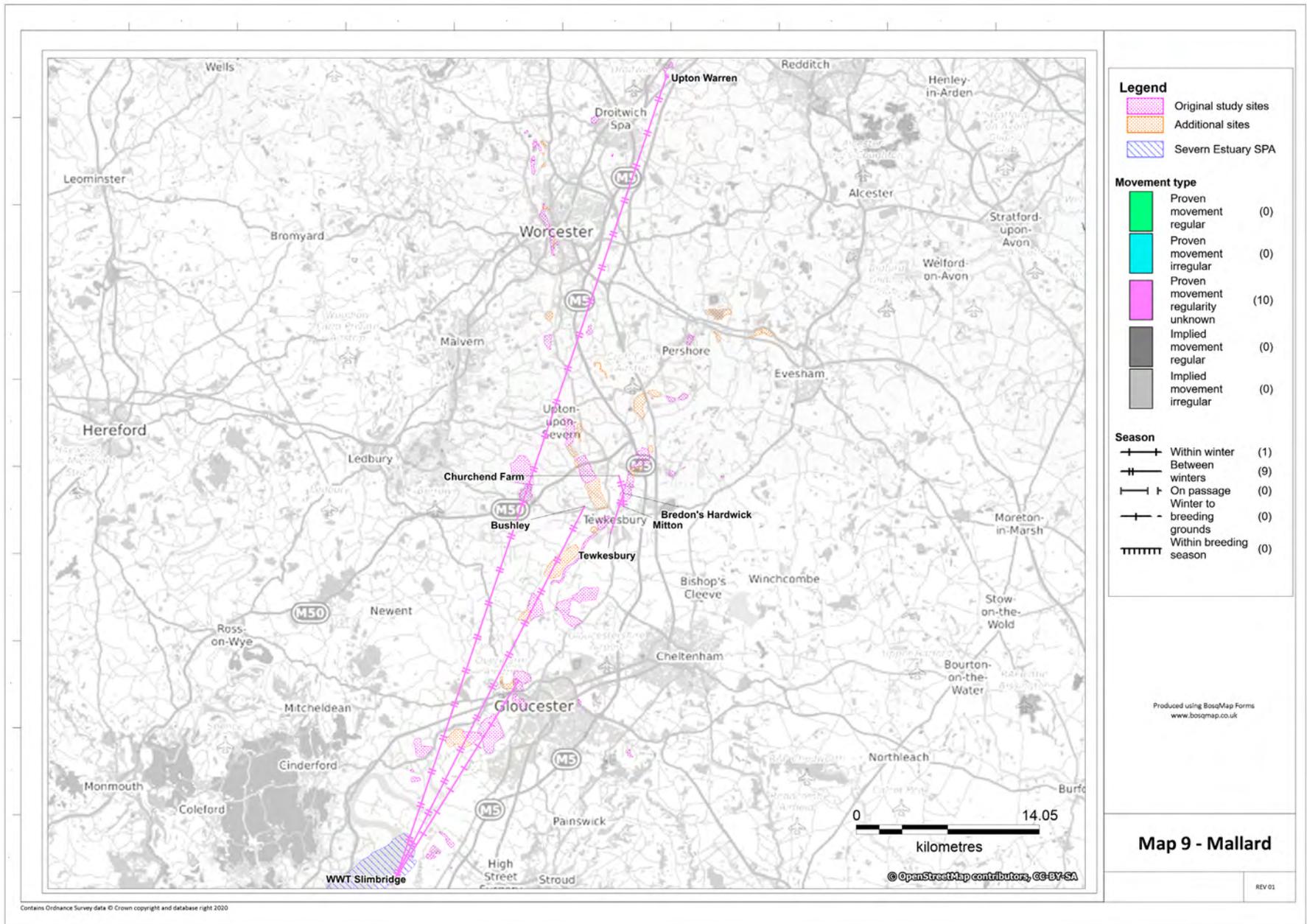


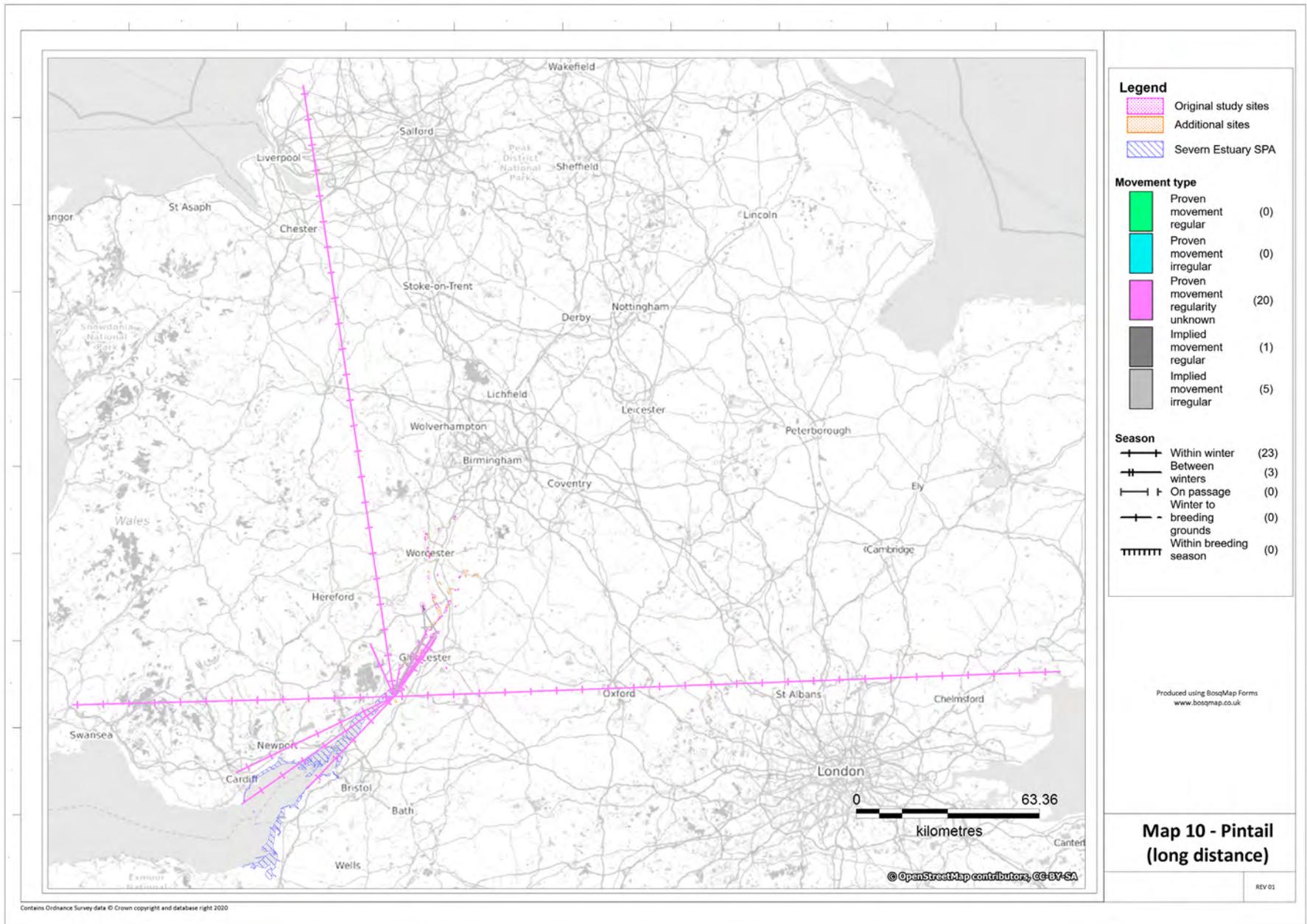


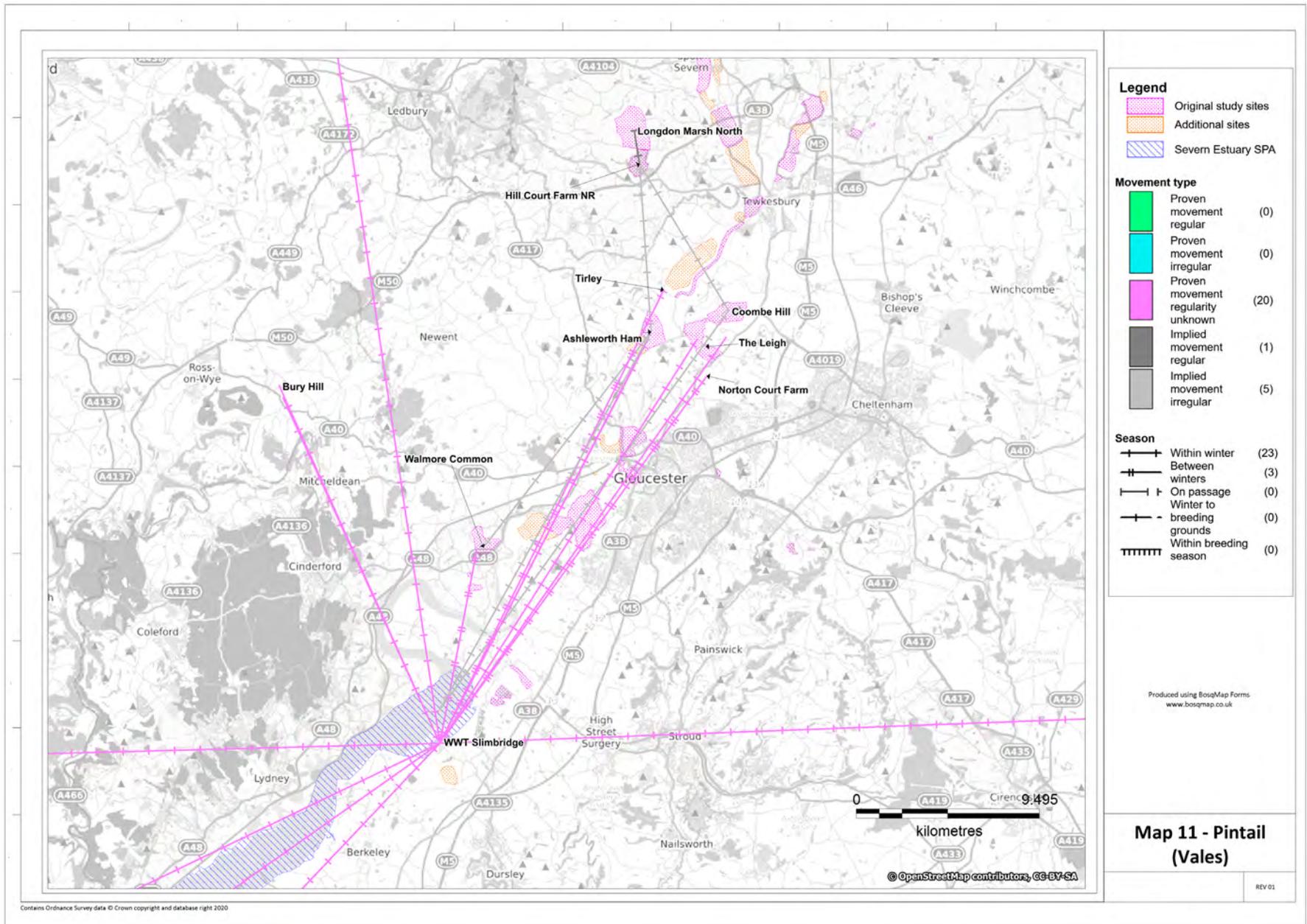




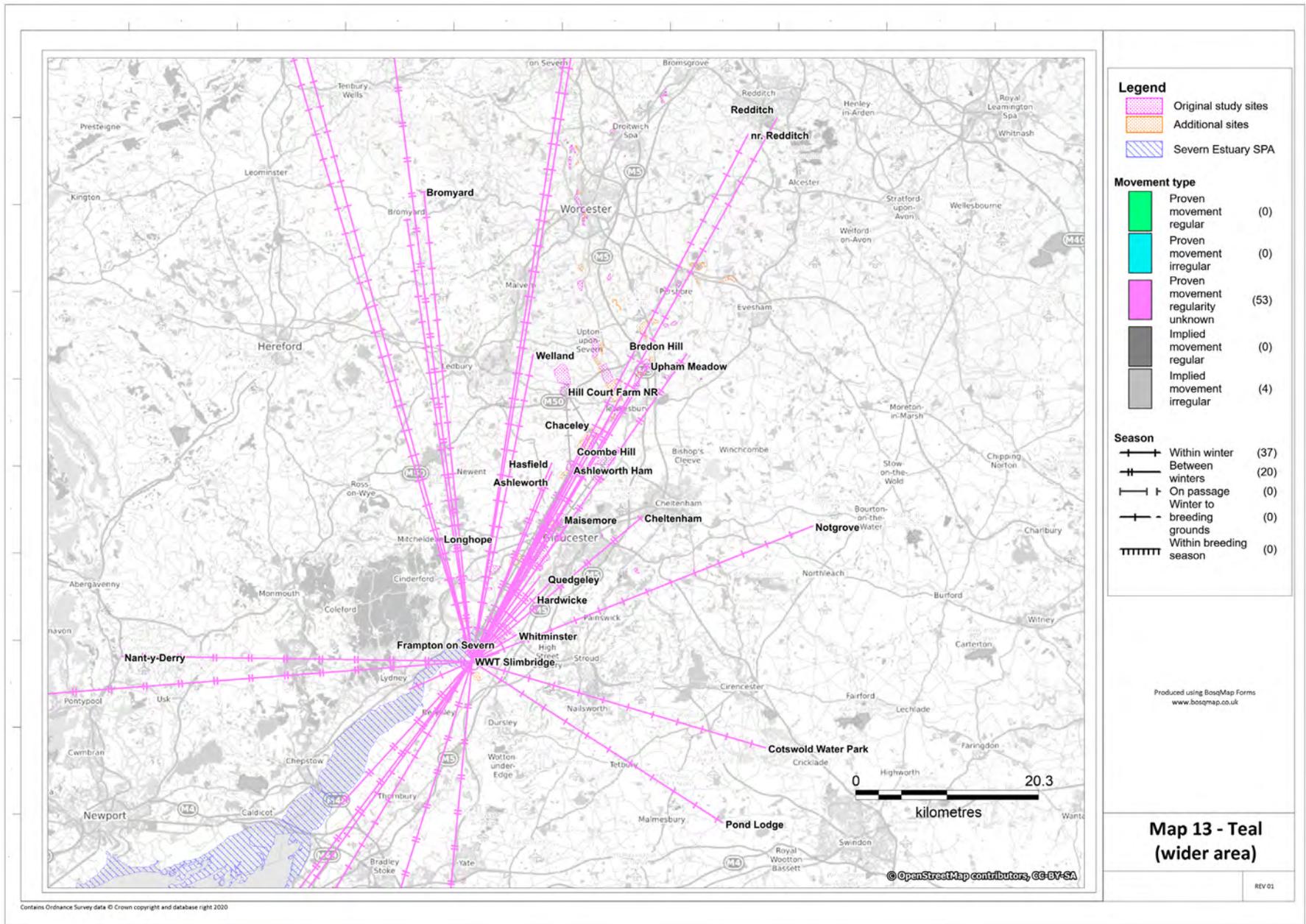


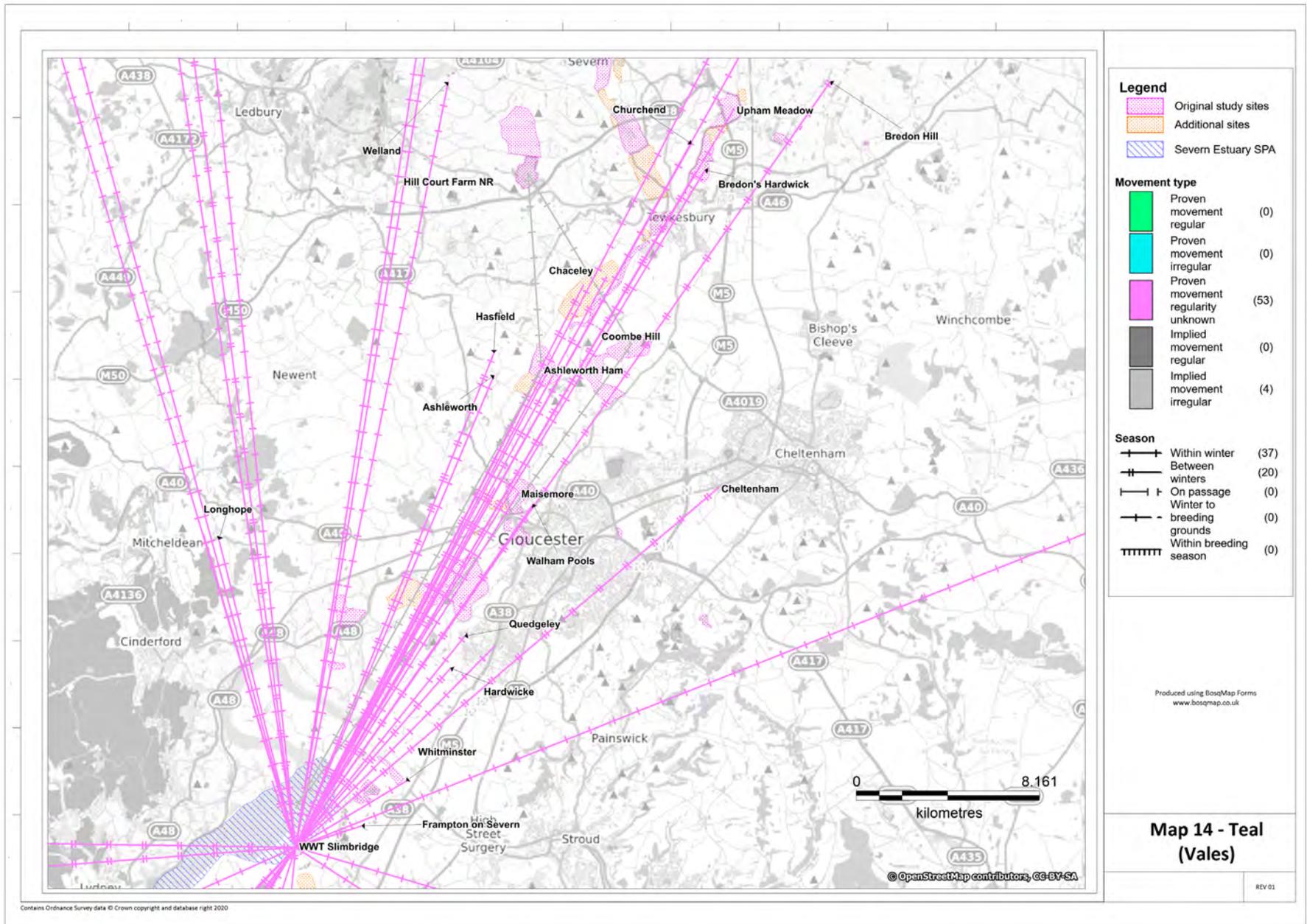


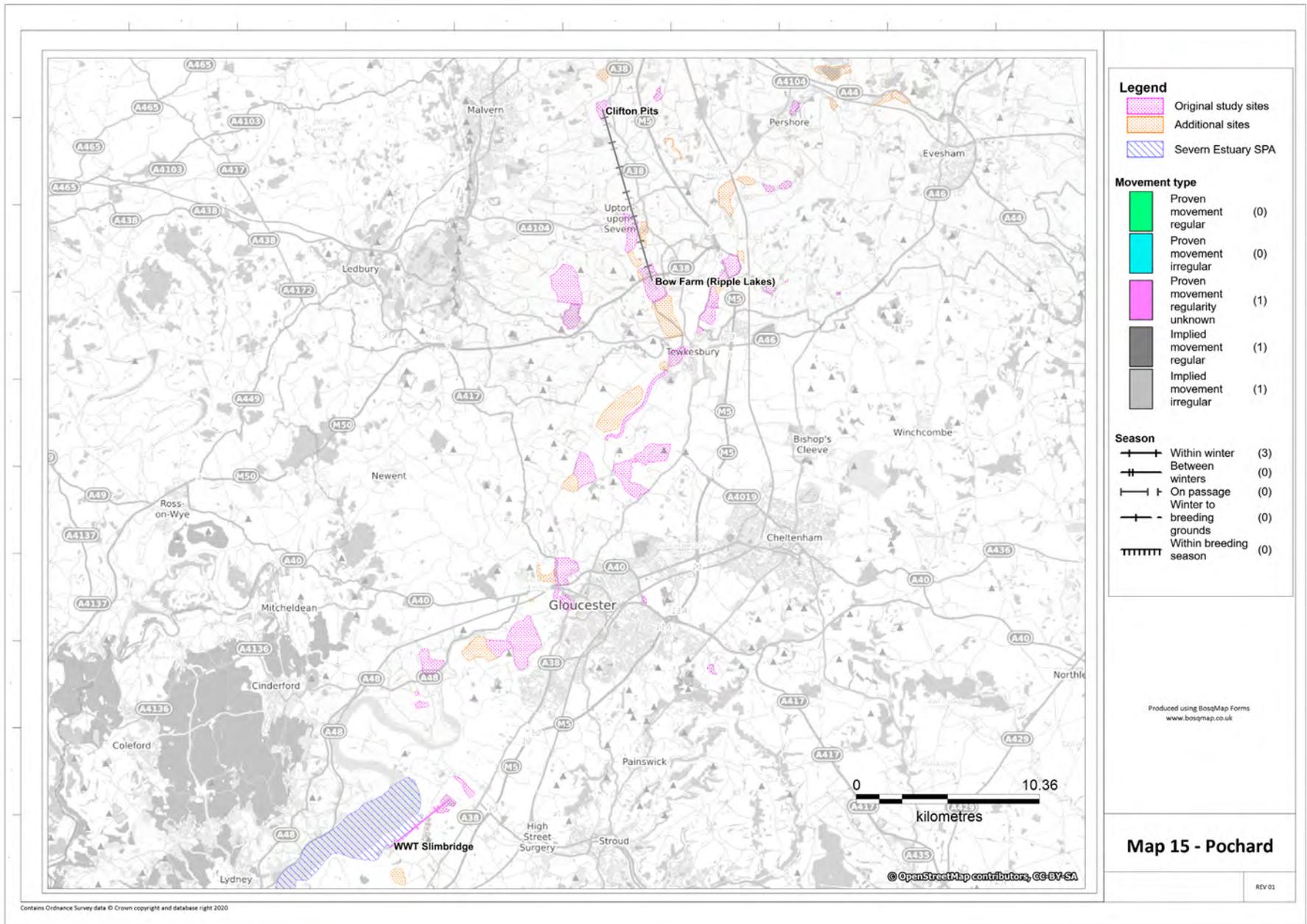


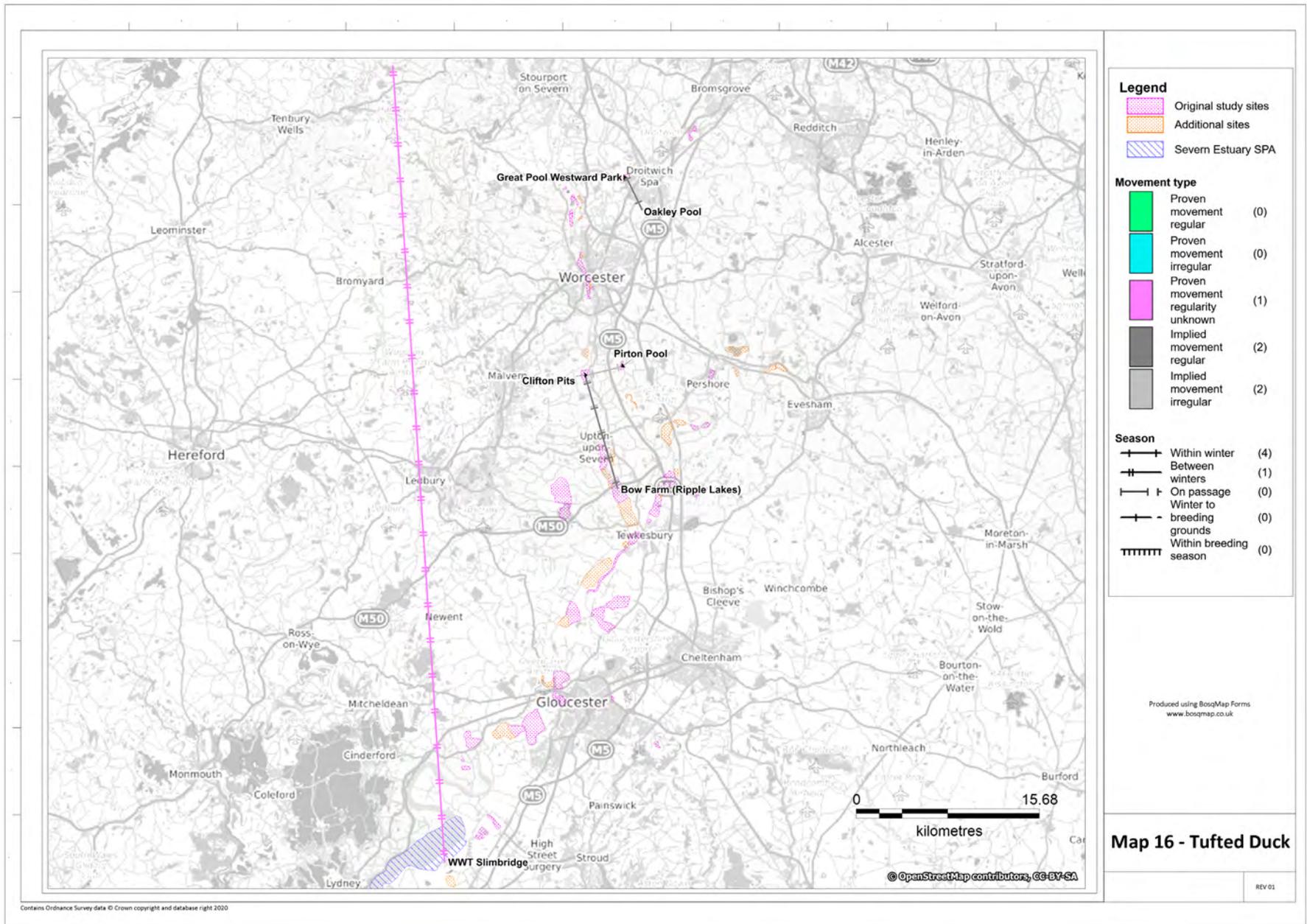


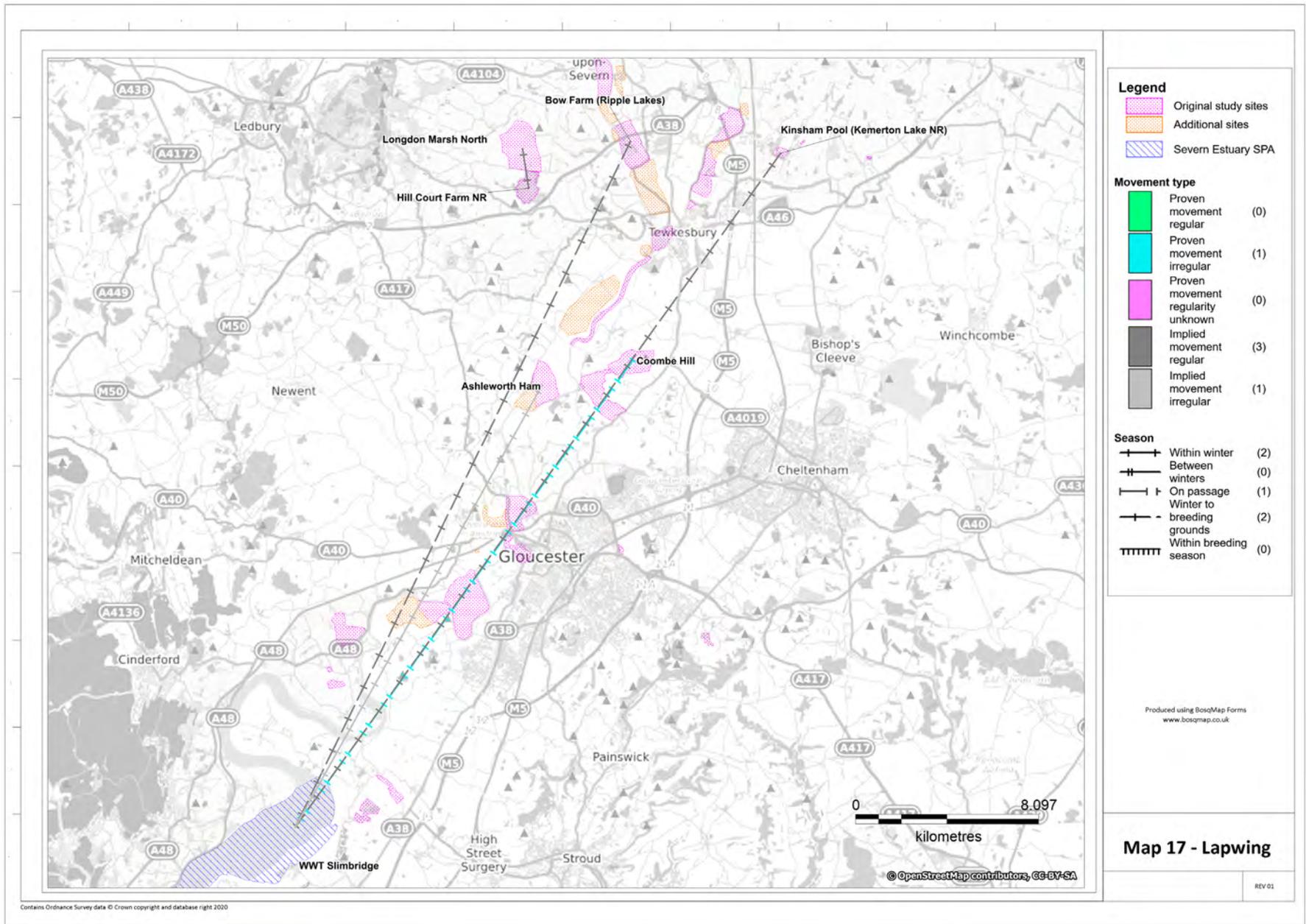




