Eurasian Curlew, Norfolk

Eurasian Curlew *Numenius arquata* Linn.

Climate Change Sensitivity:	MEDIUM	Ability to Manage:	MEDIUM
Non climatic threats:	HIGH	Vulnerability:	HIGH

Summary

The Eurasian Curlew (henceforth 'curlew') is experiencing rapid declines. The main pressures facing curlews in the UK are the predation of eggs and chicks, and habitat loss and degradation through changing farming practices and afforestation of open ground. The threats from climate change are considerable, given that curlews breeding in the UK are increasingly reliant on upland areas, which are sensitive to climate change. Large parts of England are projected to become climatically unsuitable for breeding curlew under a 2°C temperature rise. Efforts should therefore focus on managing predation and improving habitat quality in upland areas, thereby enhancing their ability to cope with climate change impacts.

Description

The Eurasian Curlew is Europe's largest wader, with a wingspan of around a metre and weighing almost a kilogram. They are one of our most iconic birds, with their haunting bubbling calls and long down-curved beaks. Curlews winter around the coasts of Europe and northern Africa, migrating inland to their breeding grounds in spring. They commonly live for 20-25 years and are very site-faithful, often returning to the same field or patch of moorland each spring.

Ecology and distribution