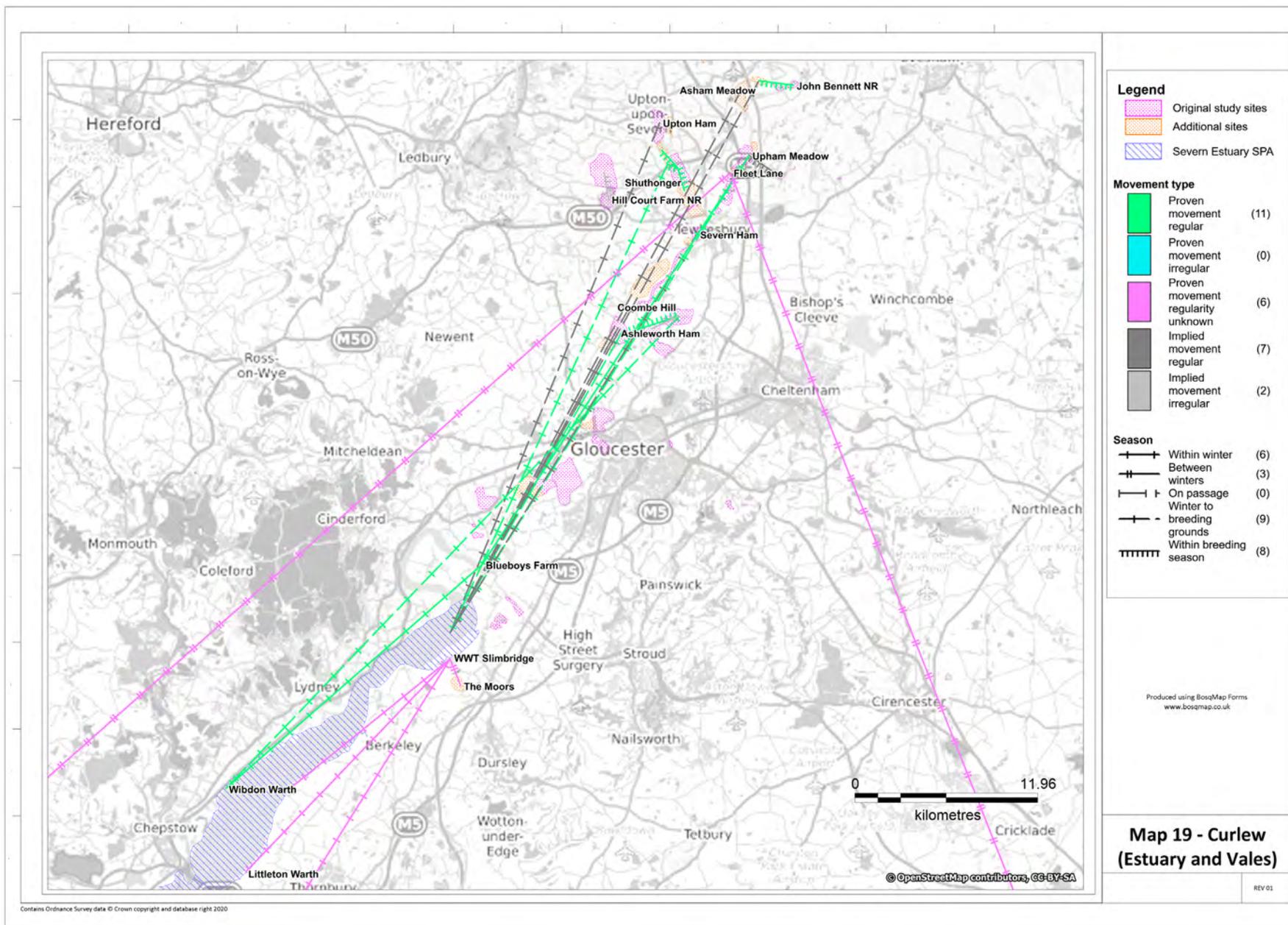


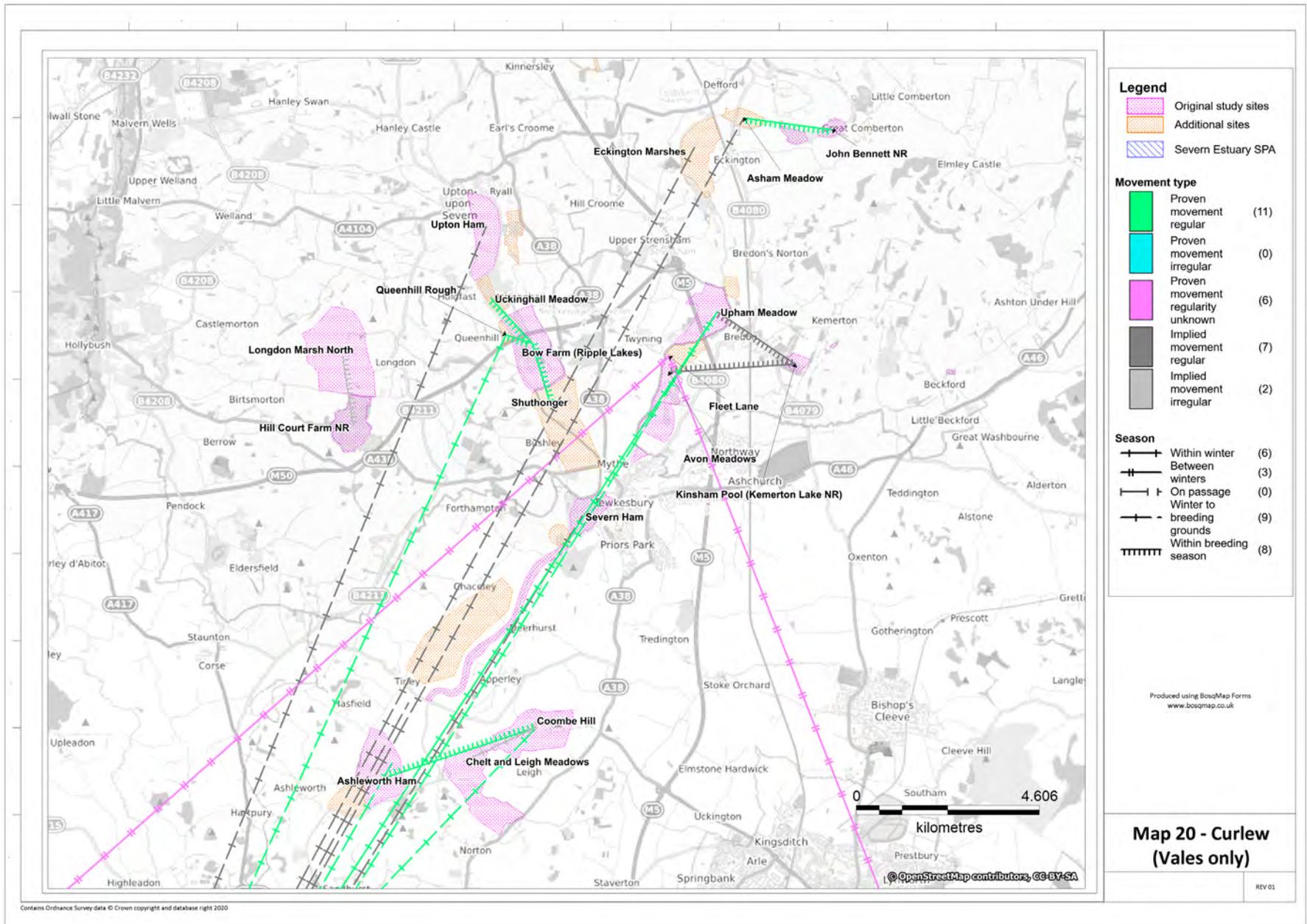


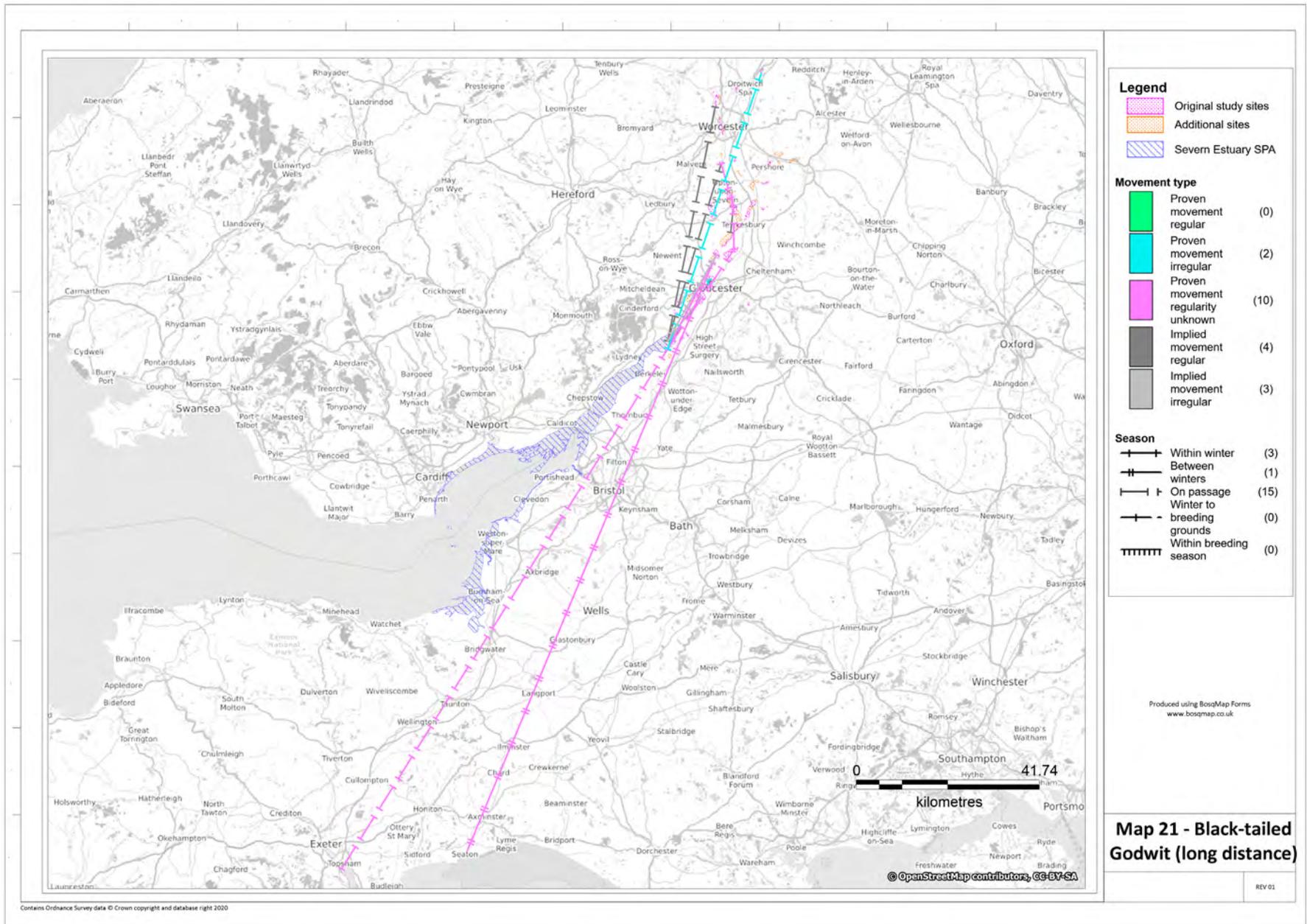


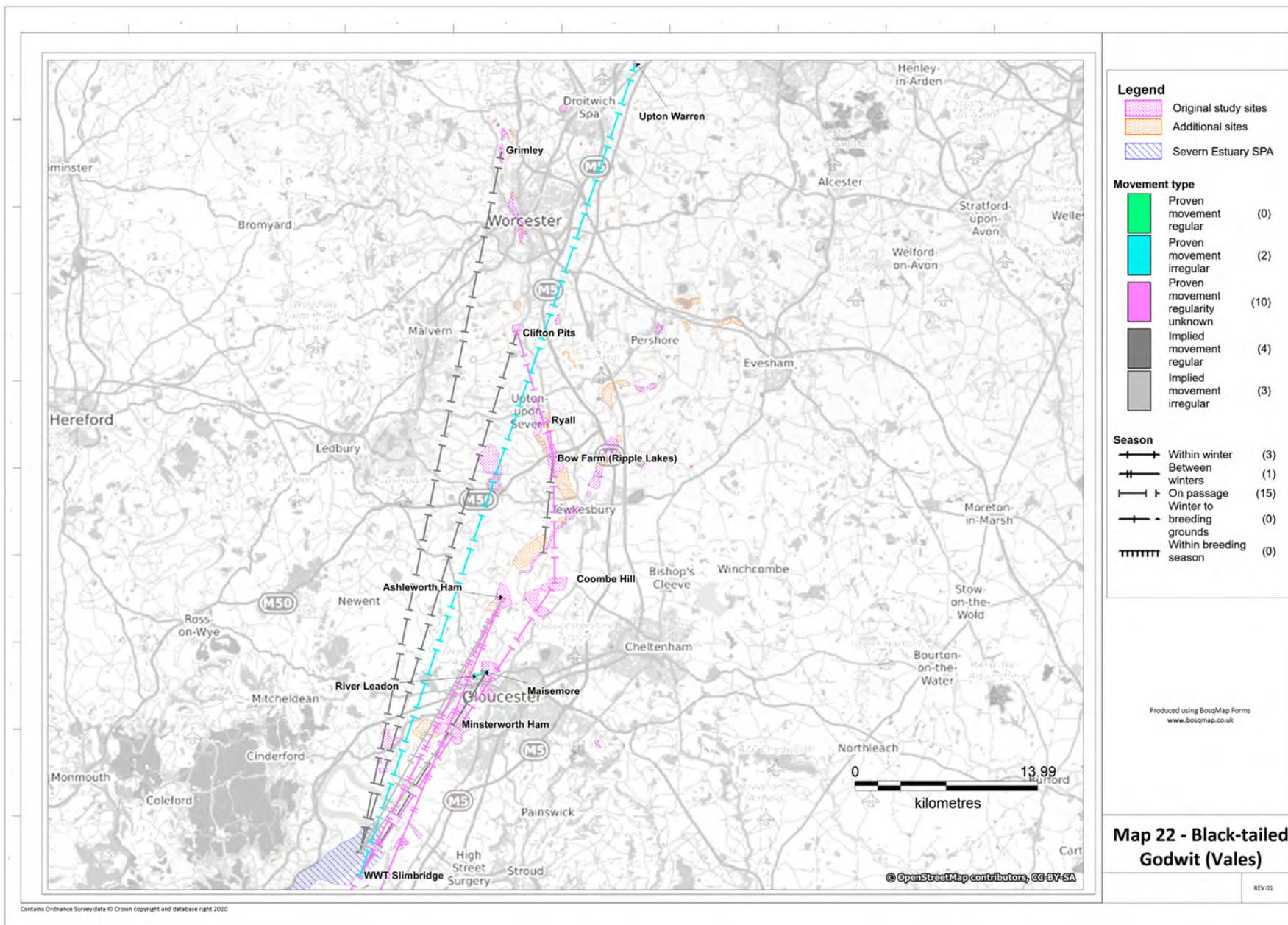


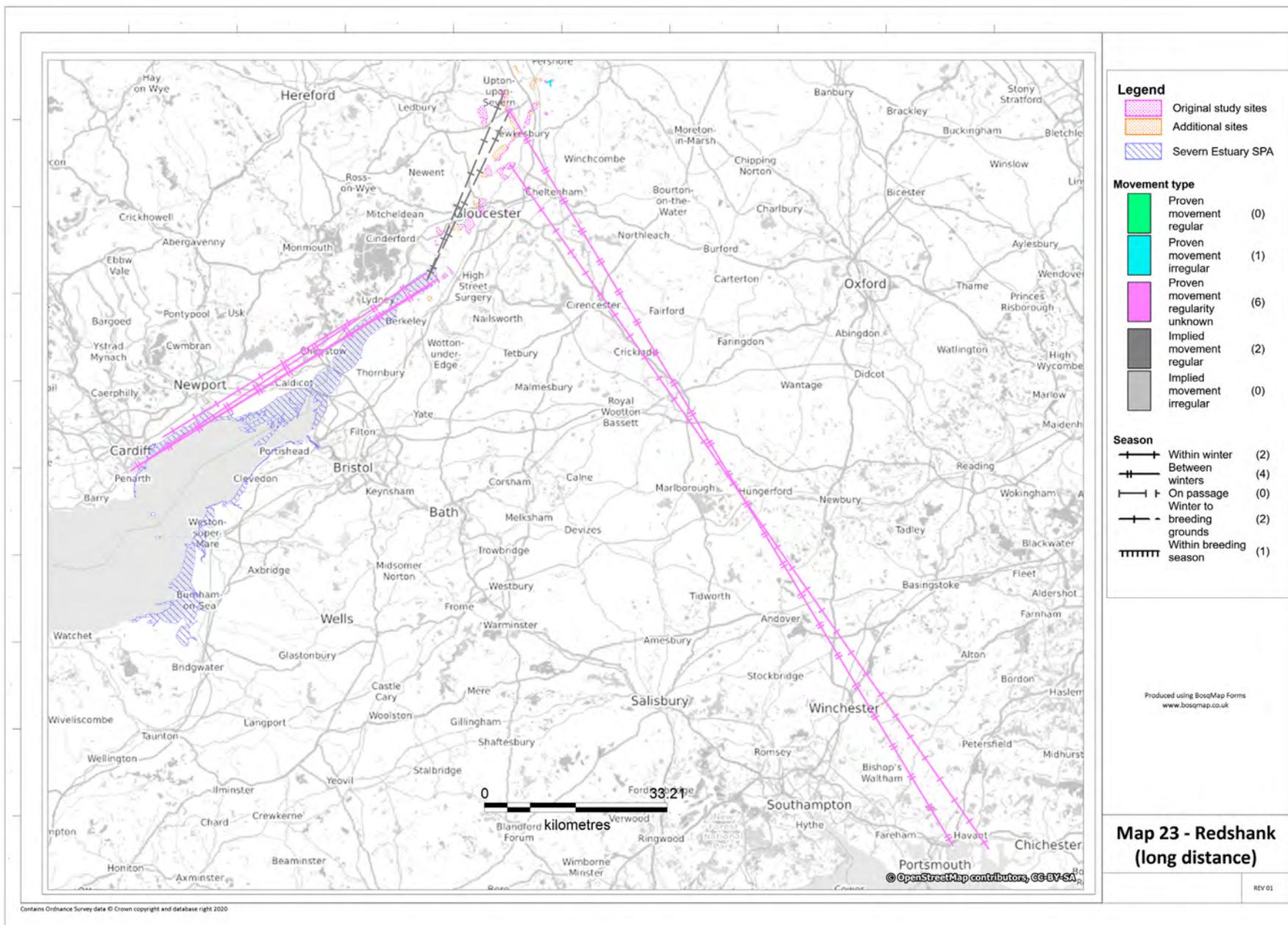










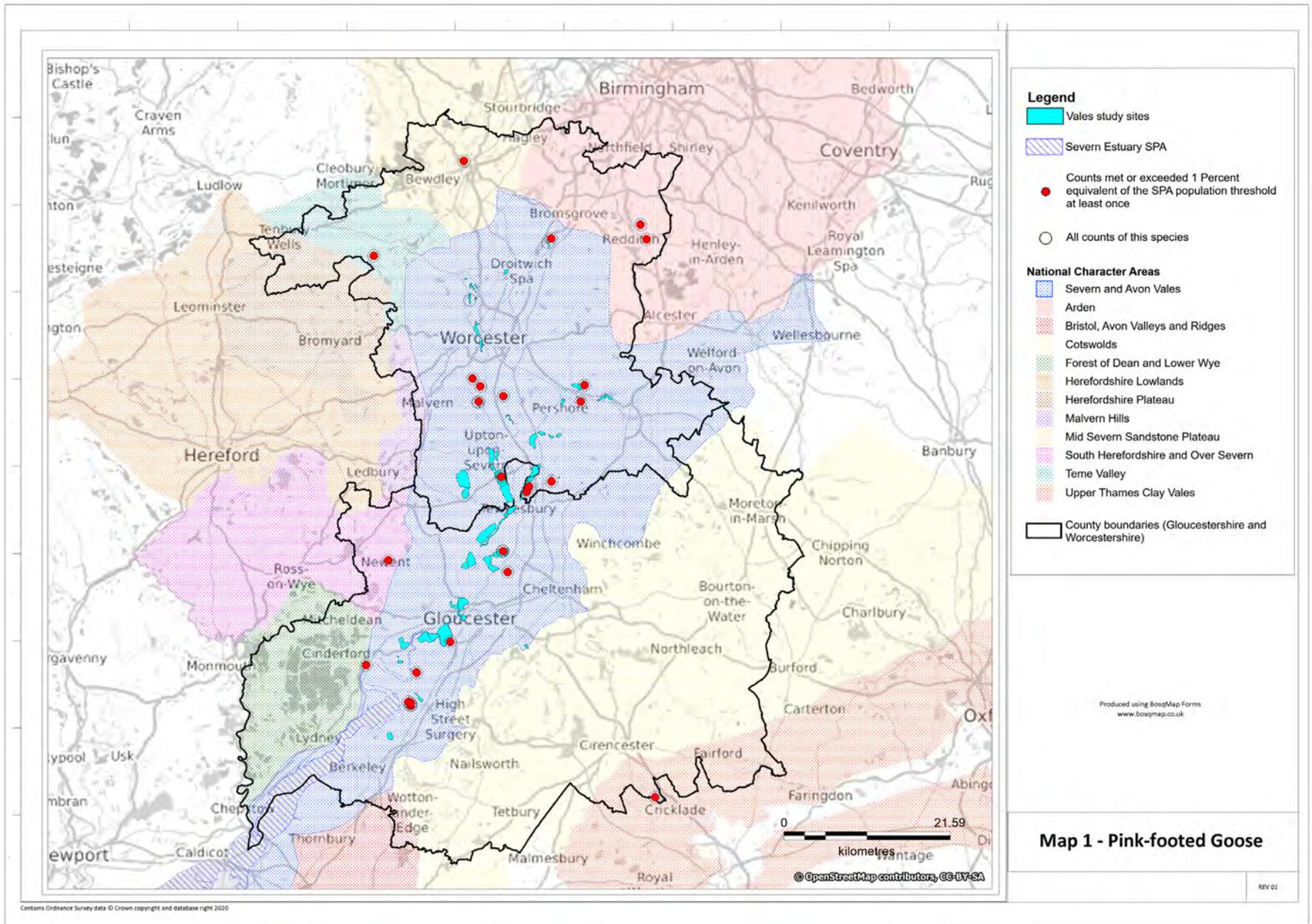


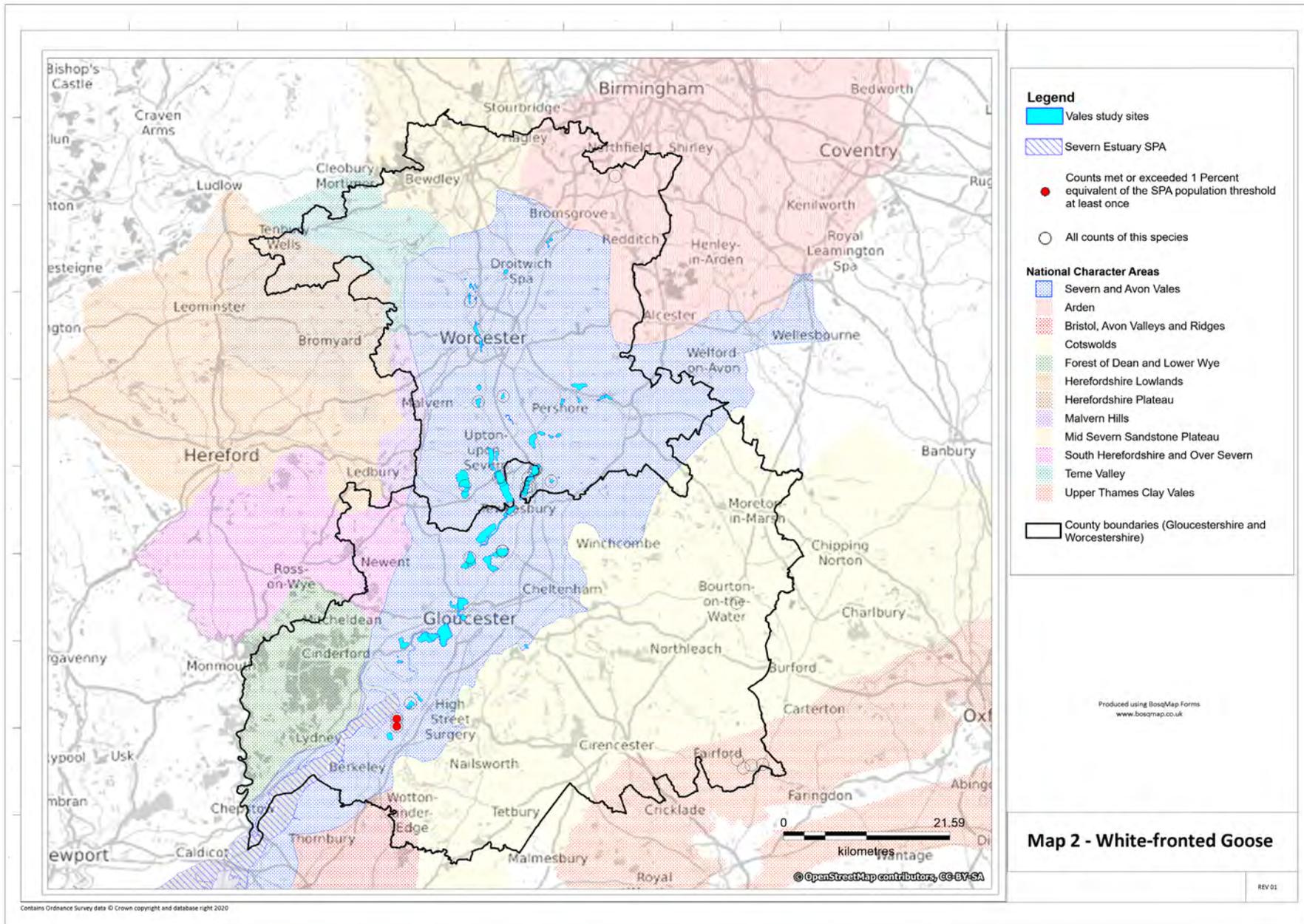
## **Appendix 2 – Maps showing locations of SPA Interest Species records**

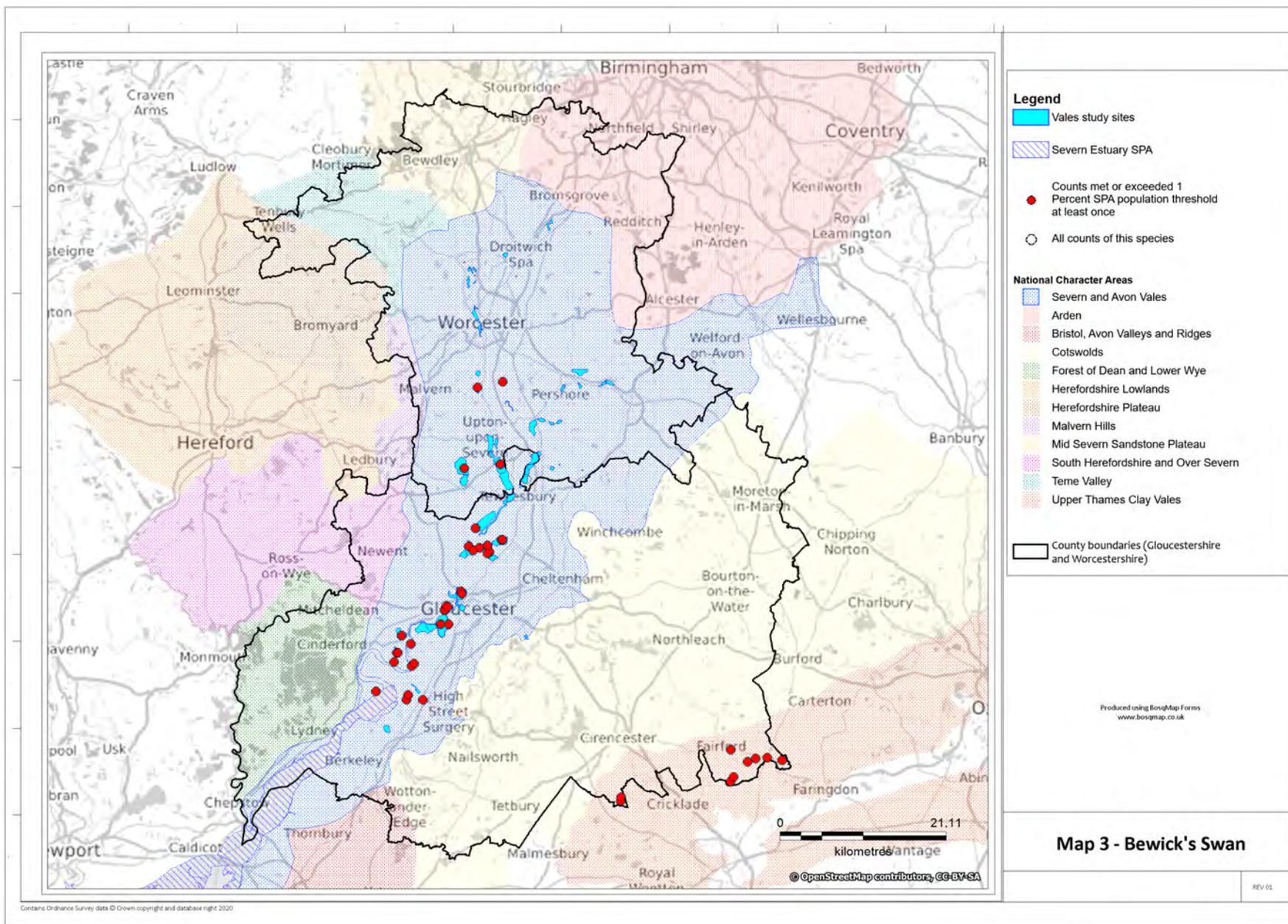
The maps in this section show where SPA Interest species have been recorded outside of the SPA, with locations highlighted where numbers reached or exceeded the equivalent of the 1% SPA population criterion for importance within Gloucestershire and Worcestershire. Numbers of records where this criterion were met have not been provided on the maps but this information is available for all Severn and Avon Vales locations listed in Section 2 of this report. The significance of these records is explored in Section 5.

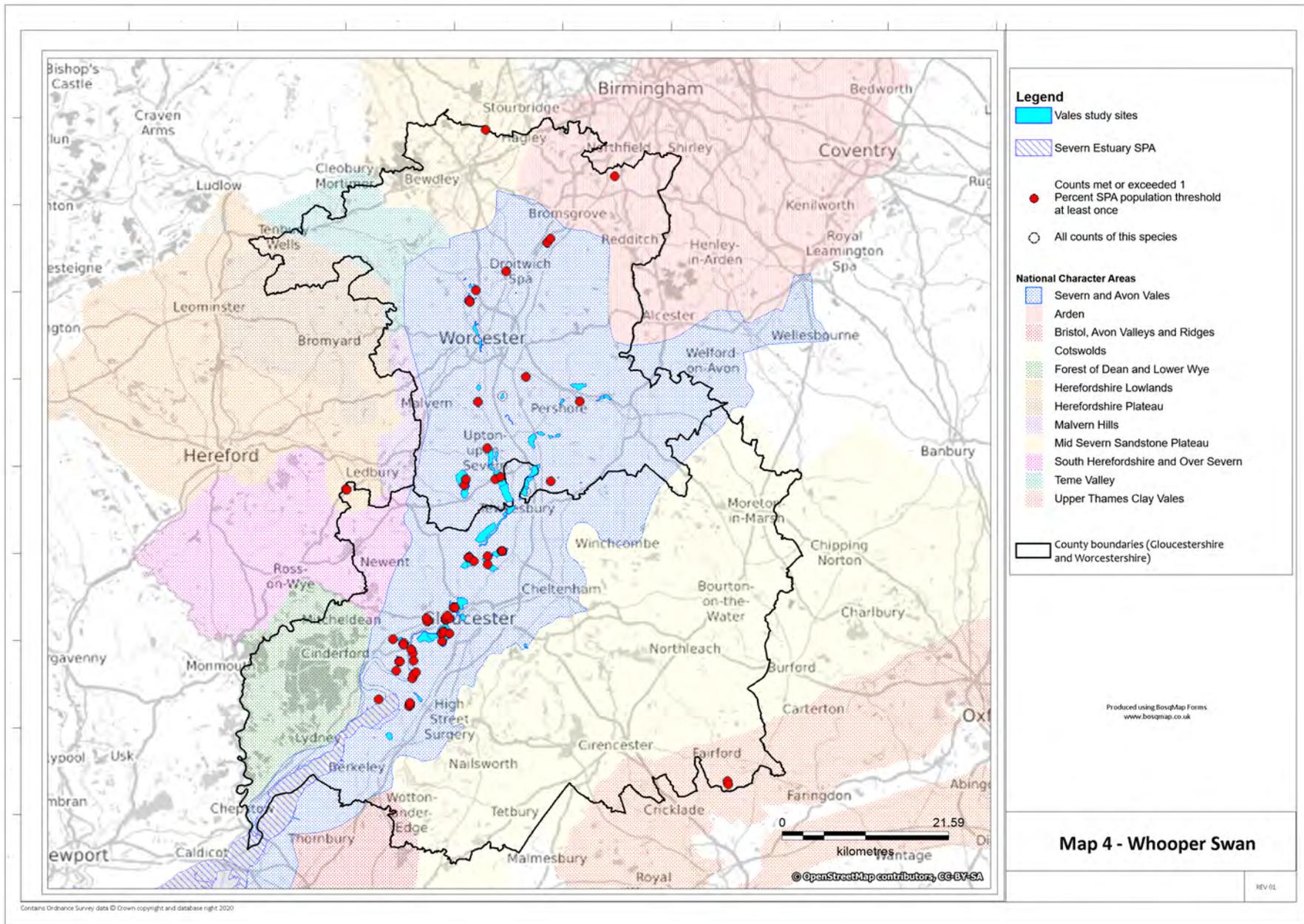
Locations outside of the Severn and Avon Vales are included to show where additional areas of potential importance to the SPA Interest Species are. Brief interpretation of these data points is given in Section 6 of this report.

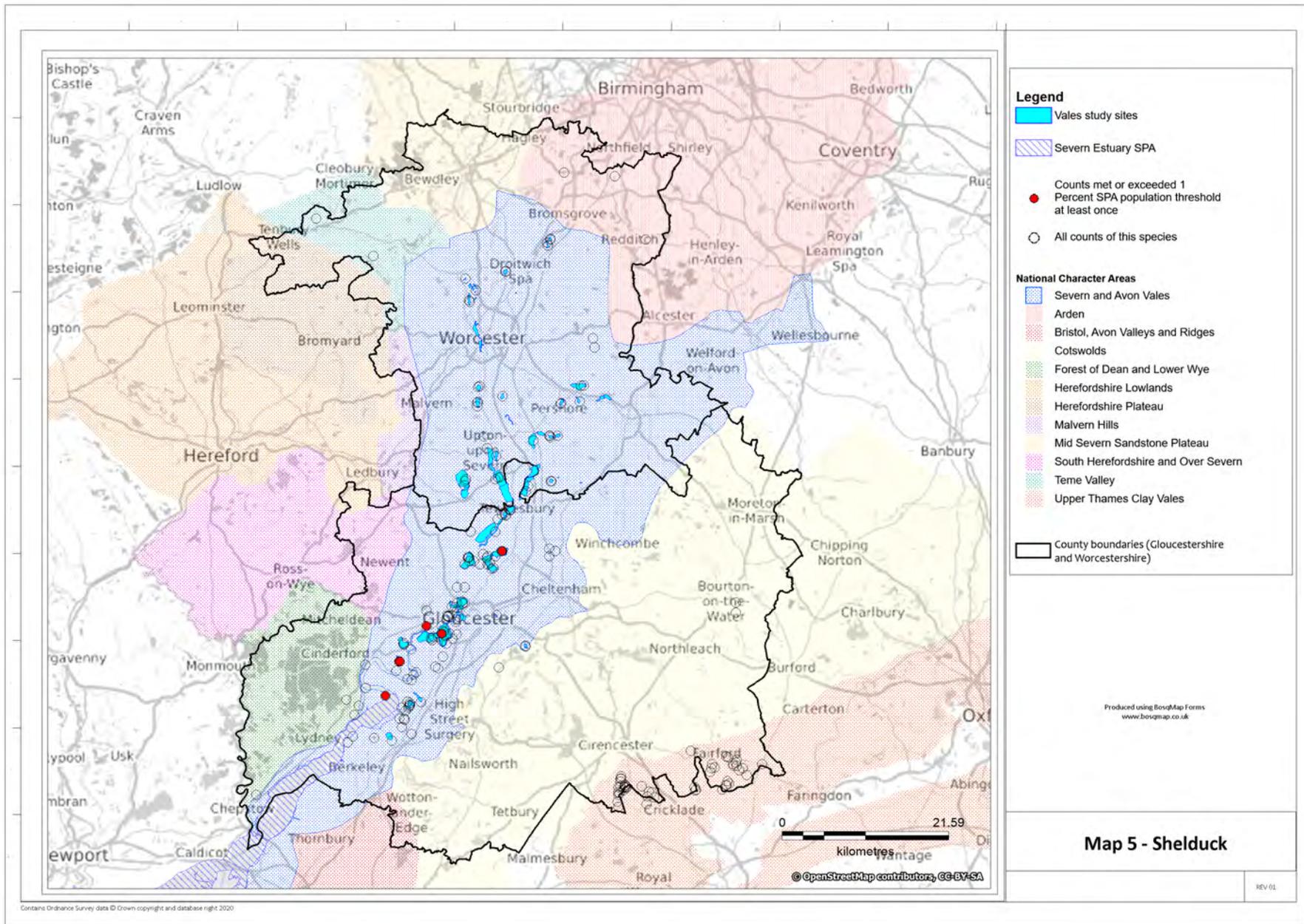
National Character Areas are shown to provide biogeographical context to the locations highlighted, as explained in Section 6.

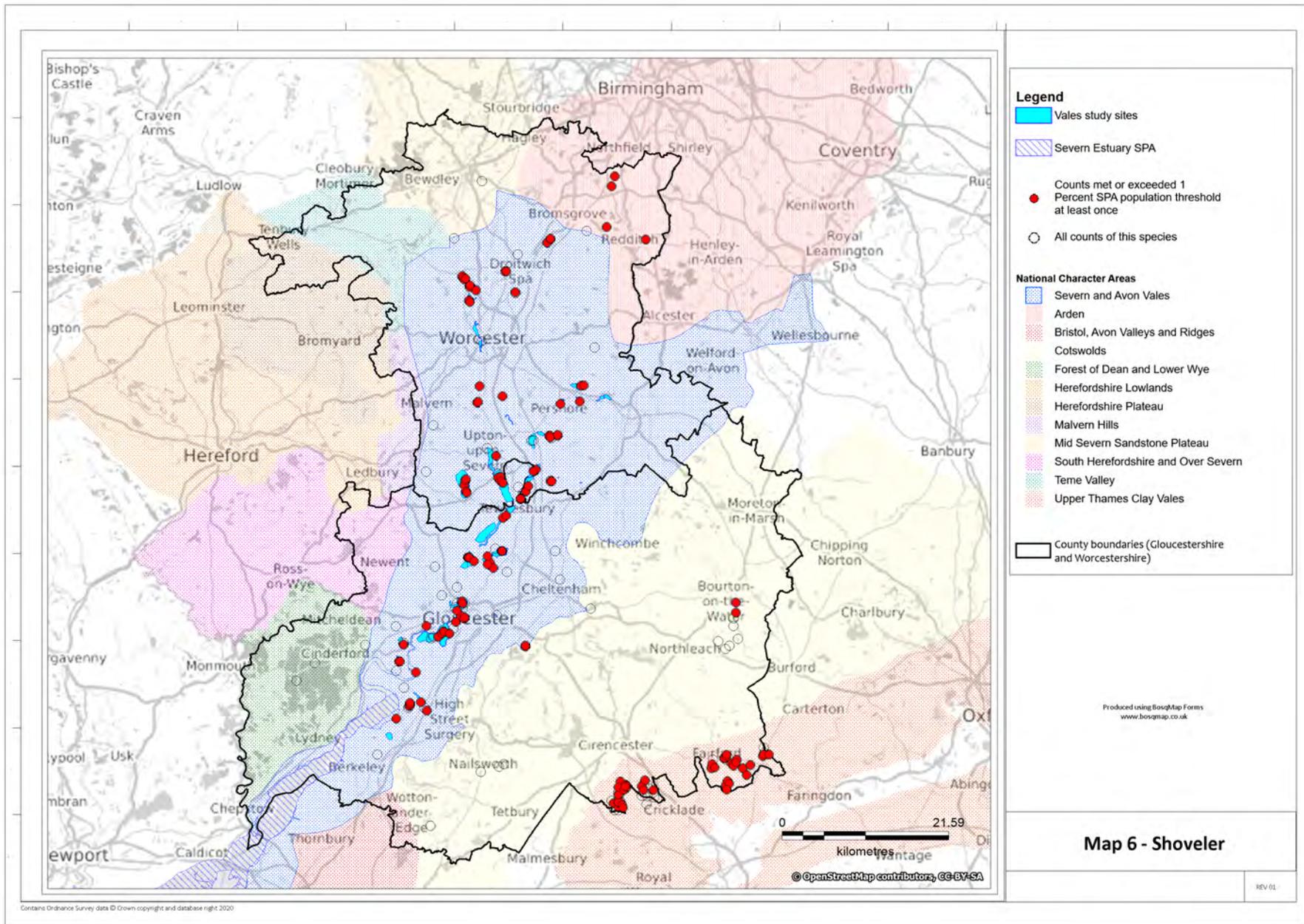


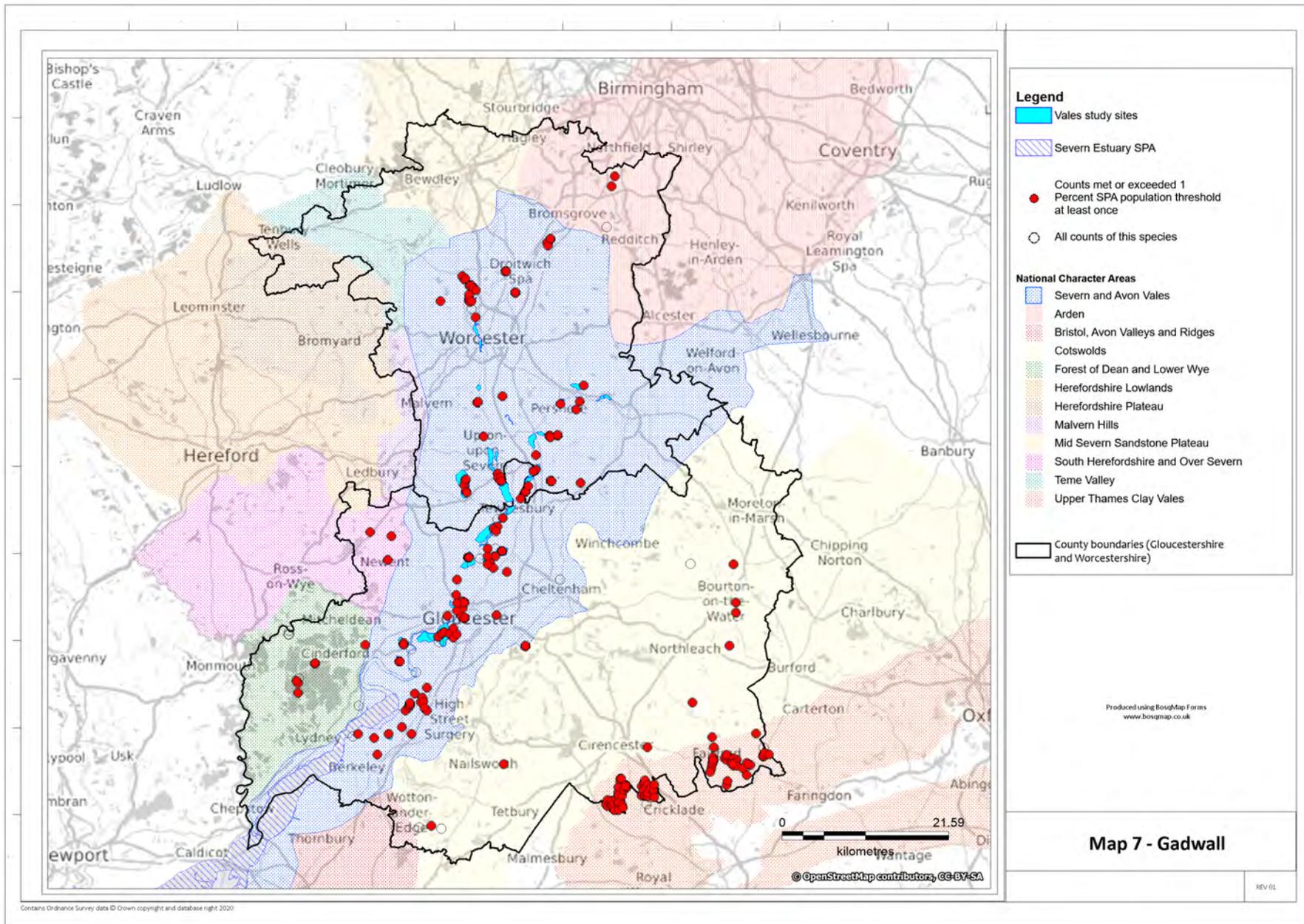


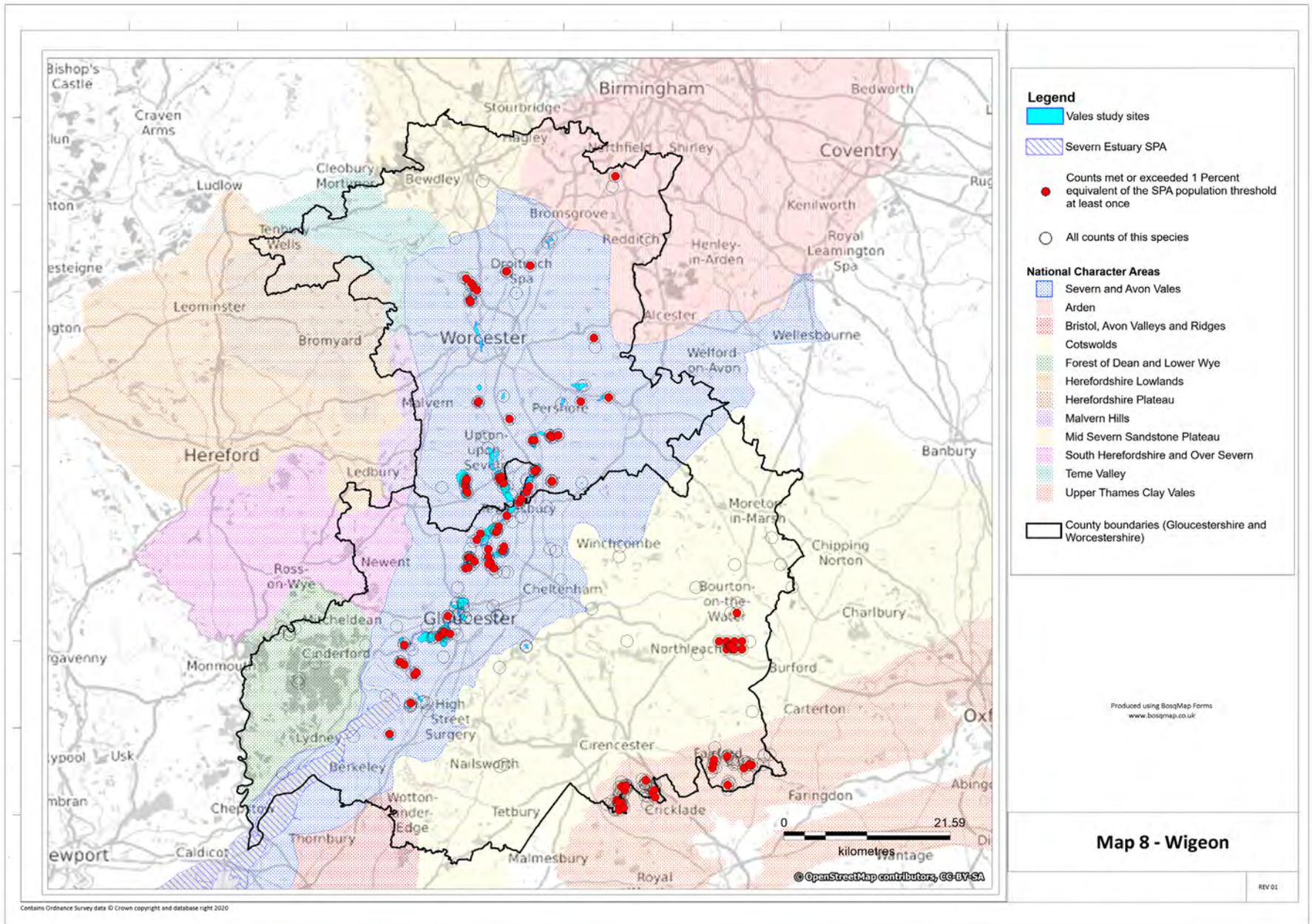


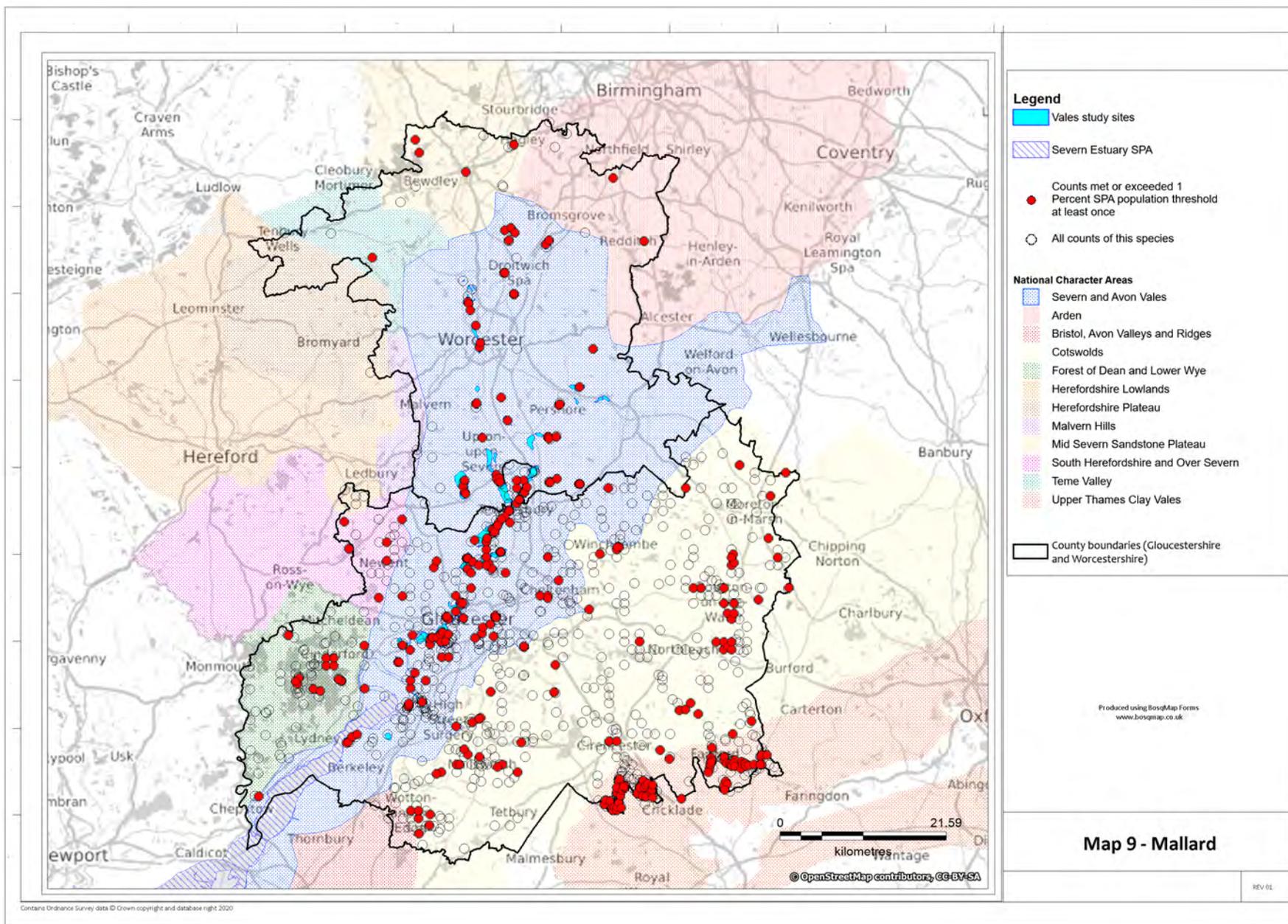


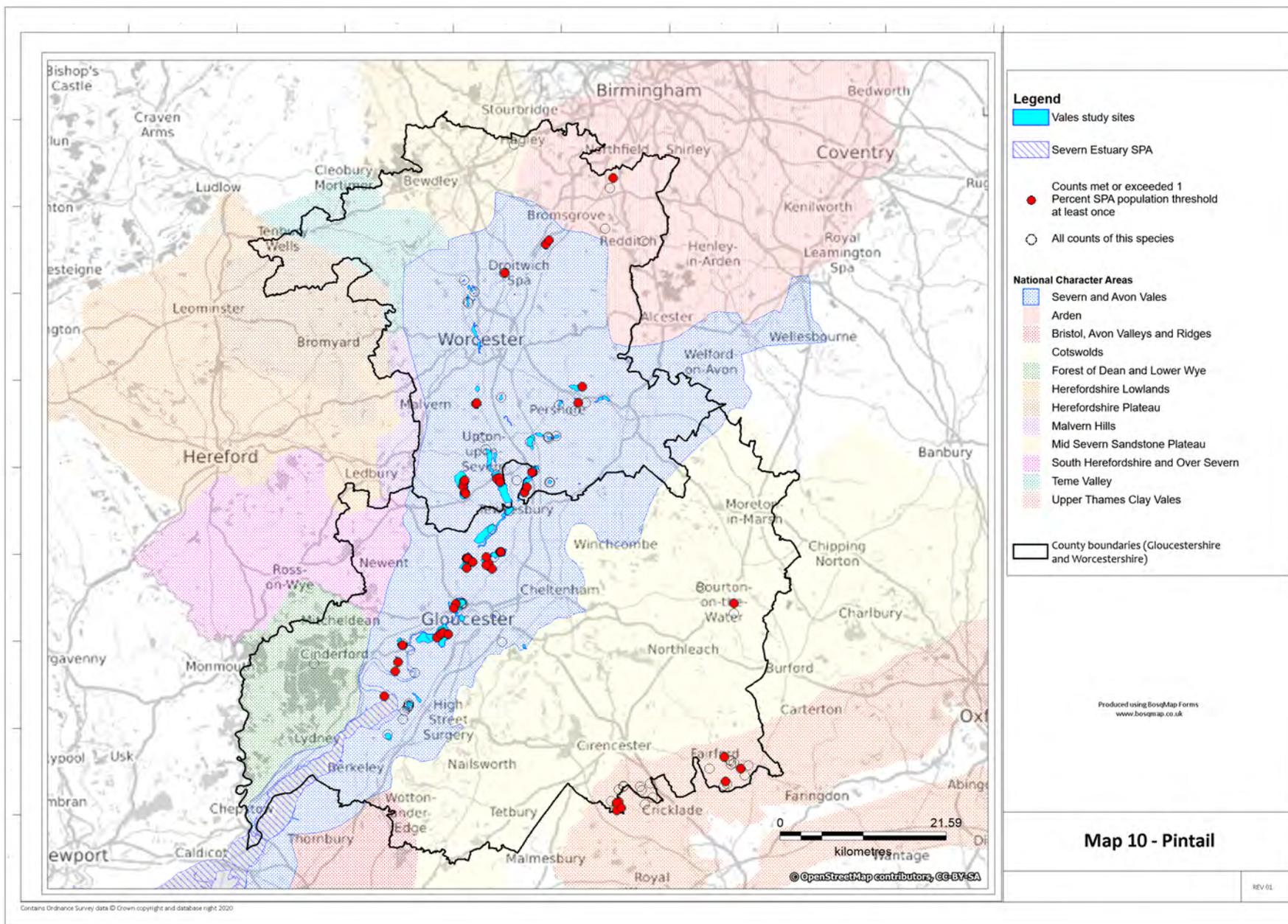


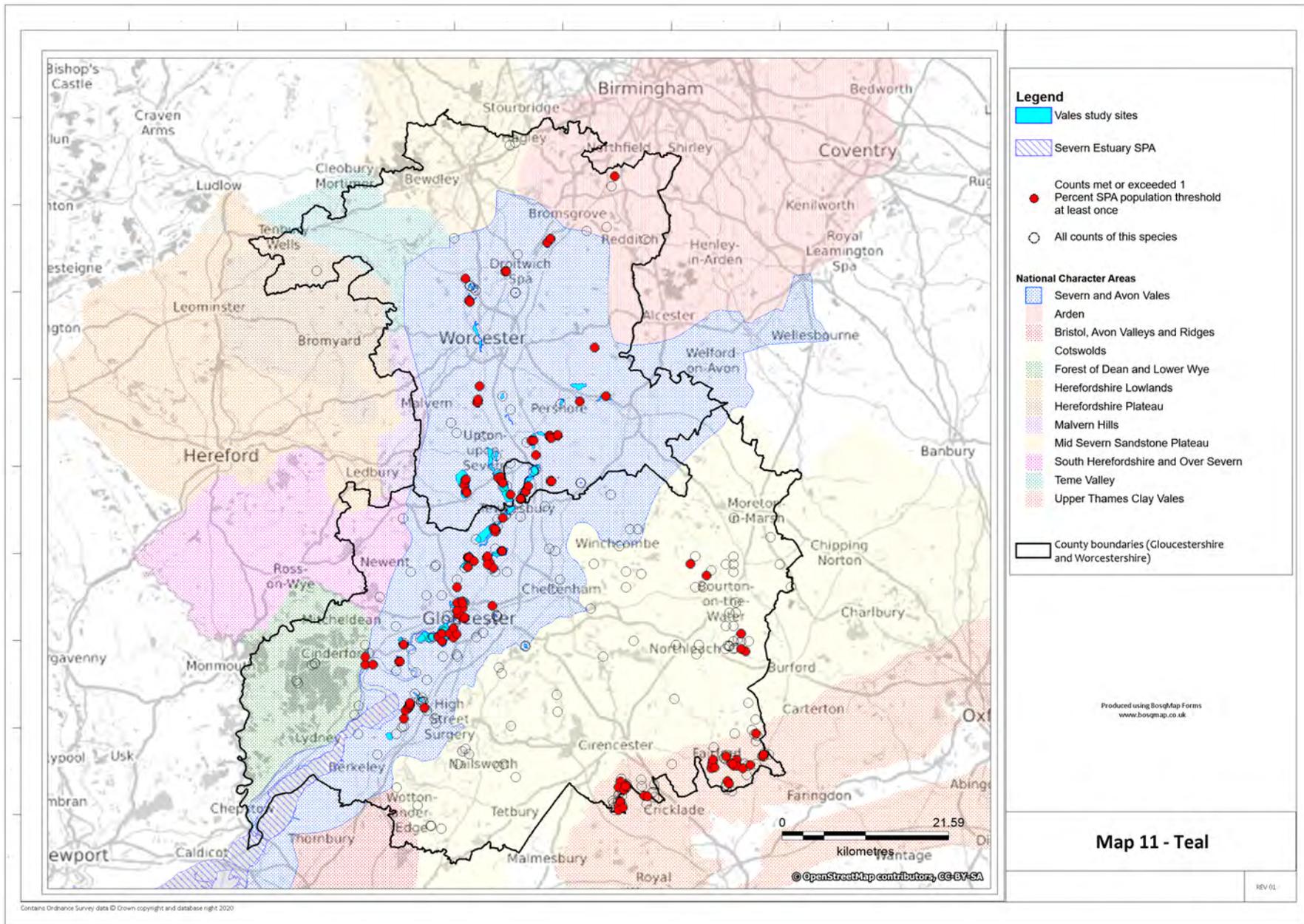


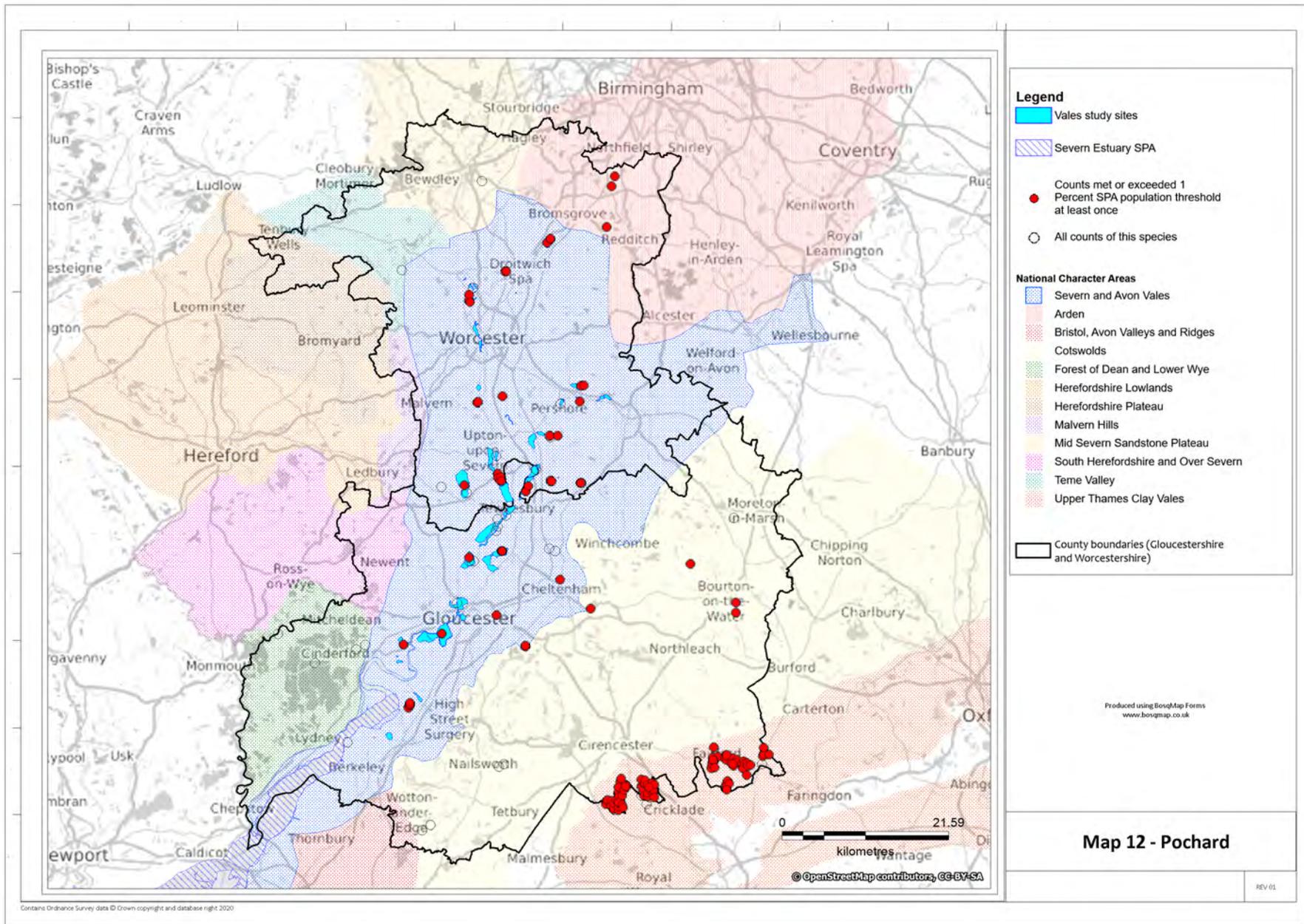


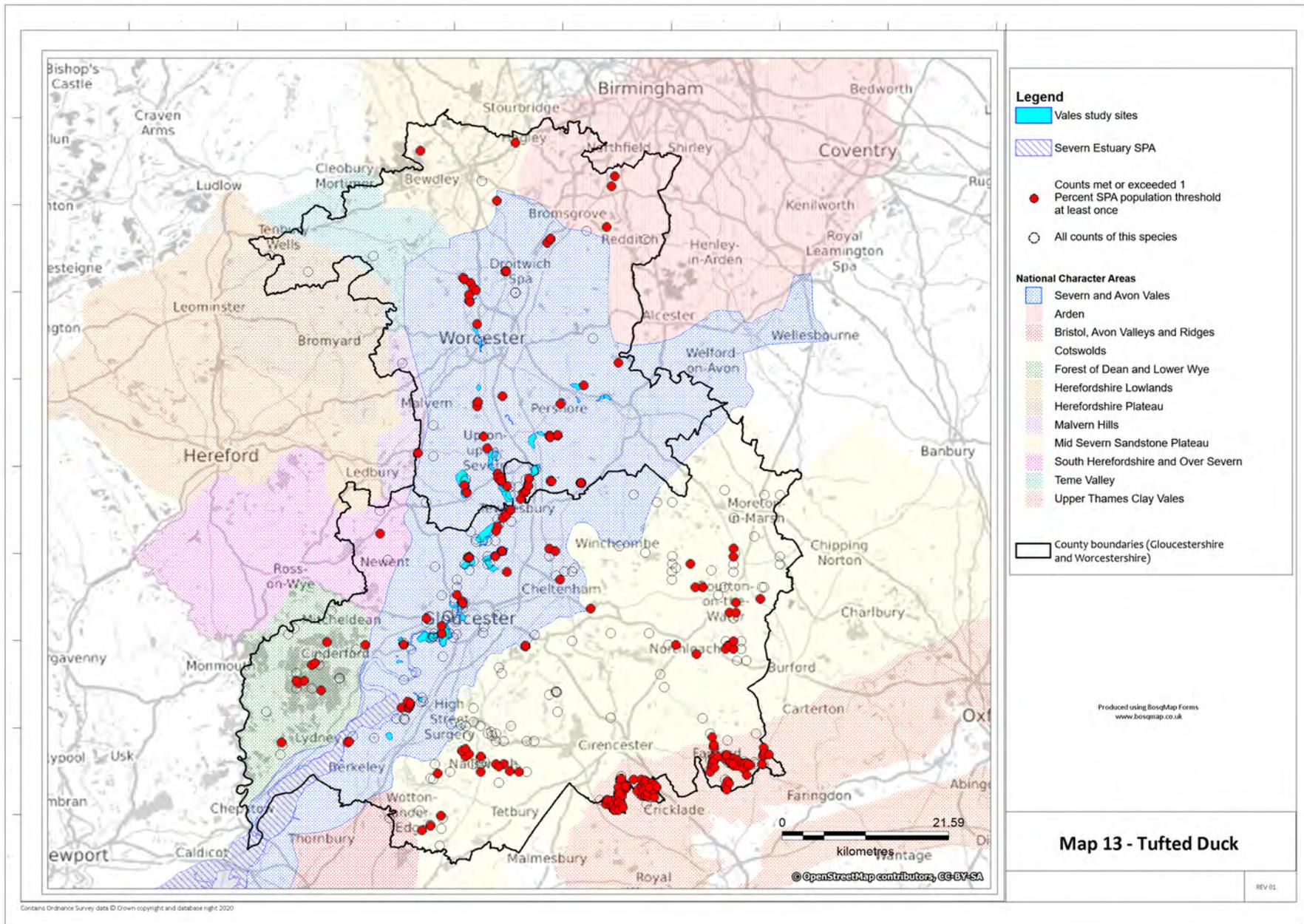


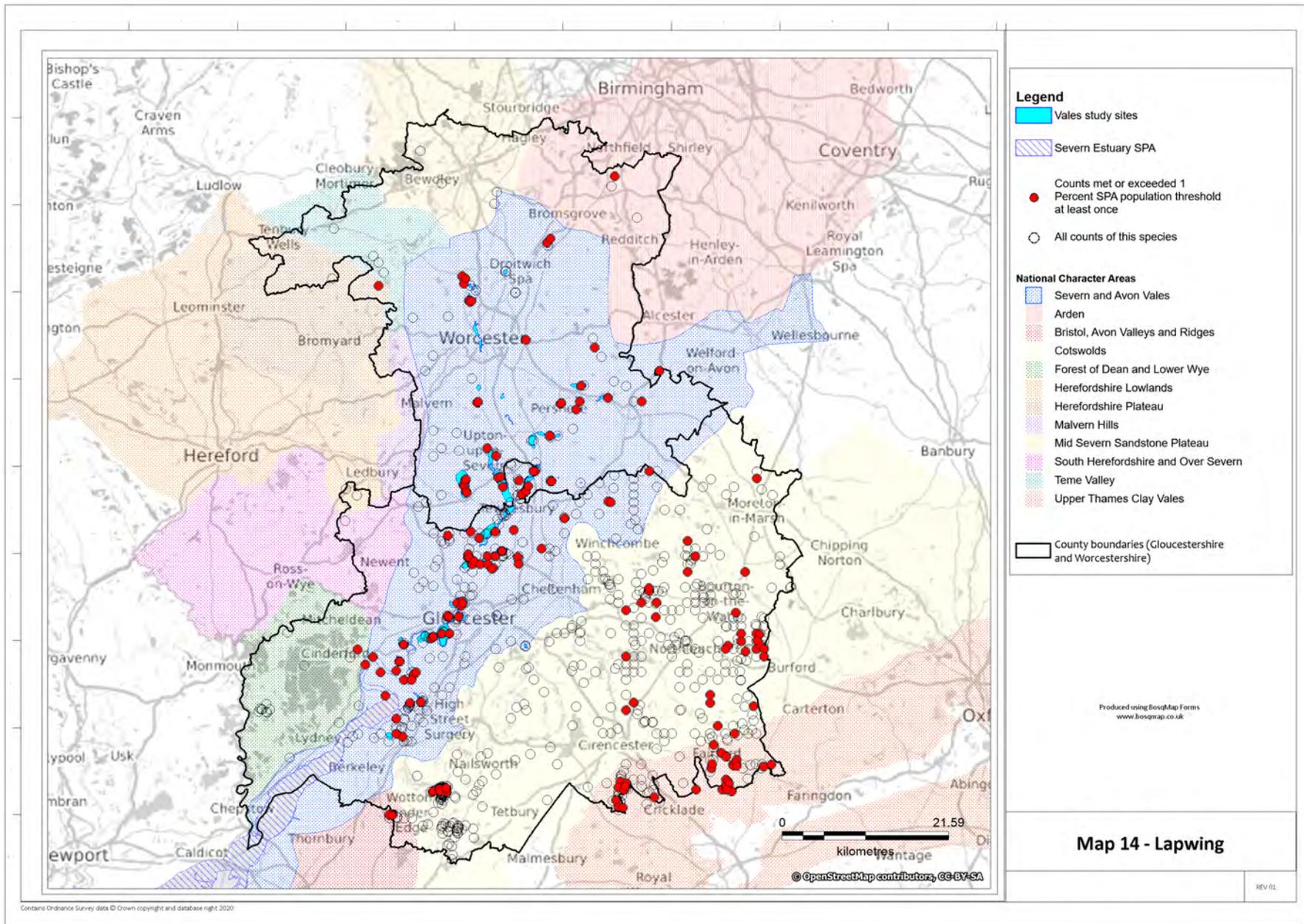


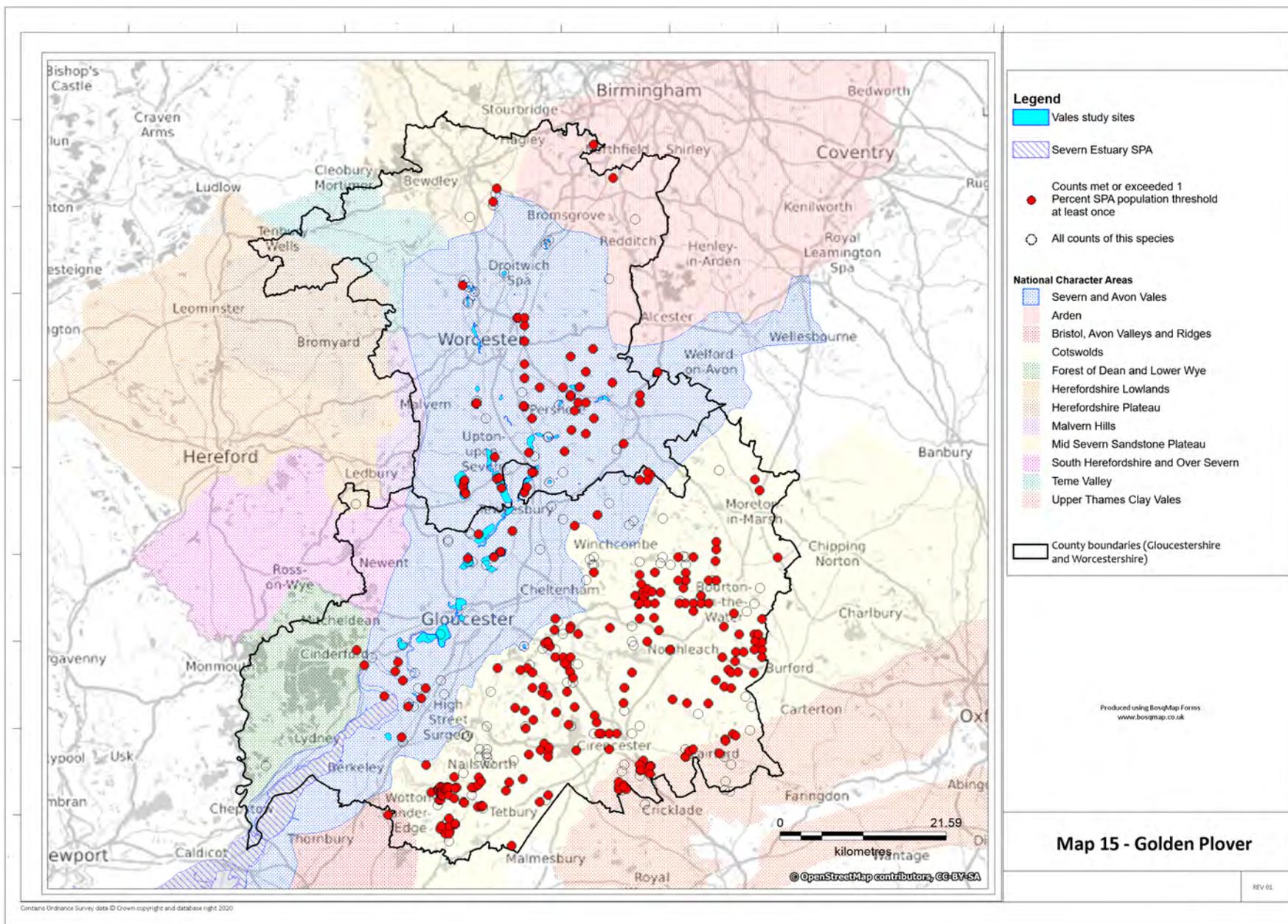


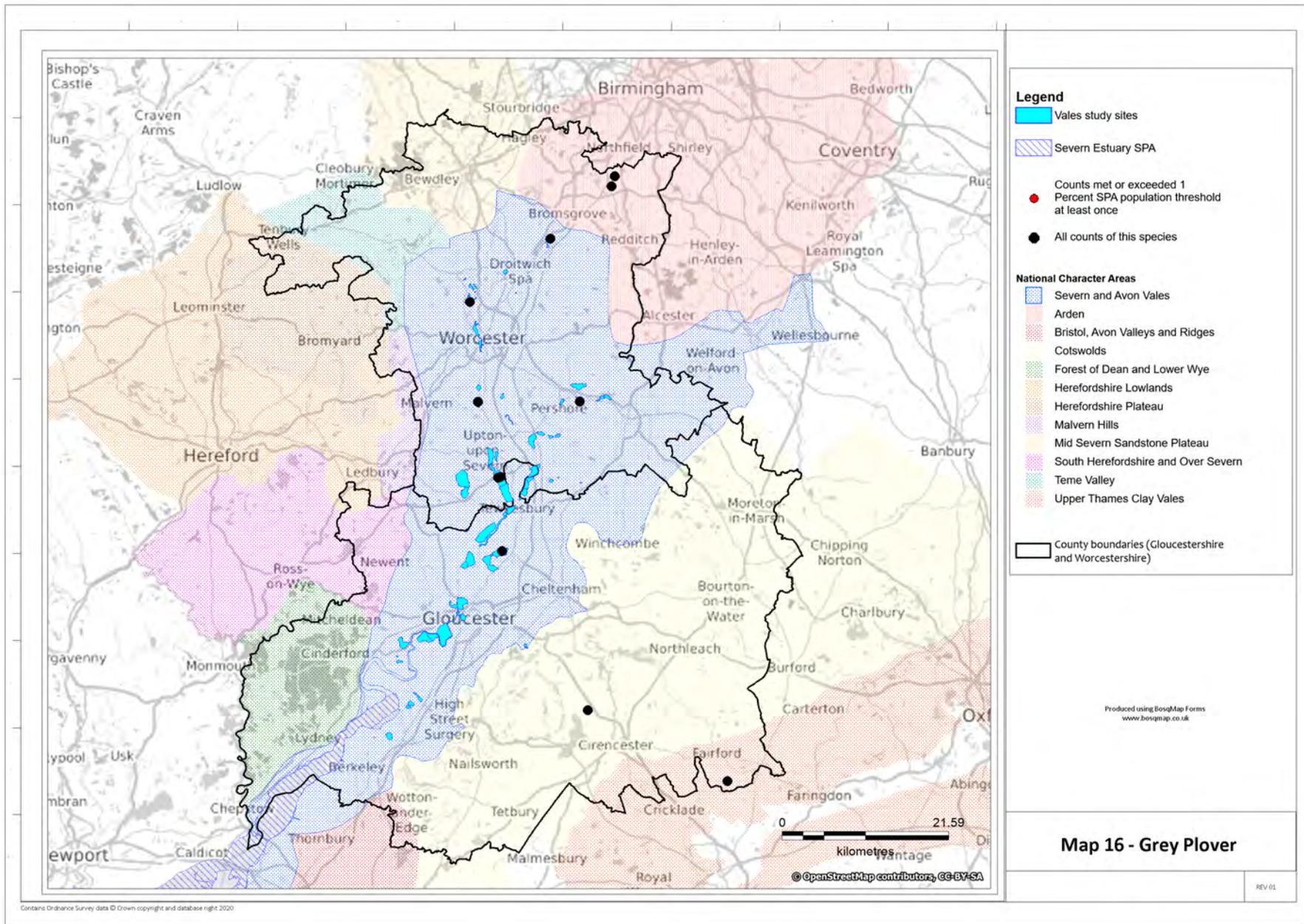


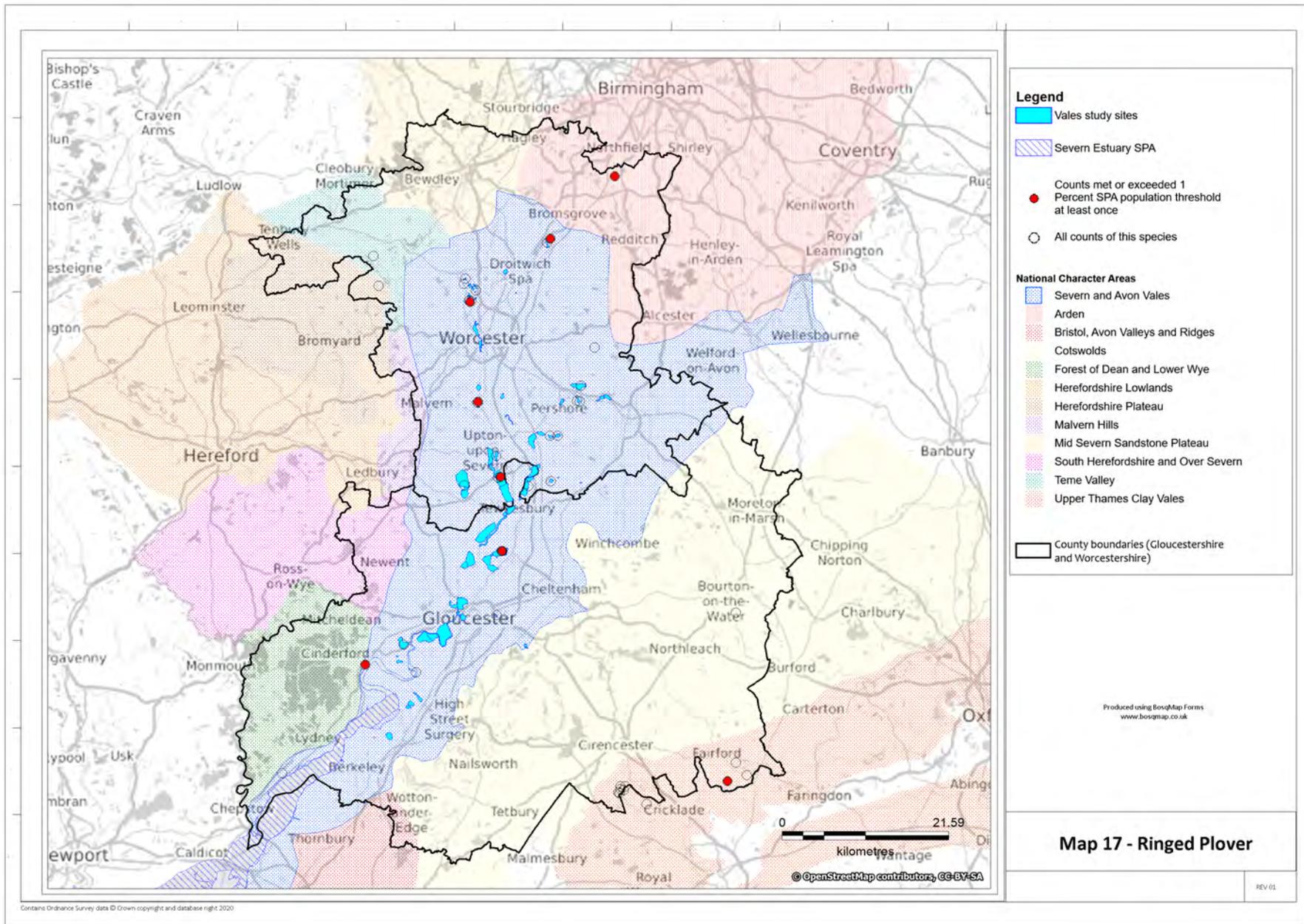


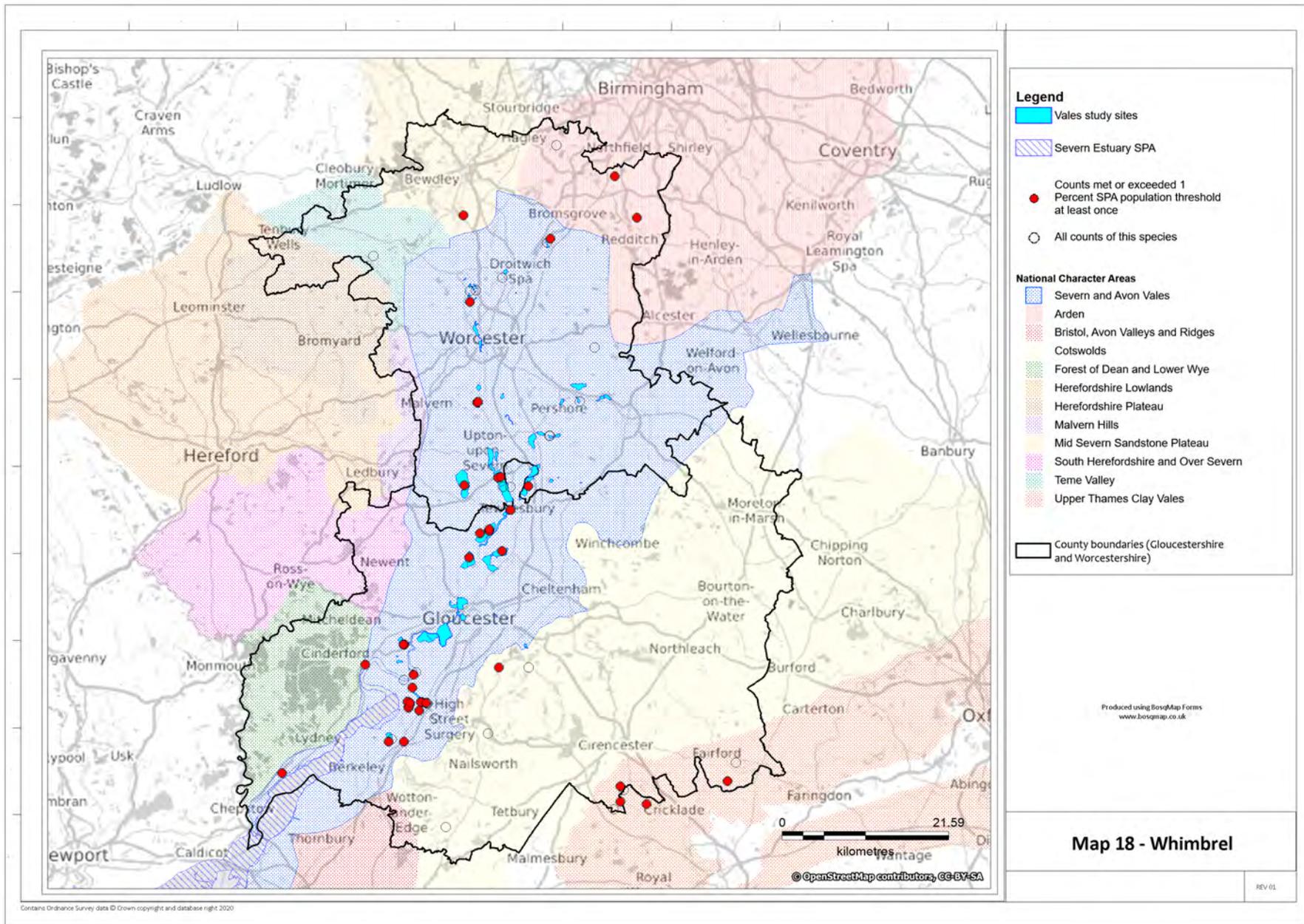


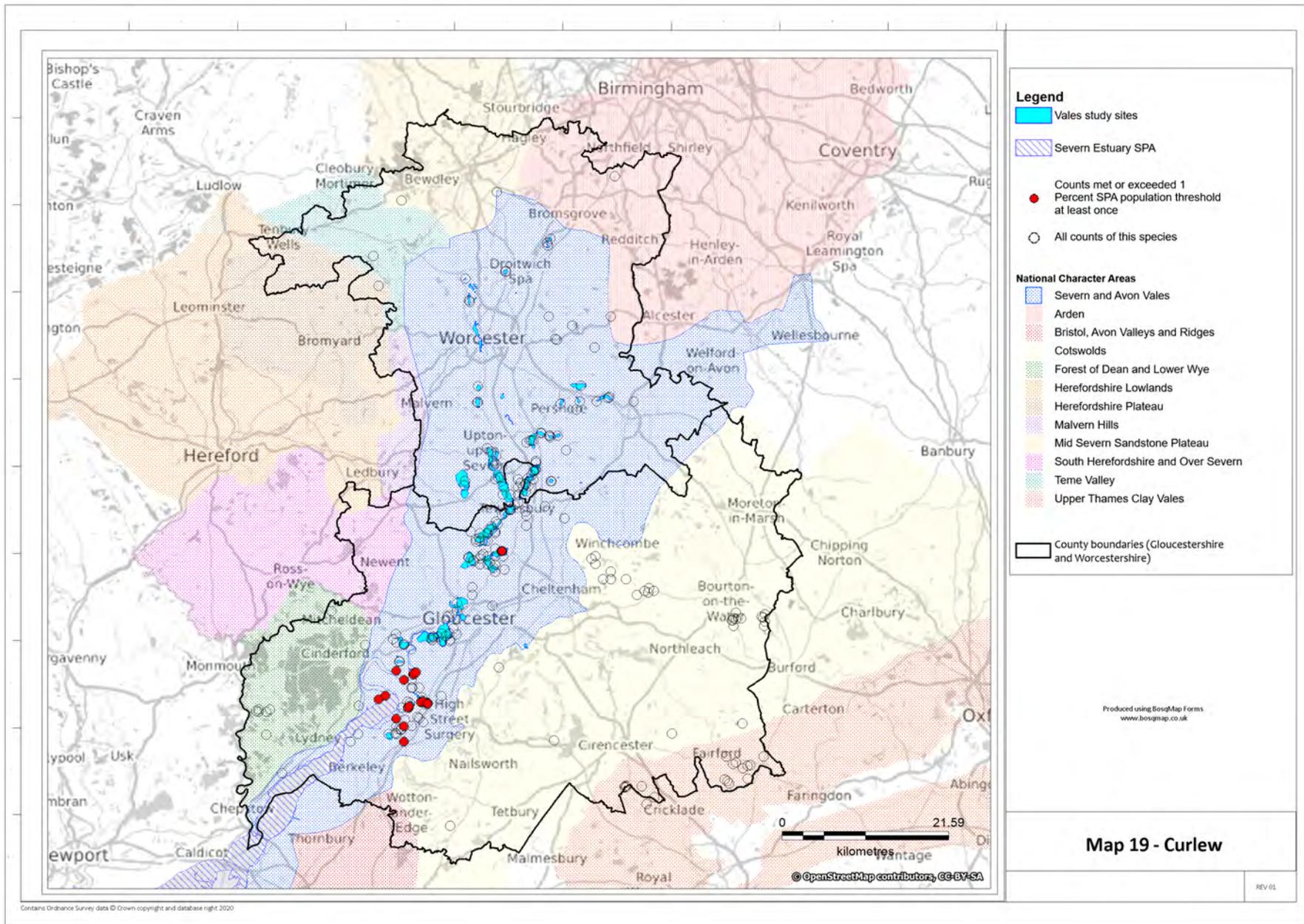


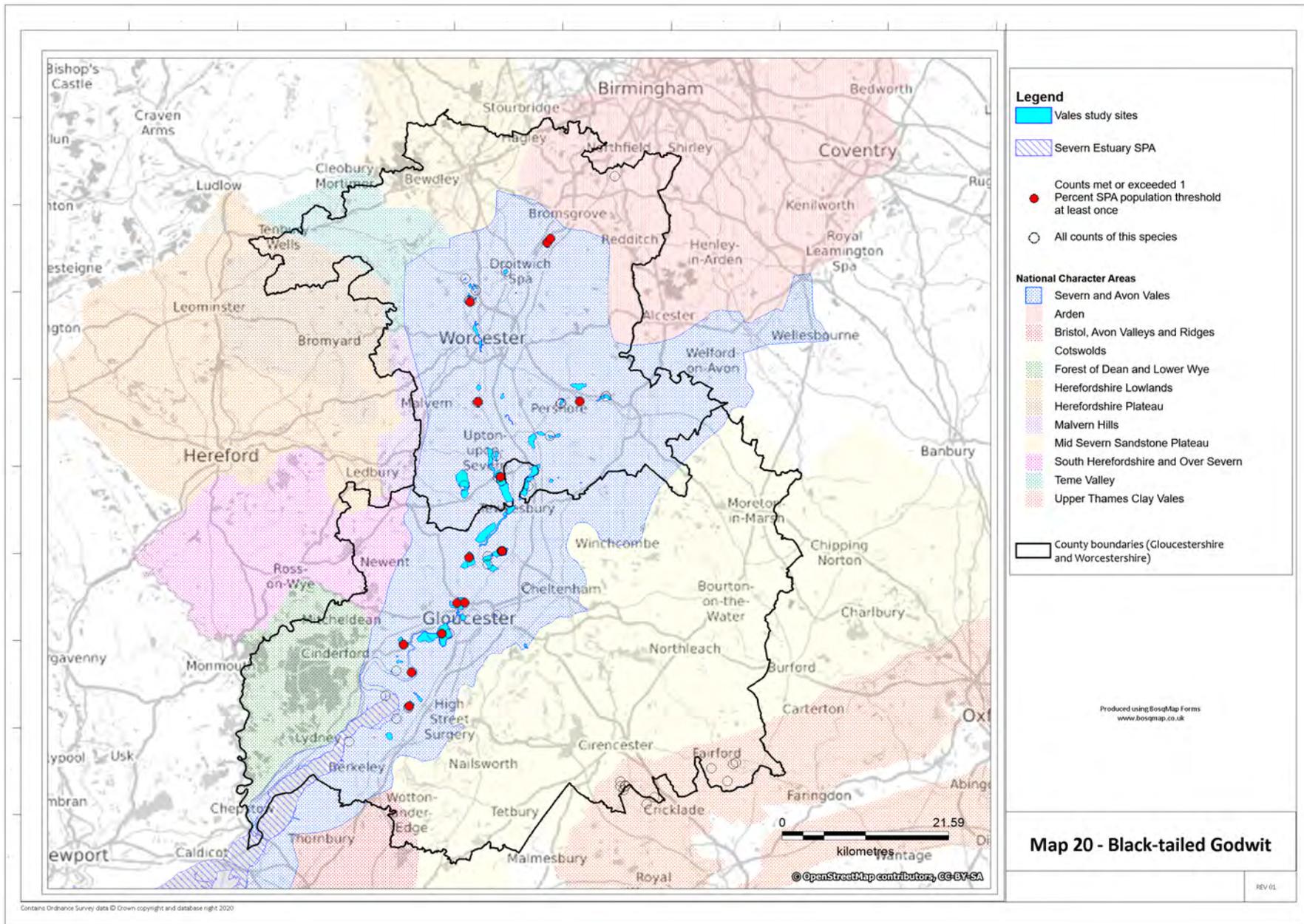


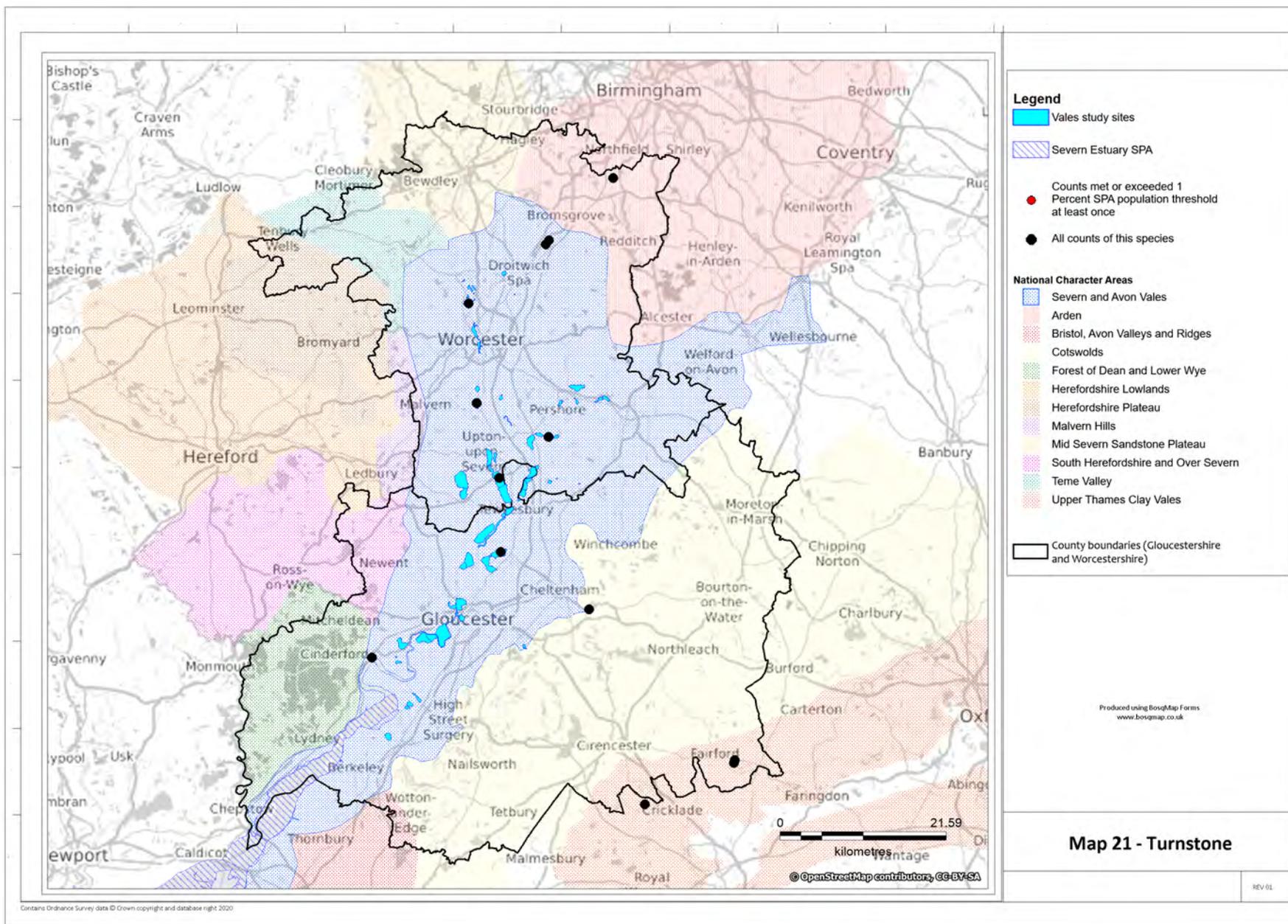


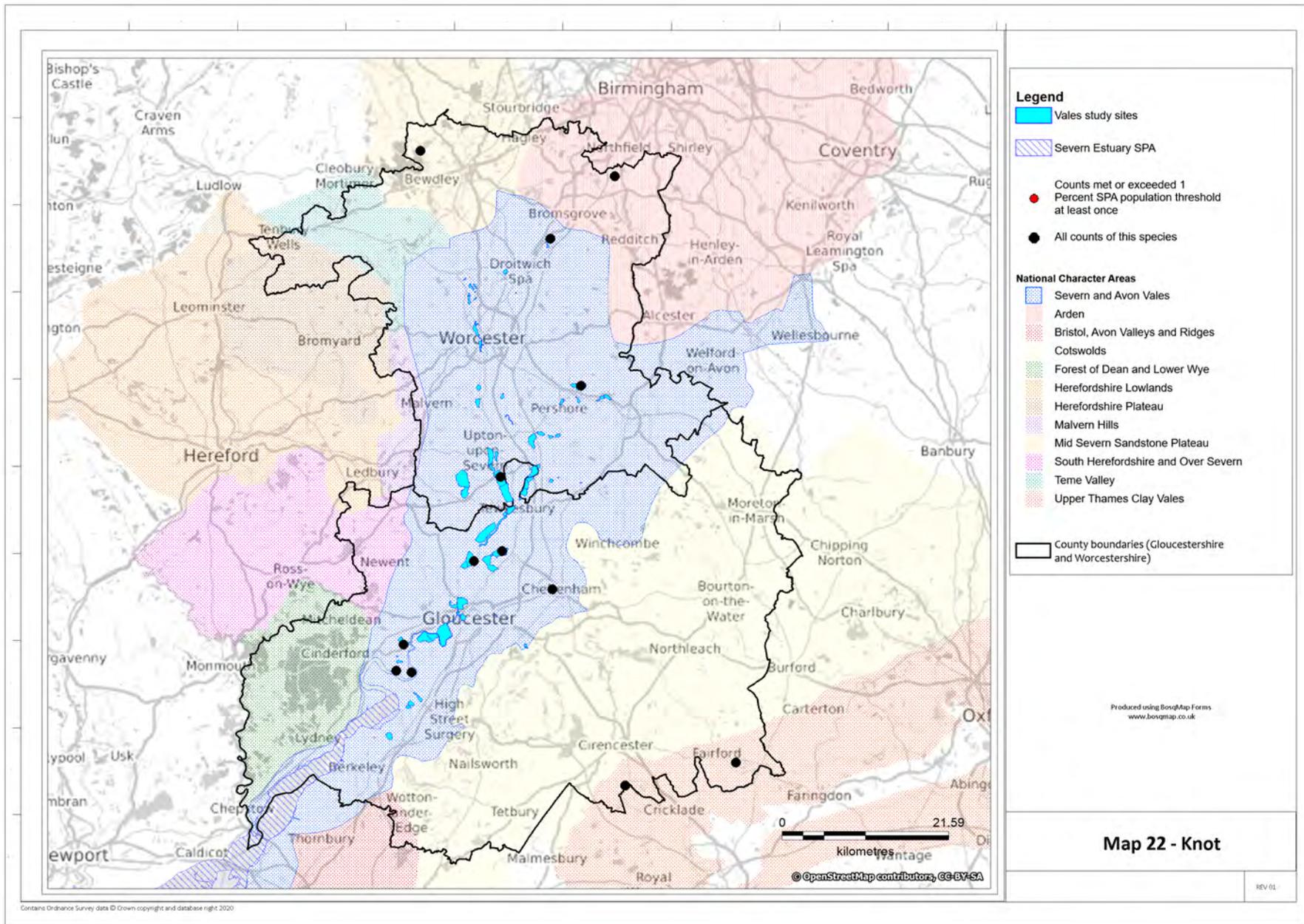


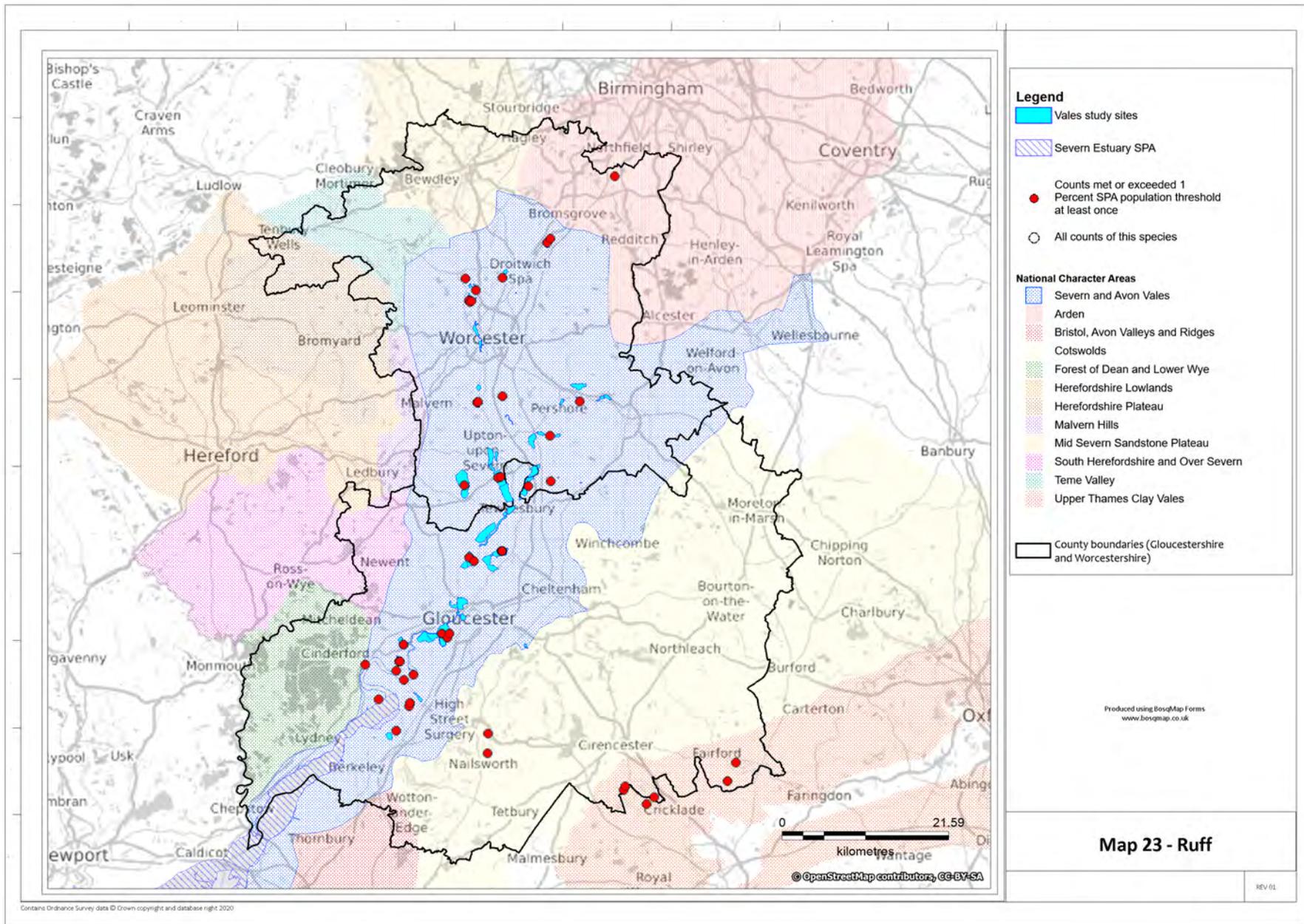


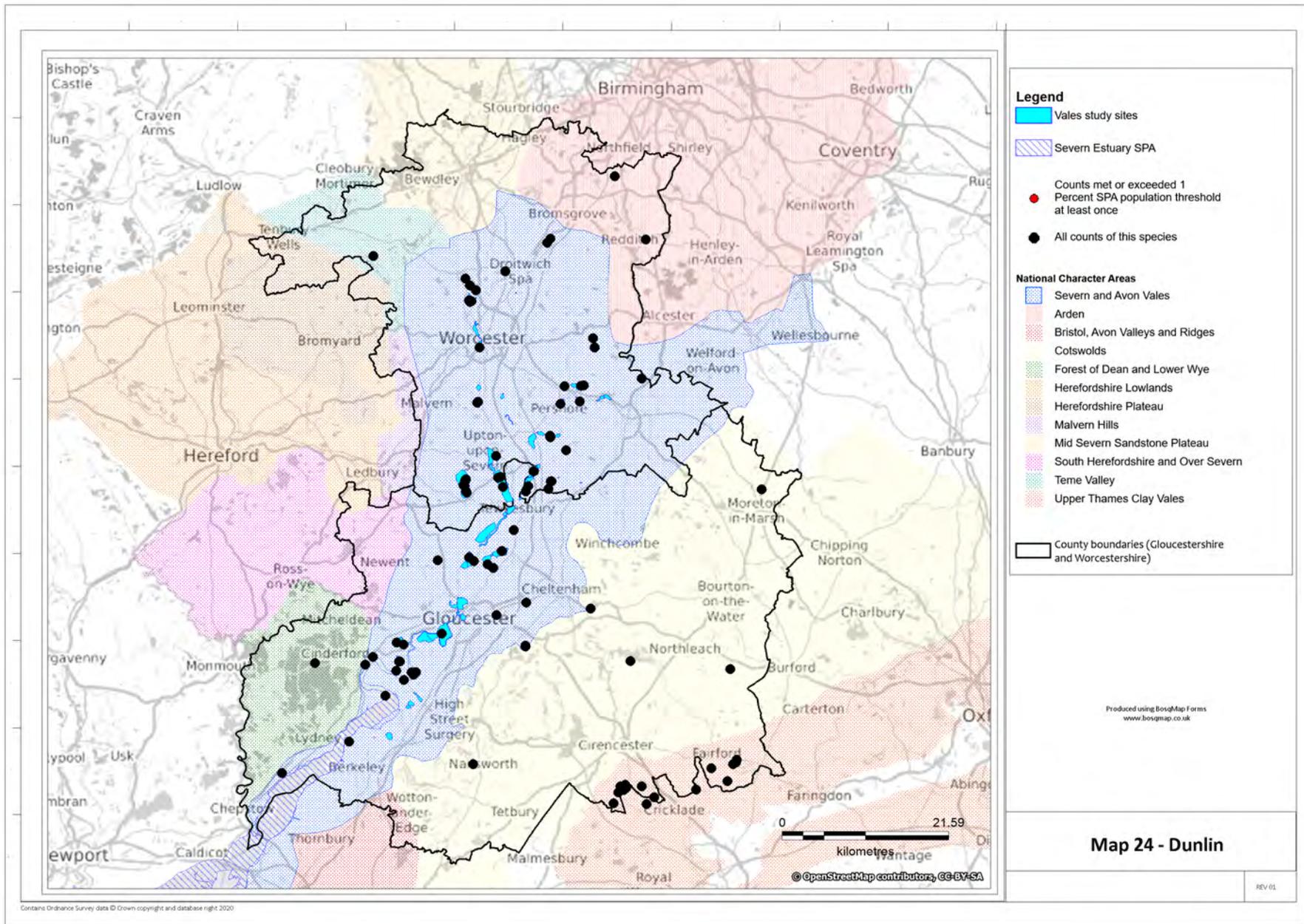


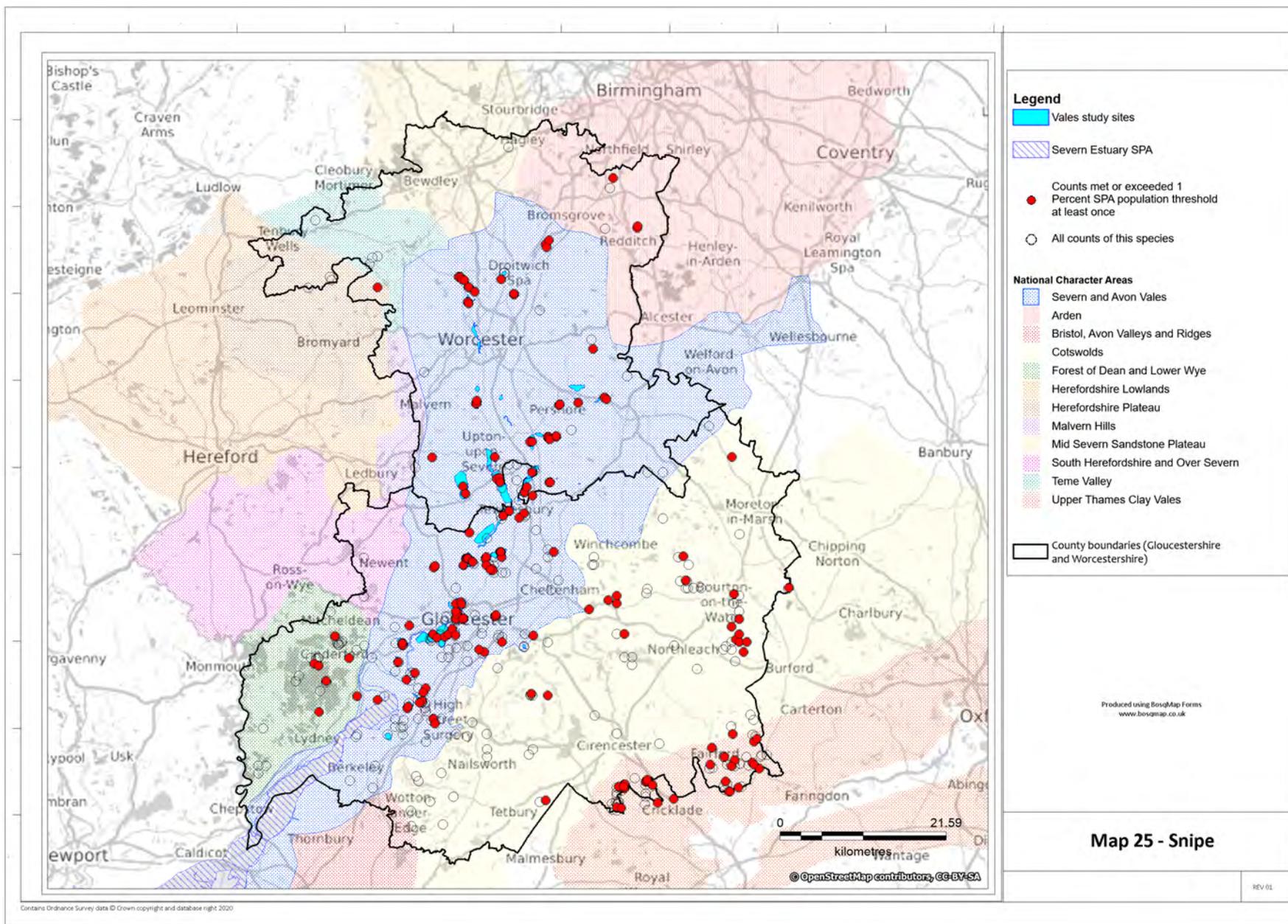


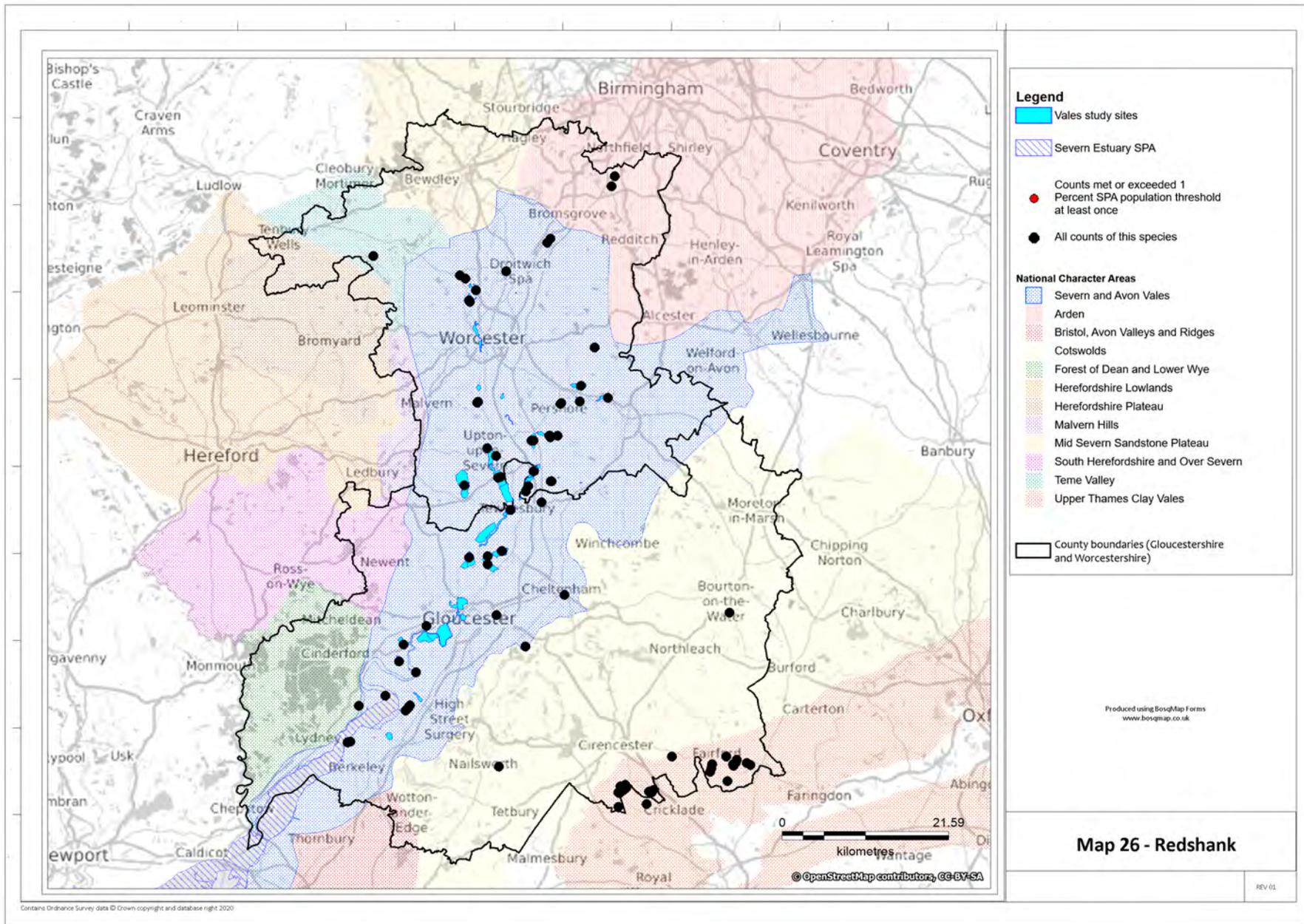


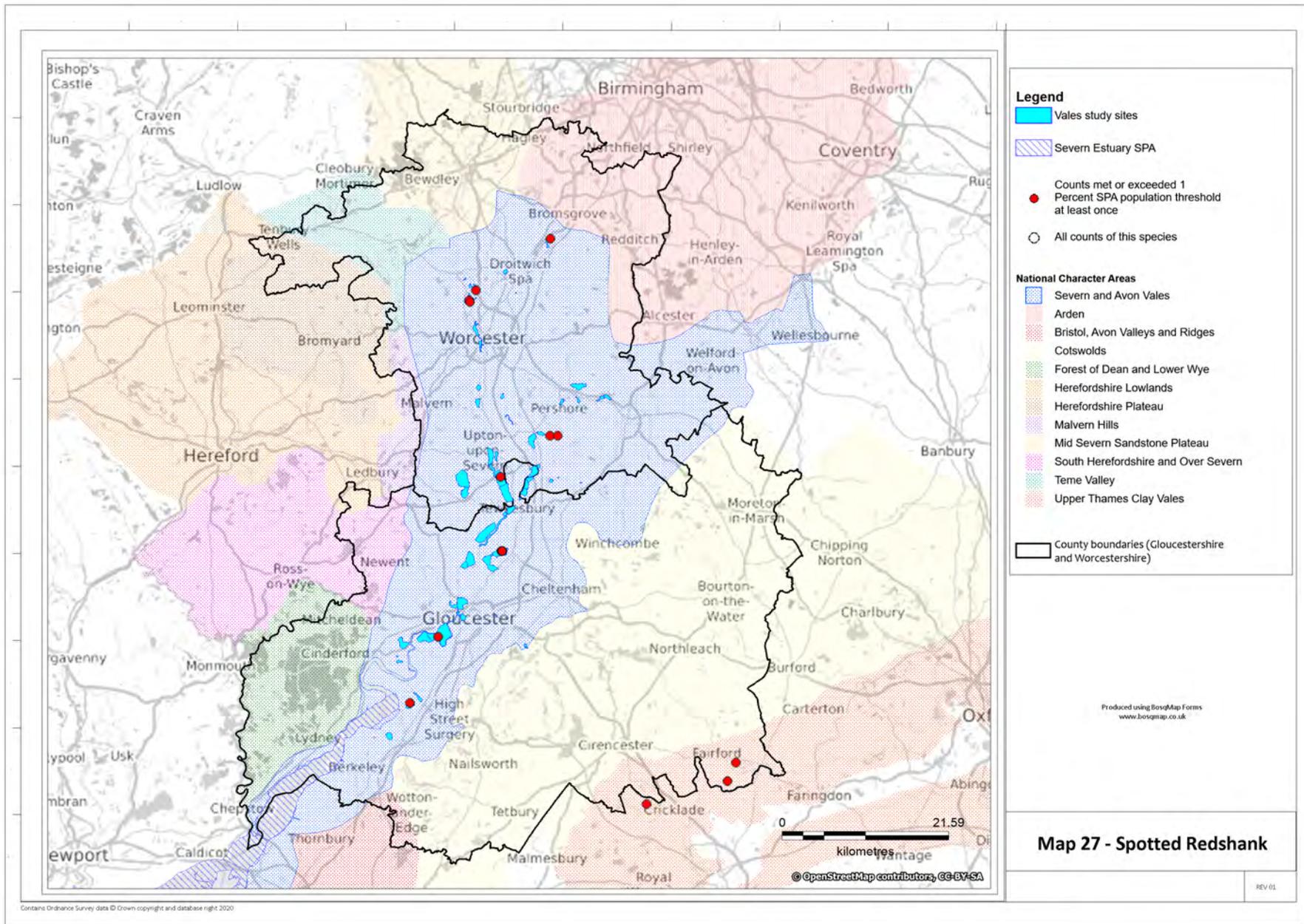












## **Appendix 3 – Evaluation of site importance to SPA Interest Species – full calculations**

This information is presented as per the explanation given in Section 4 of this report.

### Notes to accompany the following tables

**1% SPA:** The number of birds that would constitute the equivalent of 1% of the SPA population, as determined from the latest WiTUK report.

**% coverage:** Percentage of counting period in which monthly counts were provided, including counts of zero (WeBS counts only). For many species, the lack of a count can reliably be taken to indicate that birds were absent. However, this cannot be determined from casual counts.

**Reliability of assessment:** A measure of the reliability of the assessment based on % coverage. The reliability score for coverage was: low (1-24%), moderate (25-49%) and high (50% or above). If a species had never been recorded within the assessment period then scoring was noted as “not applicable” (N/A) because the species was assumed to be absent from the site.

**Total number of months present:** This is divided into seasons, with percentage of months present given for all seasons.

**Months present when 1% met or exceeded:** this is divided into seasons, giving number of months and a percentage of months present.

### **Importance:**

**High:** birds present 50% or more of counting months, in numbers at or above the 1% criterion.

**Mod (moderate):** birds present between 26 and 49% of counting months, in numbers at or above the 1% criterion.

**Low:** birds present 1-25% of counting months, in numbers at or above the 1% criterion.

**<1%:** Numbers of birds present never met or exceeded the 1% criterion.

**None:** No birds recorded within the last 10 years.

### **Abbreviations:**

Aut      autumn (July to October)

Win      winter (November to March)

Spr      spring (April to June)

15014 Horsbere Brook Flood Alleviation Area

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spr	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	6	0	3	3	6	0	7	13	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Shoveler	5	5	0	4	1	5	0	10	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Gadwall	2	2	0	0	2	2	0	0	8	0	0	2	2	0.0	0.0	8.3	<1%	<1%	low	low
Wigeon	79	43	1	21	1	23	3	51	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Mallard	24	82	24	37	19	80	75	90	79	11	18	1	30	34.4	43.9	4.2	mod	mod	low	high
Pintail	8	2	0	2	0	2	0	5	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Teal	50	47	6	28	4	38	19	68	17	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Pochard	3	2	0	2	0	2	0	5	0	0	1	0	1	0.0	2.4	0.0	<1%	low	<1%	low
Tufted Duck	9	2	1	1	0	2	3	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Lapwing	114	5	3	1	1	5	9	2	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	2	0	0	2	2	0	0	8	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Black-tailed Godwit	9	2	1	0	1	2	3	0	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	2	0	0	2	2	0	0	8	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Snipe	5	48	7	26	4	37	22	63	17	0	15	0	15	0.0	36.6	0.0	<1%	mod	<1%	mod
Redshank	58	2	1	1	0	2	3	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

15037 Alney Island

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shoveler	5	13	0	12	4	16	0	23	13	0	9	3	12	0.0	17.0	9.7	<1%	low	low	low
Gadwall	2	8	0	8	2	10	0	15	6	0	8	2	10	0.0	15.1	6.5	<1%	low	low	low
Wigeon	79	2	0	3	0	3	0	6	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Mallard	24	15	1	7	10	18	3	13	32	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Pintail	8	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Teal	50	25	0	24	7	31	0	45	23	0	15	0	15	0.0	28.3	0.0	<1%	mod	<1%	low
Pochard	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Tufted Duck	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Lapwing	114	2	0	2	0	2	0	4	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	<1%	low	low	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	<1%	low	low	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	<1%	low	<1%	N/A
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	14	0	15	2	17	0	28	6	0	5	0	5	0.0	9.4	0.0	<1%	mod	<1%	low
Redshank	58	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

15101 Witcombe Reservoir

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	69	0	0	2	2	0	0	7	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	68	0	5	1	6	0	9	3	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	high
Gadwall	2	70	1	9	0	10	3	17	0	0	7	0	7	0.0	13.2	0.0	<1%	low	<1%	high
Wigeon	79	69	3	4	0	7	8	8	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Mallard	24	86	33	49	23	105	83	92	77	20	25	3	48	50.0	47.2	10.0	high	mod	low	high
Pintail	8	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Teal	50	76	14	44	2	60	35	83	7	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Pochard	3	76	16	24	2	42	40	45	7	5	12	0	17	12.5	22.6	0.0	low	low	<1%	high
Tufted Duck	9	90	36	51	24	111	90	96	80	31	40	17	88	77.5	75.5	56.7	high	high	high	high
Lapwing	114	69	0	3	0	3	0	6	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Golden Plover	33	68	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	69	1	1	2	4	3	2	7	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	68	2	3	0	5	5	6	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Redshank	58	2	1	1	1	3	3	2	3	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

15201 Frampton Pools

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
			Pink-footed Goose	1	86	0	2	1	3	0	4	3	0	2	1	3	0.0	3.8	3.2	
European WF Goose	1	1	0	1	0	1	0	2	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Bewick's Swan	1	2	0	2	0	2	0	4	0	0	2	0	2	0.0	3.8	0.0	<1%	low	<1%	low
Whooper Swan	1	85	2	3	0	5	5	6	0	2	3	0	5	5.0	5.7	0.0	low	low	<1%	high
Shelduck	55	87	0	6	15	21	0	11	48	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	90	12	37	6	55	30	70	19	6	30	2	38	15.0	56.6	6.5	low	high	low	high
Gadwall	2	94	17	53	11	81	43	100	35	17	52	11	80	42.5	98.1	35.5	mod	high	mod	high
Wigeon	79	90	11	19	0	30	28	36	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	high
Mallard	24	99	40	53	30	123	100	100	97	18	29	1	48	45.0	54.7	3.2	mod	high	low	high
Pintail	8	86	7	5	0	12	18	9	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Teal	50	90	19	37	3	59	48	70	10	3	7	0	10	7.5	13.2	0.0	low	low	<1%	high
Pochard	3	96	13	41	9	63	33	77	29	6	36	1	43	15.0	67.9	3.2	low	high	low	high
Tufted Duck	9	98	36	53	27	116	90	100	87	29	53	25	107	72.5	####	80.6	high	high	high	high
Lapwing	114	88	3	11	6	20	8	21	19	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	high
Golden Plover	33	3	0	4	0	4	0	8	0	0	2	0	2	0.0	3.8	0.0	<1%	low	<1%	low
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	7	2	0	7	9	5	0	23	1	0	7	8	2.5	0.0	22.6	low	<1%	low	low
Curlew	34	21	11	9	6	26	28	17	19	0	1	1	2	0.0	1.9	3.2	<1%	low	low	low
Black-tailed Godwit	9	6	4	2	1	7	10	4	3	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	2	3	0	0	3	8	0	0	3	0	0	3	7.5	0.0	0.0	low	<1%	<1%	low
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	8	2	8	0	10	5	15	0	1	5	0	6	2.5	9.4	0.0	low	low	<1%	low
Redshank	58	85	1	2	4	7	3	4	13	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Spotted Redshank	1	1	1	0	0	1	3	0	0	1	0	0	1	2.5	0.0	0.0	low	<1%	<1%	low

15301 Walmore Common

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	56	0	12	0	12	0	23	0	0	12	0	12	0.0	22.6	0.0	<1%	low	<1%	high
Whooper Swan	1	55	1	27	1	29	3	51	3	1	27	1	29	2.5	50.9	3.2	low	high	low	high
Shelduck	55	73	2	37	22	61	5	70	71	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	54	3	30	1	34	8	57	3	1	19	1	21	2.5	35.8	3.2	low	mod	low	high
Gadwall	2	56	2	27	4	33	5	51	13	2	26	4	32	5.0	49.1	12.9	low	high	low	high
Wigeon	79	57	7	42	0	49	18	79	0	1	21	0	22	2.5	39.6	0.0	low	mod	<1%	high
Mallard	24	69	21	53	6	80	53	100	19	7	28	2	37	17.5	52.8	6.5	low	high	low	high
Pintail	8	54	2	25	0	27	5	47	0	0	16	0	16	0.0	30.2	0.0	<1%	mod	<1%	high
Teal	50	71	17	53	11	81	43	100	35	3	42	2	47	7.5	79.2	6.5	low	high	low	high
Pochard	3	52	0	2	0	2	0	4	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	high
Tufted Duck	9	55	3	3	2	8	8	6	6	0	0	1	1	0.0	0.0	3.2	<1%	<1%	low	high
Lapwing	114	73	11	36	15	62	28	68	48	1	12	0	13	2.5	22.6	0.0	low	low	<1%	high
Golden Plover	33	54	1	2	1	4	3	4	3	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	56	0	0	5	5	0	0	16	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Whimbrel	2	6	0	0	7	7	0	0	23	0	0	6	6	0.0	0.0	19.4	<1%	<1%	low	low
Curlew	34	68	4	11	15	30	10	21	48	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	54	1	6	2	9	3	11	6	1	2	1	4	2.5	3.8	3.2	low	low	low	high
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	1	1	0	0	1	3	0	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Ruff	1	4	2	3	0	5	5	6	0	2	3	0	5	5.0	5.7	0.0	low	low	<1%	low
Dunlin	302	56	1	11	5	17	3	21	16	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	78	29	49	11	89	73	92	35	15	38	5	58	37.5	71.7	16.1	mod	high	low	high
Redshank	58	6	1	4	2	7	3	8	6	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

15302 River Frome – Wheatenhurst

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shoveler	5	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Gadwall	2	1	0	1	0	1	0	2	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Wigeon	79	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Mallard	24	6	0	5	2	7	0	10	7	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Pintail	8	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Teal	50	2	0	3	0	3	0	6	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Pochard	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Tufted Duck	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Lapwing	114	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Redshank	58	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

15303 Minsterworth & Corn Ham

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	2	0	2	0	2	0	4	0	0	2	0	2	0.0	3.8	0.0	<1%	low	<1%	low
Whooper Swan	1	7	1	5	0	6	3	9	0	1	5	0	6	2.5	9.4	0.0	low	low	<1%	low
Shelduck	55	25	0	20	10	30	0	38	33	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	mod
Shoveler	5	15	0	15	1	16	0	28	3	0	12	1	13	0.0	22.6	3.3	<1%	low	low	low
Gadwall	2	12	0	14	1	15	0	26	3	0	14	1	15	0.0	26.4	3.3	<1%	mod	low	low
Wigeon	79	18	1	18	2	21	3	34	7	0	15	0	15	0.0	28.3	0.0	<1%	mod	<1%	low
Mallard	24	15	3	14	1	18	8	26	3	1	8	0	9	2.5	15.1	0.0	low	low	<1%	low
Pintail	8	11	0	12	0	12	0	23	0	0	11	0	11	0.0	20.8	0.0	<1%	low	<1%	low
Teal	50	18	1	20	0	21	3	38	0	0	9	0	9	0.0	17.0	0.0	<1%	low	<1%	low
Pochard	3	2	0	2	0	2	0	4	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Tufted Duck	9	6	0	4	3	7	0	8	10	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Lapwing	114	11	0	9	2	11	0	17	7	0	6	0	6	0.0	11.3	0.0	<1%	low	<1%	low
Golden Plover	33	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	6	0	2	5	7	0	4	17	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Black-tailed Godwit	9	2	0	2	1	3	0	4	3	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	2	0	3	0	3	0	6	0	0	3	0	3	0.0	5.7	0.0	<1%	low	<1%	low
Dunlin	302	2	0	3	0	3	0	6	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Snipe	5	11	1	10	2	13	3	19	7	0	3	0	3	0.0	5.7	0.0	<1%	low	<1%	low
Redshank	58	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

15304 Rodley and Wilmer Commons (Wilmore Common)

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	77	0	6	0	6	0	12	0	0	6	0	6	0.0	11.5	0.0	<1%	low	<1%	high
Whooper Swan	1	77	0	4	0	4	0	8	0	0	4	0	4	0.0	7.7	0.0	<1%	low	<1%	high
Shelduck	55	80	0	31	9	40	0	60	29	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	high
Shoveler	5	77	0	8	0	8	0	15	0	0	6	0	6	0.0	11.5	0.0	<1%	low	<1%	high
Gadwall	2	78	0	11	0	11	0	21	0	0	11	0	11	0.0	21.2	0.0	<1%	low	<1%	high
Wigeon	79	77	1	13	0	14	3	25	0	0	8	0	8	0.0	15.4	0.0	<1%	low	<1%	high
Mallard	24	80	6	32	12	50	15	62	39	3	8	0	11	7.5	15.4	0.0	low	low	<1%	high
Pintail	8	3	0	4	0	4	0	8	0	0	2	0	2	0.0	3.8	0.0	<1%	low	<1%	low
Teal	50	78	0	15	0	15	0	29	0	0	9	0	9	0.0	17.3	0.0	<1%	low	<1%	high
Pochard	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Tufted Duck	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Lapwing	114	77	1	22	4	27	3	42	13	0	7	0	7	0.0	13.5	0.0	<1%	low	<1%	high
Golden Plover	33	1	0	1	0	1	0	2	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	78	1	4	0	5	3	8	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	77	0	1	0	1	0	2	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	high
Dunlin	302	77	0	3	0	3	0	6	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	77	0	4	0	4	0	8	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	high
Redshank	58	77	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	high
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

15305 Mitton (Tewkesbury)

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shoveler	5	32	0	7	0	7	0	41	0	0	6	0	6	0.0	35.3	0.0	<1%	mod	<1%	mod
Gadwall	2	3	0	1	0	1	0	6	0	0	1	0	1	0.0	5.9	0.0	<1%	low	<1%	low
Wigeon	79	32	0	9	0	9	0	53	0	0	7	0	7	0.0	41.2	0.0	<1%	mod	<1%	mod
Mallard	24	29	2	3	0	5	17	18	0	2	1	0	3	16.7	5.9	0.0	low	low	<1%	mod
Pintail	8	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Teal	50	32	1	8	0	9	8	47	0	0	6	0	6	0.0	35.3	0.0	<1%	mod	<1%	mod
Pochard	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Tufted Duck	9	21	0	1	0	1	0	6	0	0	1	0	1	0.0	5.9	0.0	<1%	low	<1%	low
Lapwing	114	29	1	3	0	4	8	18	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	21	0	1	0	1	0	6	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Redshank	58	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

15311 Elmore Marsh

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	21	0	2	3	5	0	4	10	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Shoveler	5	19	0	2	0	2	0	4	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Gadwall	2	3	0	3	1	4	0	6	3	0	3	1	4	0.0	5.8	3.3	<1%	low	low	low
Wigeon	79	20	0	4	0	4	0	8	0	0	2	0	2	0.0	3.8	0.0	<1%	low	<1%	low
Mallard	24	21	7	15	4	26	18	29	13	0	6	0	6	0.0	11.5	0.0	<1%	low	<1%	low
Pintail	8	2	0	3	0	3	0	6	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Teal	50	20	0	6	0	6	0	12	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Pochard	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Tufted Duck	9	20	1	3	0	4	3	6	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Lapwing	114	18	0	5	3	8	0	10	10	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	21	0	1	5	6	0	2	17	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	19	1	5	2	8	3	10	7	1	1	1	3	2.5	1.9	3.3	low	low	low	low
Redshank	58	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Spotted Redshank	1	1	0	1	0	1	0	2	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low

15319 River Severn - Gloucester to Maisemore

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	50	0	1	0	1	0	2	0	0	1	0	1	0.0	2.0	0.0	<1%	low	<1%	high
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	51	0	2	1	3	0	4	3	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	51	9	22	1	32	23	44	3	7	19	0	26	17.5	38.0	0.0	low	mod	<1%	high
Gadwall	2	57	17	34	3	54	43	68	10	16	34	3	53	40.0	68.0	9.7	mod	high	low	high
Wigeon	79	50	8	19	0	27	20	38	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Mallard	24	58	20	47	3	70	50	94	10	6	13	0	19	15.0	26.0	0.0	low	mod	<1%	high
Pintail	8	51	0	3	1	4	0	6	3	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Teal	50	56	15	41	3	59	38	82	10	0	7	0	7	0.0	14.0	0.0	<1%	low	<1%	high
Pochard	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Tufted Duck	9	59	4	7	5	16	10	14	16	1	0	1	2	2.5	0.0	3.2	low	<1%	low	high
Lapwing	114	53	0	5	1	6	0	10	3	0	2	0	2	0.0	4.0	0.0	<1%	low	<1%	high
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Black-tailed Godwit	9	1	0	0	1	1	0	0	3	0	0	1	1	0.0	0.0	3.2	<1%	<1%	low	low
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	50	0	3	0	3	0	6	0	0	1	0	1	0.0	2.0	0.0	<1%	low	<1%	high
Redshank	58	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

15321 Coombe Hill Meadows

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	60	0	1	1	2	0	2	3	0	1	1	2	0.0	1.9	3.3	<1%	low	low	high
European WF Goose	1	3	1	3	0	4	3	6	0	1	3	0	4	2.5	5.7	0.0	low	low	<1%	low
Bewick's Swan	1	61	0	9	2	11	0	17	7	0	9	2	11	0.0	17.0	6.7	<1%	low	low	high
Whooper Swan	1	60	3	8	0	11	8	15	0	3	8	0	11	7.5	15.1	0.0	low	low	<1%	high
Shelduck	55	87	7	46	29	82	18	87	97	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	high
Shoveler	5	88	28	51	25	104	70	96	83	18	49	10	77	45.0	92.5	33.3	mod	high	mod	high
Gadwall	2	89	22	46	26	94	55	87	87	19	45	25	89	47.5	84.9	83.3	mod	high	high	high
Wigeon	79	89	24	52	26	102	60	98	87	5	49	2	56	12.5	92.5	6.7	low	high	low	high
Mallard	24	99	39	53	30	122	98	100	100	31	44	19	94	77.5	83.0	63.3	high	high	high	high
Pintail	8	70	5	50	9	64	13	94	30	2	38	1	41	5.0	71.7	3.3	low	high	low	high
Teal	50	96	38	52	27	117	95	98	90	18	52	7	77	45.0	98.1	23.3	mod	high	low	high
Pochard	3	62	1	22	2	25	3	42	7	0	10	2	12	0.0	18.9	6.7	<1%	low	low	high
Tufted Duck	9	85	11	39	25	75	28	74	83	4	25	8	37	10.0	47.2	26.7	low	mod	mod	high
Lapwing	114	97	34	48	30	112	85	91	100	8	35	1	44	20.0	66.0	3.3	low	high	low	high
Golden Plover	33	66	3	20	4	27	8	38	13	0	3	0	3	0.0	5.7	0.0	<1%	low	<1%	high
Grey Plover	3	2	0	1	2	3	0	2	7	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Ringed Plover	10	78	5	3	22	30	13	6	73	0	0	4	4	0.0	0.0	13.3	<1%	<1%	low	high
Whimbrel	2	14	0	0	17	17	0	0	57	0	0	13	13	0.0	0.0	43.3	<1%	<1%	mod	low
Curlew	34	89	15	27	30	72	38	51	100	0	0	1	1	0.0	0.0	3.3	<1%	<1%	low	high
Black-tailed Godwit	9	78	14	17	15	46	35	32	50	4	5	4	13	10.0	9.4	13.3	low	low	low	high
Turnstone	6	3	0	0	4	4	0	0	13	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Knot	21	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Ruff	1	70	9	17	9	35	23	32	30	9	17	9	35	22.5	32.1	30.0	low	mod	mod	high
Dunlin	302	89	18	27	20	65	45	51	67	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	89	36	42	17	95	90	79	57	24	23	4	51	60.0	43.4	13.3	high	mod	low	high
Redshank	58	85	13	15	29	57	33	28	97	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Spotted Redshank	1	2	0	0	2	2	0	0	7	0	0	2	2	0.0	0.0	6.7	<1%	<1%	low	low

15322 Ashleworth Ham

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	1	0	1	0	1	0	2	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Bewick's Swan	1	60	0	6	0	6	0	11	0	0	6	0	6	0.0	11.3	0.0	<1%	low	<1%	high
Whooper Swan	1	59	0	5	1	6	0	9	3	0	5	1	6	0.0	9.4	3.3	<1%	low	low	high
Shelduck	55	76	1	28	25	54	3	53	83	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	72	8	50	12	70	20	94	40	7	44	7	58	17.5	83.0	23.3	low	high	low	high
Gadwall	2	73	4	40	14	58	10	75	47	2	40	10	52	5.0	75.5	33.3	low	high	mod	high
Wigeon	79	80	14	52	18	84	35	98	60	0	45	1	46	0.0	84.9	3.3	<1%	high	low	high
Mallard	24	96	33	51	29	113	83	96	97	13	46	12	71	32.5	86.8	40.0	mod	high	mod	high
Pintail	8	70	3	48	10	61	8	91	33	0	44	1	45	0.0	83.0	3.3	<1%	high	low	high
Teal	50	84	23	51	23	97	58	96	77	4	47	7	58	10.0	88.7	23.3	low	high	low	high
Pochard	3	60	0	11	1	12	0	21	3	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	high
Tufted Duck	9	77	4	31	16	51	10	58	53	0	11	4	15	0.0	20.8	13.3	<1%	low	low	high
Lapwing	114	85	8	43	26	77	20	81	87	0	30	0	30	0.0	56.6	0.0	<1%	high	<1%	high
Golden Plover	33	60	0	6	0	6	0	11	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	high
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	3	1	0	3	4	3	0	10	0	0	1	1	0.0	0.0	3.3	<1%	<1%	low	low
Curlew	34	84	5	16	29	50	13	30	97	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	58	0	7	2	9	0	13	7	0	3	1	4	0.0	5.7	3.3	<1%	low	low	high
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Ruff	1	5	0	6	0	6	0	11	0	0	6	0	6	0.0	11.3	0.0	<1%	low	<1%	low
Dunlin	302	59	1	6	1	8	3	11	3	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	78	21	46	12	79	53	87	40	7	43	6	56	17.5	81.1	20.0	low	high	low	high
Redshank	58	60	0	6	4	10	0	11	13	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

15323 River Severn - Haw Bridge to Tewkesbury

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Shoveler	5	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Gadwall	2	5	0	1	0	1	0	2	0	0	1	0	1	0.0	2.0	0.0	<1%	low	<1%	low
Wigeon	79	6	0	5	0	5	0	10	0	0	3	0	3	0.0	6.1	0.0	<1%	low	<1%	low
Mallard	24	11	1	6	3	10	3	12	11	1	4	1	6	2.5	8.2	3.6	low	low	low	low
Pintail	8	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Teal	50	5	0	2	0	2	0	4	0	0	1	0	1	0.0	2.0	0.0	<1%	low	<1%	low
Pochard	3	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Tufted Duck	9	2	0	1	1	2	0	2	4	0	1	0	1	0.0	2.0	0.0	<1%	low	<1%	low
Lapwing	114	2	0	1	1	2	0	2	4	0	1	0	1	0.0	2.0	0.0	<1%	low	<1%	low
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	1	0	0	1	1	0	0	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Redshank	58	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

15324 Chelt & Leigh Meadows (and Cobney Meadows)

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	54	0	5	0	5	0	9	0	0	5	0	5	0.0	9.4	0.0	<1%	low	<1%	high
Whooper Swan	1	54	1	6	0	7	3	11	0	1	6	0	7	2.5	11.3	0.0	low	low	<1%	high
Shelduck	55	64	3	28	8	39	8	53	27	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	55	1	11	0	12	3	21	0	1	5	0	6	2.5	9.4	0.0	low	low	<1%	high
Gadwall	2	54	0	9	3	12	0	17	10	0	9	1	10	0.0	17.0	3.3	<1%	low	low	high
Wigeon	79	55	1	34	0	35	3	64	0	0	14	0	14	0.0	26.4	0.0	<1%	mod	<1%	high
Mallard	24	67	22	46	7	75	55	87	23	7	16	0	23	17.5	30.2	0.0	low	mod	<1%	high
Pintail	8	54	0	11	0	11	0	21	0	0	6	0	6	0.0	11.3	0.0	<1%	low	<1%	high
Teal	50	60	9	40	3	52	23	75	10	0	18	0	18	0.0	34.0	0.0	<1%	mod	<1%	high
Pochard	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Tufted Duck	9	55	1	3	3	7	3	6	10	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Lapwing	114	60	5	23	4	32	13	43	13	1	13	0	14	2.5	24.5	0.0	low	low	<1%	high
Golden Plover	33	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	65	0	12	15	27	0	23	50	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	54	0	1	1	2	0	2	3	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	53	0	2	0	2	0	4	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	61	10	27	2	39	25	51	7	3	7	0	10	7.5	13.2	0.0	low	low	<1%	high
Redshank	58	54	1	1	0	2	3	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

40001 Pershore Wetland Meadows

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Shoveler	5	8	1	6	2	9	3	13	7	0	3	1	4	0.0	6.4	3.7	<1%	low	low	low
Gadwall	2	5	0	6	0	6	0	13	0	0	5	0	5	0.0	10.6	0.0	<1%	low	<1%	low
Wigeon	79	4	1	3	0	4	3	6	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Mallard	24	90	33	44	22	99	92	94	81	21	40	17	78	58.3	85.1	63.0	high	high	high	high
Pintail	8	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Teal	50	32	8	24	3	35	22	51	11	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Pochard	3	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Tufted Duck	9	25	4	12	11	27	11	26	41	0	0	1	1	0.0	0.0	3.7	<1%	<1%	low	low
Lapwing	114	15	3	12	1	16	8	26	4	0	3	0	3	0.0	6.4	0.0	<1%	low	<1%	low
Golden Plover	33	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	3	1	1	1	3	3	2	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Black-tailed Godwit	9	3	2	1	0	3	6	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	1	1	0	0	1	3	0	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Snipe	5	43	10	31	6	47	28	66	22	3	18	2	23	8.3	38.3	7.4	low	mod	low	mod
Redshank	58	2	1	0	1	2	3	0	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

40003 Bow Farm (Ripple Lakes)

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	1	0	0	1	1	0	0	4	0	0	1	1	0.0	0.0	4.2	<1%	<1%	low	low
European WF Goose	1	71	2	5	0	7	6	12	0	2	5	0	7	6.3	11.6	0.0	low	low	<1%	high
Bewick's Swan	1	1	0	1	0	1	0	2	0	0	1	0	1	0.0	2.3	0.0	<1%	low	<1%	low
Whooper Swan	1	4	0	3	1	4	0	7	4	0	3	1	4	0.0	7.0	4.2	<1%	low	low	low
Shelduck	55	81	1	19	12	32	3	44	50	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	86	18	38	13	69	56	88	54	12	32	3	47	37.5	74.4	12.5	mod	high	low	high
Gadwall	2	85	16	35	15	66	50	81	63	13	34	14	61	40.6	79.1	58.3	mod	high	high	high
Wigeon	79	92	20	42	11	73	63	98	46	11	39	2	52	34.4	90.7	8.3	mod	high	low	high
Mallard	24	75	24	31	18	73	75	72	75	9	11	6	26	28.1	25.6	25.0	mod	mod	low	high
Pintail	8	83	9	35	2	46	28	81	8	0	11	1	12	0.0	25.6	4.2	<1%	mod	low	high
Teal	50	91	25	39	13	77	78	91	54	3	31	2	36	9.4	72.1	8.3	low	high	low	high
Pochard	3	94	28	40	14	82	88	93	58	24	37	7	68	75.0	86.0	29.2	high	high	mod	high
Tufted Duck	9	91	28	42	20	90	88	98	83	26	42	20	88	81.3	97.7	83.3	high	high	high	high
Lapwing	114	84	16	32	22	70	50	74	92	4	12	0	16	12.5	27.9	0.0	low	mod	<1%	high
Golden Plover	33	73	1	11	0	12	3	26	0	0	5	0	5	0.0	11.6	0.0	<1%	low	<1%	high
Grey Plover	3	70	0	0	1	1	0	0	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Ringed Plover	10	78	9	4	11	24	28	9	46	0	0	1	1	0.0	0.0	4.2	<1%	<1%	low	high
Whimbrel	2	73	1	0	13	14	3	0	54	0	0	12	12	0.0	0.0	50.0	<1%	<1%	high	high
Curlew	34	72	3	8	12	23	9	19	50	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	73	8	6	6	20	25	14	25	0	1	1	2	0.0	2.3	4.2	<1%	low	low	high
Turnstone	6	2	1	0	1	2	3	0	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Knot	21	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Ruff	1	72	2	2	3	7	6	5	13	2	2	3	7	6.3	4.7	12.5	low	low	low	high
Dunlin	302	85	15	20	17	52	47	47	71	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	77	14	20	3	37	44	47	13	2	11	1	14	6.3	25.6	4.2	low	mod	low	high
Redshank	58	81	5	15	23	43	16	35	96	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Spotted Redshank	1	2	1	1	0	2	3	2	0	1	1	0	2	3.1	2.3	0.0	low	low	<1%	low

40004 Oakley Pool

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shoveler	5	26	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Gadwall	2	26	0	2	0	2	0	5	0	0	2	0	2	0.0	4.5	0.0	<1%	low	<1%	mod
Wigeon	79	26	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Mallard	24	27	7	16	3	26	21	36	13	6	9	0	15	18.2	20.5	0.0	low	low	<1%	mod
Pintail	8	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Teal	50	26	1	5	1	7	3	11	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Pochard	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Tufted Duck	9	27	2	9	2	13	6	20	8	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Lapwing	114	26	0	3	1	4	0	7	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	26	0	0	1	1	0	0	4	0	0	1	1	0.0	0.0	4.2	<1%	<1%	low	mod
Redshank	58	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

40007 John Bennett nature reserve

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	90	0	2	4	6	0	11	44	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	97	4	15	4	23	33	83	44	1	10	0	11	8.3	55.6	0.0	low	high	<1%	high
Gadwall	2	97	0	9	5	14	0	50	56	0	8	4	12	0.0	44.4	44.4	<1%	mod	mod	high
Wigeon	79	97	6	16	4	26	50	89	44	0	9	0	9	0.0	50.0	0.0	<1%	high	<1%	high
Mallard	24	97	12	17	9	38	100	94	100	9	5	2	16	75.0	27.8	22.2	high	mod	low	high
Pintail	8	8	0	1	0	1	0	6	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Teal	50	97	10	17	4	31	83	94	44	3	16	0	19	25.0	88.9	0.0	low	high	<1%	high
Pochard	3	90	0	6	2	8	0	33	22	0	2	2	4	0.0	11.1	22.2	<1%	low	low	high
Tufted Duck	9	97	4	15	6	25	33	83	67	0	7	1	8	0.0	38.9	11.1	<1%	mod	low	high
Lapwing	114	90	9	6	5	20	75	33	56	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	90	0	0	1	1	0	0	11	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	90	0	3	0	3	0	17	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	97	3	17	4	24	25	94	44	2	15	3	20	16.7	83.3	33.3	low	high	mod	high
Redshank	58	90	0	2	4	6	0	11	44	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Spotted Redshank	1	90	1	0	0	1	8	0	0	1	0	0	1	8.3	0.0	0.0	low	<1%	<1%	high

40051 Great Pool Westwood Park

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	1	1	0	0	1	3	0	0	1	0	0	1	2.8	0.0	0.0	low	<1%	<1%	low
Shelduck	55	100	0	15	3	18	0	33	12	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	100	17	38	8	63	47	84	32	7	32	2	41	19.4	71.1	8.0	low	high	low	high
Gadwall	2	100	19	31	18	68	53	69	72	19	29	15	63	52.8	64.4	60.0	high	high	high	high
Wigeon	79	100	11	30	1	42	31	67	4	0	4	0	4	0.0	8.9	0.0	<1%	low	<1%	high
Mallard	24	100	35	45	23	103	97	100	92	21	10	6	37	58.3	22.2	24.0	high	low	low	high
Pintail	8	100	4	19	1	24	11	42	4	0	2	0	2	0.0	4.4	0.0	<1%	low	<1%	high
Teal	50	100	24	37	7	68	67	82	28	1	9	0	10	2.8	20.0	0.0	low	low	<1%	high
Pochard	3	100	21	43	5	69	58	96	20	16	41	4	61	44.4	91.1	16.0	mod	high	low	high
Tufted Duck	9	100	34	43	25	102	94	96	100	30	42	17	89	83.3	93.3	68.0	high	high	high	high
Lapwing	114	100	0	2	0	2	0	4	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Golden Plover	33	100	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	high
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	100	0	1	1	2	0	2	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	1	1	0	0	1	3	0	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	100	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	high
Snipe	5	100	2	1	0	3	6	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Redshank	58	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

40056 Upton Warren LNR

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	98	0	1	0	1	0	2	0	0	1	0	1	0.0	2.2	0.0	<1%	low	<1%	high
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	98	2	10	0	12	6	22	0	2	10	0	12	5.6	22.2	0.0	low	low	<1%	high
Shelduck	55	99	16	40	24	80	44	89	100	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	99	35	44	24	103	97	98	100	32	43	16	91	88.9	95.6	66.7	high	high	high	high
Gadwall	2	99	32	39	24	95	89	87	100	31	39	24	94	86.1	86.7	100.0	high	high	high	high
Wigeon	79	98	22	34	4	60	61	76	17	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Mallard	24	99	35	44	23	102	97	98	96	34	40	23	97	94.4	88.9	95.8	high	high	high	high
Pintail	8	98	12	14	0	26	33	31	0	3	1	0	4	8.3	2.2	0.0	low	low	<1%	high
Teal	50	99	36	44	23	103	100	98	96	21	38	1	60	58.3	84.4	4.2	high	high	low	high
Pochard	3	98	23	43	14	80	64	96	58	13	43	3	59	36.1	95.6	12.5	mod	high	low	high
Tufted Duck	9	99	36	44	24	104	100	98	100	35	43	24	102	97.2	95.6	100.0	high	high	high	high
Lapwing	114	99	36	44	24	104	100	98	100	24	38	0	62	66.7	84.4	0.0	high	high	<1%	high
Golden Plover	33	98	3	12	0	15	8	27	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Grey Plover	3	4	1	1	2	4	3	2	8	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Ringed Plover	10	98	18	4	17	39	50	9	71	0	0	2	2	0.0	0.0	8.3	<1%	<1%	low	high
Whimbrel	2	98	8	0	13	21	22	0	54	2	0	9	11	5.6	0.0	37.5	low	<1%	mod	high
Curlew	34	99	35	44	19	98	97	98	79	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	99	23	11	20	54	64	24	83	6	0	2	8	16.7	0.0	8.3	low	<1%	low	high
Turnstone	6	98	4	1	2	7	11	2	8	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Knot	21	2	1	1	0	2	3	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Ruff	1	98	21	0	8	29	58	0	33	21	0	8	29	58.3	0.0	33.3	high	<1%	mod	high
Dunlin	302	99	32	22	16	70	89	49	67	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	99	33	44	18	95	92	98	75	25	44	8	77	69.4	97.8	33.3	high	high	mod	high
Redshank	58	98	18	16	20	54	50	36	83	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Spotted Redshank	1	3	2	0	1	3	6	0	4	2	0	1	3	5.6	0.0	4.2	low	<1%	low	low

40057 Kinsham Pool

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spr	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	1	0	0	1	1	0	0	4	0	0	1	1	0.0	0.0	4.2	<1%	<1%	low	low
European WF Goose	1	2	0	1	1	2	0	2	4	0	1	1	2	0.0	2.2	4.2	<1%	low	low	low
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	1	0	1	0	1	0	2	0	0	1	0	1	0.0	2.2	0.0	<1%	low	<1%	low
Shelduck	55	98	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	100	15	26	8	49	42	58	33	7	12	0	19	19.4	26.7	0.0	low	mod	<1%	high
Gadwall	2	100	22	38	12	72	61	84	50	19	33	10	62	52.8	73.3	41.7	high	high	mod	high
Wigeon	79	100	21	43	3	67	58	96	13	2	26	0	28	5.6	57.8	0.0	low	high	<1%	high
Mallard	24	100	36	45	23	104	100	100	96	27	18	5	50	75.0	40.0	20.8	high	mod	low	high
Pintail	8	100	11	8	1	20	31	18	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Teal	50	100	27	43	10	80	75	96	42	7	16	0	23	19.4	35.6	0.0	low	mod	<1%	high
Pochard	3	100	31	38	23	92	86	84	96	28	36	23	87	77.8	80.0	95.8	high	high	high	high
Tufted Duck	9	100	36	44	24	104	100	98	100	9	39	21	69	25.0	86.7	87.5	low	high	high	high
Lapwing	114	100	31	32	23	86	86	71	96	6	6	0	12	16.7	13.3	0.0	low	low	<1%	high
Golden Plover	33	2	0	2	0	2	0	4	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	1	1	0	0	1	3	0	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	98	0	5	11	16	0	11	46	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	2	2	0	0	2	6	0	0	2	0	0	2	5.6	0.0	0.0	low	<1%	<1%	low
Dunlin	302	98	1	0	1	2	3	0	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	100	23	43	11	77	64	96	46	11	41	9	61	30.6	91.1	37.5	mod	high	mod	high
Redshank	58	98	0	2	3	5	0	4	13	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

40058 Gwen Finch nature reserve

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	97	2	18	14	34	6	40	58	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	100	19	37	15	71	53	82	63	13	29	5	47	36.1	64.4	20.8	mod	high	low	high
Gadwall	2	97	11	27	16	54	31	60	67	6	25	13	44	16.7	55.6	54.2	low	high	high	high
Wigeon	79	100	17	42	6	65	47	93	25	1	22	1	24	2.8	48.9	4.2	low	mod	low	high
Mallard	24	100	33	45	24	102	92	100	100	26	29	12	67	72.2	64.4	50.0	high	high	high	high
Pintail	8	97	0	6	0	6	0	13	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Teal	50	100	31	45	19	95	86	100	79	15	41	0	56	41.7	91.1	0.0	mod	high	<1%	high
Pochard	3	97	6	17	8	31	17	38	33	0	9	4	13	0.0	20.0	16.7	<1%	low	low	high
Tufted Duck	9	97	25	35	21	81	69	78	88	5	20	17	42	13.9	44.4	70.8	low	mod	high	high
Lapwing	114	97	28	30	22	80	78	67	92	6	1	0	7	16.7	2.2	0.0	low	low	<1%	high
Golden Plover	33	2	0	2	0	2	0	4	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	5	3	0	2	5	8	0	8	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Whimbrel	2	4	0	0	4	4	0	0	17	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Curlew	34	97	0	8	17	25	0	18	71	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	9	5	1	3	9	14	2	13	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Turnstone	6	1	1	0	0	1	3	0	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	6	6	0	0	6	17	0	0	6	0	0	6	16.7	0.0	0.0	low	<1%	<1%	low
Dunlin	302	97	3	4	3	10	8	9	13	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	100	26	45	17	88	72	100	71	19	44	8	71	52.8	97.8	33.3	high	high	mod	high
Redshank	58	97	6	11	19	36	17	24	79	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Spotted Redshank	1	1	1	0	0	1	3	0	0	1	0	0	1	2.8	0.0	0.0	low	<1%	<1%	low

40059 Grimley New Workings

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	96	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	high
European WF Goose	1	1	1	0	0	1	3	0	0	1	0	0	1	2.8	0.0	0.0	low	<1%	<1%	low
Bewick's Swan	1	96	2	0	3	5	6	0	13	2	0	3	5	5.6	0.0	12.5	low	<1%	low	high
Whooper Swan	1	96	1	5	0	6	3	11	0	1	5	0	6	2.8	11.1	0.0	low	low	<1%	high
Shelduck	55	96	3	1	0	4	8	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	99	17	38	14	69	47	84	58	11	35	10	56	30.6	77.8	41.7	mod	high	mod	high
Gadwall	2	99	36	43	24	103	100	96	100	36	43	24	103	100	95.6	100	high	high	high	high
Wigeon	79	99	11	33	4	48	31	73	17	1	6	0	7	2.8	13.3	0.0	low	low	<1%	high
Mallard	24	99	36	44	24	104	100	98	100	36	44	23	103	100	97.8	95.8	high	high	high	high
Pintail	8	99	8	12	2	22	22	27	8	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Teal	50	99	22	39	17	78	61	87	71	5	23	3	31	13.9	51.1	12.5	low	high	low	high
Pochard	3	99	13	39	5	57	36	87	21	8	36	3	47	22.2	80.0	12.5	low	high	low	high
Tufted Duck	9	99	36	44	24	104	100	98	100	36	44	24	104	100	97.8	100	high	high	high	high
Lapwing	114	100	36	43	24	103	100	96	100	2	9	0	11	5.6	20.0	0.0	low	low	<1%	high
Golden Plover	33	96	0	2	0	2	0	4	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Grey Plover	3	4	0	3	1	4	0	7	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Ringed Plover	10	96	8	1	12	21	22	2	50	0	0	1	1	0.0	0.0	4.2	<1%	<1%	low	high
Whimbrel	2	10	2	0	8	10	6	0	33	2	0	3	5	5.6	0.0	12.5	low	<1%	low	low
Curlew	34	99	0	1	1	2	0	2	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	96	19	3	6	28	53	7	25	2	0	1	3	5.6	0.0	4.2	low	<1%	low	high
Turnstone	6	3	0	0	3	3	0	0	13	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	96	15	3	7	25	42	7	29	15	3	7	25	41.7	6.7	29.2	mod	low	mod	high
Dunlin	302	96	15	5	7	27	42	11	29	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	99	17	26	3	46	47	58	13	13	11	0	24	36.1	24.4	0.0	mod	low	<1%	high
Redshank	58	99	3	6	19	28	8	13	79	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Spotted Redshank	1	96	2	0	3	5	6	0	13	2	0	3	5	5.6	0.0	12.5	low	<1%	low	high

40090 Pirton Pool

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	88	0	1	0	1	0	2	0	0	1	0	1	0.0	2.3	0.0	<1%	low	<1%	high
European WF Goose	1	88	0	1	0	1	0	2	0	0	1	0	1	0.0	2.3	0.0	<1%	low	<1%	high
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	88	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	high
Shelduck	55	88	0	2	1	3	0	5	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	88	6	13	1	20	17	30	4	2	6	0	8	5.6	13.6	0.0	low	low	<1%	high
Gadwall	2	88	4	15	4	23	11	34	17	1	13	3	17	2.8	29.5	12.5	low	mod	low	high
Wigeon	79	88	7	16	0	23	19	36	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Mallard	24	90	33	40	20	93	92	91	83	23	10	2	35	63.9	22.7	8.3	high	low	low	high
Pintail	8	88	2	1	0	3	6	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Teal	50	88	18	25	1	44	50	57	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Pochard	3	88	4	13	1	18	11	30	4	1	5	0	6	2.8	11.4	0.0	low	low	<1%	high
Tufted Duck	9	90	31	34	20	85	86	77	83	18	19	18	55	50.0	43.2	75.0	high	mod	high	high
Lapwing	114	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	1	1	0	0	1	3	0	0	1	0	0	1	2.8	0.0	0.0	low	<1%	<1%	low
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Redshank	58	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

40201 Beckford Nature Reserve

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shoveler	5	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Gadwall	2	3	1	0	1	2	5	0	7	1	0	1	2	5.0	0.0	6.7	low	<1%	low	low
Wigeon	79	2	0	1	0	1	0	4	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Mallard	24	78	10	26	7	43	50	93	47	3	6	0	9	15.0	21.4	0.0	low	low	<1%	high
Pintail	8	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Teal	50	63	1	7	0	8	5	25	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Pochard	3	63	1	5	2	8	5	18	13	0	2	1	3	0.0	7.1	6.7	<1%	low	low	high
Tufted Duck	9	73	6	18	8	32	30	64	53	1	6	3	10	5.0	21.4	20.0	low	low	low	high
Lapwing	114	63	0	1	0	1	0	4	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Redshank	58	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

40203 Clifton Pits

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	79	0	3	0	3	0	7	0	0	3	0	3	0.0	6.7	0.0	<1%	low	<1%	high
European WF Goose	1	2	0	2	0	2	0	4	0	0	2	0	2	0.0	4.4	0.0	<1%	low	<1%	low
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	3	2	1	0	3	6	2	0	2	1	0	3	5.6	2.2	0.0	low	low	<1%	low
Shelduck	55	86	8	18	22	48	22	40	92	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	79	16	28	12	56	44	62	50	4	18	1	23	11.1	40.0	4.2	low	mod	low	high
Gadwall	2	81	16	29	12	57	44	64	50	16	28	11	55	44.4	62.2	45.8	mod	high	mod	high
Wigeon	79	83	10	36	1	47	28	80	4	1	10	0	11	2.8	22.2	0.0	low	low	<1%	high
Mallard	24	81	28	37	20	85	78	82	83	20	23	9	52	55.6	51.1	37.5	high	high	mod	high
Pintail	8	81	10	19	1	30	28	42	4	1	8	0	9	2.8	17.8	0.0	low	low	<1%	high
Teal	50	83	20	38	12	70	56	84	50	0	17	1	18	0.0	37.8	4.2	<1%	mod	low	high
Pochard	3	81	16	29	10	55	44	64	42	10	27	5	42	27.8	60.0	20.8	mod	high	low	high
Tufted Duck	9	81	28	37	16	81	78	82	67	26	37	15	78	72.2	82.2	62.5	high	high	high	high
Lapwing	114	79	17	23	15	55	47	51	63	0	2	0	2	0.0	4.4	0.0	<1%	low	<1%	high
Golden Plover	33	81	0	11	1	12	0	24	4	0	5	0	5	0.0	11.1	0.0	<1%	low	<1%	high
Grey Plover	3	3	1	0	2	3	3	0	8	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Ringed Plover	10	82	10	0	11	21	28	0	46	1	0	2	3	2.8	0.0	8.3	low	<1%	low	high
Whimbrel	2	79	3	0	9	12	8	0	38	1	0	2	3	2.8	0.0	8.3	low	<1%	low	high
Curlew	34	79	6	3	2	11	17	7	8	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	82	10	1	6	17	28	2	25	1	0	0	1	2.8	0.0	0.0	low	<1%	<1%	high
Turnstone	6	2	0	0	2	2	0	0	8	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	80	8	1	3	12	22	2	13	8	1	3	12	22.2	2.2	12.5	low	low	low	high
Dunlin	302	83	15	9	12	36	42	20	50	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	78	5	24	1	30	14	53	4	3	13	0	16	8.3	28.9	0.0	low	mod	<1%	high
Redshank	58	84	6	9	13	28	17	20	54	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

40260 Bredon's Hardwick Gravel Pits

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spr	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	72	0	1	0	1	0	2	0	0	1	0	1	0.0	2.2	0.0	<1%	low	<1%	high
European WF Goose	1	72	0	2	0	2	0	4	0	0	2	0	2	0.0	4.4	0.0	<1%	low	<1%	high
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	72	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	high
Shelduck	55	72	0	2	1	3	0	4	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Shoveler	5	72	2	13	1	16	6	29	4	0	5	0	5	0.0	11.1	0.0	<1%	low	<1%	high
Gadwall	2	72	0	17	2	19	0	38	8	0	15	1	16	0.0	33.3	4.2	<1%	mod	low	high
Wigeon	79	74	6	33	2	41	17	73	8	1	13	0	14	2.8	28.9	0.0	low	mod	<1%	high
Mallard	24	76	26	37	17	80	72	82	71	23	26	12	61	63.9	57.8	50.0	high	high	high	high
Pintail	8	72	0	9	0	9	0	20	0	0	1	0	1	0.0	2.2	0.0	<1%	low	<1%	high
Teal	50	73	5	23	0	28	14	51	0	0	5	0	5	0.0	11.1	0.0	<1%	low	<1%	high
Pochard	3	72	1	17	1	19	3	38	4	1	10	0	11	2.8	22.2	0.0	low	low	<1%	high
Tufted Duck	9	74	23	34	14	71	64	76	58	11	33	4	48	30.6	73.3	16.7	mod	high	low	high
Lapwing	114	72	4	14	3	21	11	31	13	0	4	0	4	0.0	8.9	0.0	<1%	low	<1%	high
Golden Plover	33	72	1	1	0	2	3	2	0	0	1	0	1	0.0	2.2	0.0	<1%	low	<1%	high
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	72	0	8	6	14	0	18	25	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	72	3	0	0	3	8	0	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Snipe	5	72	5	7	0	12	14	16	0	2	3	0	5	5.6	6.7	0.0	low	low	<1%	high
Redshank	58	72	0	1	1	2	0	2	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

40304 Longdon Marsh (north of Marsh Lane)

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spr	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	1	0	1	0	1	0	2	0	0	1	0	1	0.0	2.3	0.0	<1%	low	<1%	low
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	2	0	2	0	2	0	5	0	0	2	0	2	0.0	4.7	0.0	<1%	low	<1%	low
Shelduck	55	33	1	19	13	33	3	44	54	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Shoveler	5	27	2	22	3	27	6	51	13	1	20	2	23	3.1	46.5	8.3	low	mod	low	mod
Gadwall	2	15	2	9	4	15	6	21	17	2	9	4	15	6.3	20.9	16.7	low	low	low	low
Wigeon	79	47	11	33	3	47	34	77	13	1	27	0	28	3.1	62.8	0.0	low	high	<1%	mod
Mallard	24	12	2	9	1	12	6	21	4	0	4	1	5	0.0	9.3	4.2	<1%	low	low	low
Pintail	8	28	1	24	3	28	3	56	13	0	21	2	23	0.0	48.8	8.3	<1%	mod	low	mod
Teal	50	61	16	33	11	60	50	77	46	15	33	1	49	46.9	76.7	4.2	mod	high	low	high
Pochard	3	2	0	1	1	2	0	2	4	0	1	0	1	0.0	2.3	0.0	<1%	low	<1%	low
Tufted Duck	9	9	0	7	2	9	0	16	8	0	1	2	3	0.0	2.3	8.3	<1%	low	low	low
Lapwing	114	30	4	19	7	30	13	44	29	0	15	0	15	0.0	34.9	0.0	<1%	mod	<1%	mod
Golden Plover	33	9	0	9	0	9	0	21	0	0	6	0	6	0.0	14.0	0.0	<1%	low	<1%	low
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	1	0	0	1	1	0	0	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Whimbrel	2	4	0	0	4	4	0	0	17	0	0	4	4	0.0	0.0	16.7	<1%	<1%	low	low
Curlew	34	15	0	6	9	15	0	14	38	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Black-tailed Godwit	9	4	0	4	0	4	0	9	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	3	2	1	0	3	6	2	0	2	1	0	3	6.3	2.3	0.0	low	low	<1%	low
Dunlin	302	8	1	4	3	8	3	9	13	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Snipe	5	11	4	6	1	11	13	14	4	2	6	0	8	6.3	14.0	0.0	low	low	<1%	low
Redshank	58	4	0	1	3	4	0	2	13	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

40305 Hill Court Farm Reserve (Longdon & Eldersfield Marshes)

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shoveler	5	57	0	7	0	7	0	50	0	0	6	0	6	0.0	42.9	0.0	<1%	mod	<1%	high
Gadwall	2	14	0	4	0	4	0	29	0	0	4	0	4	0.0	28.6	0.0	<1%	mod	<1%	low
Wigeon	79	57	2	8	0	10	25	57	0	0	4	0	4	0.0	28.6	0.0	<1%	mod	<1%	high
Mallard	24	57	3	10	1	14	38	71	17	0	3	0	3	0.0	21.4	0.0	<1%	low	<1%	high
Pintail	8	54	0	4	0	4	0	29	0	0	3	0	3	0.0	21.4	0.0	<1%	low	<1%	high
Teal	50	57	1	8	0	9	13	57	0	0	7	0	7	0.0	50.0	0.0	<1%	high	<1%	high
Pochard	3	54	1	1	0	2	13	7	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	high
Tufted Duck	9	54	1	1	0	2	13	7	0	0	1	0	1	0.0	7.1	0.0	<1%	low	<1%	high
Lapwing	114	54	0	3	0	3	0	21	0	0	3	0	3	0.0	21.4	0.0	<1%	low	<1%	high
Golden Plover	33	7	0	2	0	2	0	14	0	0	1	0	1	0.0	7.1	0.0	<1%	low	<1%	low
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	7	0	2	0	2	0	14	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Snipe	5	54	0	1	0	1	0	7	0	0	1	0	1	0.0	7.1	0.0	<1%	low	<1%	high
Redshank	58	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

40353 Avon Meadows - Twynning and Bredon's Hardwick

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	3	0	2	1	3	0	5	4	0	2	1	3	0.0	4.7	4.2	<1%	low	low	low
European WF Goose	1	7	0	5	2	7	0	12	8	0	5	2	7	0.0	11.6	8.3	<1%	low	low	low
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	10	1	6	3	10	3	14	13	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Shoveler	5	19	3	13	3	19	9	30	13	0	8	0	8	0.0	18.6	0.0	<1%	low	<1%	low
Gadwall	2	24	1	20	3	24	3	47	13	1	19	2	22	3.1	44.2	8.3	low	mod	low	low
Wigeon	79	43	6	31	3	40	19	72	13	1	17	0	18	3.1	39.5	0.0	low	mod	<1%	mod
Mallard	24	72	22	32	17	71	69	74	71	20	25	12	57	62.5	58.1	50.0	high	high	high	high
Pintail	8	19	0	19	0	19	0	44	0	0	3	0	3	0.0	7.0	0.0	<1%	low	<1%	low
Teal	50	28	6	20	0	26	19	47	0	0	6	0	6	0.0	14.0	0.0	<1%	low	<1%	mod
Pochard	3	22	1	18	3	22	3	42	13	1	9	0	10	3.1	20.9	0.0	low	low	<1%	low
Tufted Duck	9	71	19	34	15	68	59	79	63	9	33	6	48	28.1	76.7	25.0	mod	high	low	high
Lapwing	114	15	3	10	2	15	9	23	8	0	3	0	3	0.0	7.0	0.0	<1%	low	<1%	low
Golden Plover	33	5	1	4	0	5	3	9	0	0	2	0	2	0.0	4.7	0.0	<1%	low	<1%	low
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	2	2	0	0	2	6	0	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Whimbrel	2	1	0	0	1	1	0	0	4	0	0	1	1	0.0	0.0	4.2	<1%	<1%	low	low
Curlew	34	21	2	10	9	21	6	23	38	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Black-tailed Godwit	9	8	4	3	1	8	13	7	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	2	1	1	0	2	3	2	0	1	1	0	2	3.1	2.3	0.0	low	low	<1%	low
Dunlin	302	9	6	1	2	9	19	2	8	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Snipe	5	7	2	5	0	7	6	12	0	1	2	0	3	3.1	4.7	0.0	low	low	<1%	low
Redshank	58	5	0	4	1	5	0	9	4	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

40363 River Severn Northwick to Diglis Lock

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shoveler	5	82	0	1	0	1	0	3	0	0	0	0	0	0.0	0.0	0.0	none	none	none	high
Gadwall	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Wigeon	79	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Mallard	24	82	15	26	12	53	71	87	80	15	26	12	53	71.4	86.7	80.0	high	high	high	high
Pintail	8	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Teal	50	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Pochard	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Tufted Duck	9	82	8	14	1	23	38	47	7	1	0	0	1	4.8	0.0	0.0	low	none	none	high
Lapwing	114	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Redshank	58	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

x Severn Ham, Tewkesbury

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	1	0	1	0	1	0	2	0	0	1	0	1	0.0	1.9	0.0	none	low	none	low
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	3	0	3	1	4	0	6	3	0	0	0	0	0.0	0.0	0.0	none	none	none	low
Shoveler	5	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Gadwall	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Wigeon	79	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	none	none	none	low
Mallard	24	11	3	7	4	14	8	13	13	1	2	2	5	2.5	3.8	6.7	low	low	low	low
Pintail	8	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	none	none	none	low
Teal	50	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	none	none	none	low
Pochard	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Tufted Duck	9	5	1	3	2	6	3	6	7	0	1	0	1	0.0	1.9	0.0	none	low	none	low
Lapwing	114	2	0	1	1	2	0	2	3	0	0	0	0	0.0	0.0	0.0	none	none	none	low
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	1	1	0	0	1	3	0	0	1	0	0	1	2.5	0.0	0.0	low	none	none	low
Curlew	34	20	3	7	13	23	8	13	43	0	0	0	0	0.0	0.0	0.0	none	none	none	low
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	6	0	7	0	7	0	13	0	0	2	0	2	0.0	3.8	0.0	none	low	none	low
Redshank	58	2	0	1	1	2	0	2	3	0	0	0	0	0.0	0.0	0.0	none	none	none	low
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

x Upham Meadow & summer Leasow

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	1	0	1	0	1	0	2	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shoveler	5	2	0	2	0	2	0	4	0	0	2	0	2	0.0	3.8	0.0	<1%	low	<1%	low
Gadwall	2	4	0	3	2	5	0	6	7	0	2	0	2	0.0	3.8	0.0	<1%	low	<1%	low
Wigeon	79	5	0	5	1	6	0	9	3	0	4	0	4	0.0	7.5	0.0	<1%	low	<1%	low
Mallard	24	10	2	5	5	12	5	9	17	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Pintail	8	2	0	3	0	3	0	6	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Teal	50	2	0	3	0	3	0	6	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Pochard	3	2	0	2	0	2	0	4	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Tufted Duck	9	2	0	2	0	2	0	4	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Lapwing	114	7	2	6	1	9	5	11	3	0	3	0	3	0.0	5.7	0.0	<1%	low	<1%	low
Golden Plover	33	2	0	2	0	2	0	4	0	0	2	0	2	0.0	3.8	0.0	<1%	low	<1%	low
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	28	6	10	18	34	15	19	60	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	1	0	1	0	1	0	2	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Snipe	5	2	0	3	0	3	0	6	0	0	1	0	1	0.0	1.9	0.0	<1%	low	<1%	low
Redshank	58	7	1	0	7	8	3	0	23	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

x Upton Ham

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	2	0	2	0	2	0	5	0	0	2	0	2	0.0	5.4	0.0	<1%	low	<1%	low
Shelduck	55	7	0	5	1	6	0	14	5	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Shoveler	5	1	0	0	1	1	0	0	5	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Gadwall	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Wigeon	79	1	0	1	0	1	0	3	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Mallard	24	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Pintail	8	2	0	2	0	2	0	5	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Teal	50	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Pochard	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Tufted Duck	9	2	0	2	0	2	0	5	0	0	2	0	2	0.0	5.4	0.0	<1%	low	<1%	low
Lapwing	114	1	0	1	0	1	0	3	0	0	1	0	1	0.0	2.7	0.0	<1%	low	<1%	low
Golden Plover	33	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	6	0	3	2	5	0	8	10	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Snipe	5	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Redshank	58	3	0	1	2	3	0	3	10	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

x Lower Moor

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	2	0	2	0	2	0	6	0	0	2	0	2	0.0	5.7	0.0	<1%	low	<1%	low
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	1	0	1	0	1	0	3	0	0	1	0	1	0.0	2.9	0.0	<1%	low	<1%	low
Shelduck	55	48	7	15	18	40	25	43	86	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Shoveler	5	61	9	30	9	48	32	86	43	6	27	1	34	21.4	77.1	4.8	low	high	low	high
Gadwall	2	21	4	10	3	17	14	29	14	4	10	3	17	14.3	28.6	14.3	low	mod	low	low
Wigeon	79	68	18	35	4	57	64	100	19	0	15	0	15	0.0	42.9	0.0	<1%	mod	<1%	high
Mallard	24	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Pintail	8	13	0	11	0	11	0	31	0	0	5	0	5	0.0	14.3	0.0	<1%	low	<1%	low
Teal	50	100	25	35	14	74	89	100	67	4	34	3	41	14.3	97.1	14.3	low	high	low	high
Pochard	3	4	0	2	1	3	0	6	5	0	2	0	2	0.0	5.7	0.0	<1%	low	<1%	low
Tufted Duck	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Lapwing	114	100	28	35	21	84	100	100	100	6	29	0	35	21.4	82.9	0.0	low	high	<1%	high
Golden Plover	33	57	12	32	4	48	43	91	19	6	24	1	31	21.4	68.6	4.8	low	high	low	high
Grey Plover	3	1	0	1	0	1	0	3	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Ringed Plover	10	17	6	0	8	14	21	0	38	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Whimbrel	2	5	1	0	3	4	4	0	14	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Curlew	34	26	1	7	14	22	4	20	67	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Black-tailed Godwit	9	21	8	3	7	18	29	9	33	1	0	1	2	3.6	0.0	4.8	low	<1%	low	low
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ruff	1	11	7	0	2	9	25	0	10	7	0	2	9	25.0	0.0	9.5	low	<1%	low	low
Dunlin	302	40	14	8	12	34	50	23	57	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Snipe	5	85	23	35	7	65	82	100	33	19	34	2	55	67.9	97.1	9.5	high	high	low	high
Redshank	58	37	5	10	15	30	18	29	71	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	mod
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

x Throckmorton

SPA species	1% SPA	% coverage	Total months present							Months present when ≥1%							Site importance			Reliability of assessment
			Aut	Win	Spr	Total	% Aut	% Win	% Spri	Aut	Win	Spr	Tot no.	% Aut	% Win	% Spr	Aut	Win	Spr	
Pink-footed Goose	1	5	0	3	1	4	0	9	5	0	3	1	4	0.0	8.6	4.8	<1%	low	low	low
European WF Goose	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Bewick's Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Whooper Swan	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Shelduck	55	6	0	5	0	5	0	14	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Shoveler	5	25	5	16	0	21	18	46	0	5	16	0	21	17.9	45.7	0.0	low	mod	<1%	low
Gadwall	2	63	18	26	9	53	64	74	43	18	26	9	53	64.3	74.3	42.9	high	high	mod	high
Wigeon	79	8	3	4	0	7	11	11	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Mallard	24	1	0	1	0	1	0	3	0	0	1	0	1	0.0	2.9	0.0	<1%	low	<1%	low
Pintail	8	2	0	2	0	2	0	6	0	0	1	0	1	0.0	2.9	0.0	<1%	low	<1%	low
Teal	50	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Pochard	3	88	21	35	11	67	75	100	52	16	35	4	55	57.1	100.0	19.0	high	high	low	high
Tufted Duck	9	20	4	10	3	17	14	29	14	4	10	3	17	14.3	28.6	14.3	low	mod	low	low
Lapwing	114	2	0	1	1	2	0	3	5	0	1	0	1	0.0	2.9	0.0	<1%	low	<1%	low
Golden Plover	33	6	1	4	0	5	4	11	0	0	3	0	3	0.0	8.6	0.0	<1%	low	<1%	low
Grey Plover	3	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Ringed Plover	10	1	1	0	0	1	4	0	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Whimbrel	2	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Curlew	34	1	0	1	0	1	0	3	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Black-tailed Godwit	9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Turnstone	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Knot	21	1	0	1	0	1	0	3	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Ruff	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Dunlin	302	6	1	3	1	5	4	9	5	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Snipe	5	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A
Redshank	58	4	0	3	0	3	0	9	0	0	0	0	0	0.0	0.0	0.0	<1%	<1%	<1%	low
Spotted Redshank	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	none	none	none	N/A

Natural England is here to secure a healthy natural environment for people to enjoy, where wildlife is protected and England's traditional landscapes are safeguarded for future generations.

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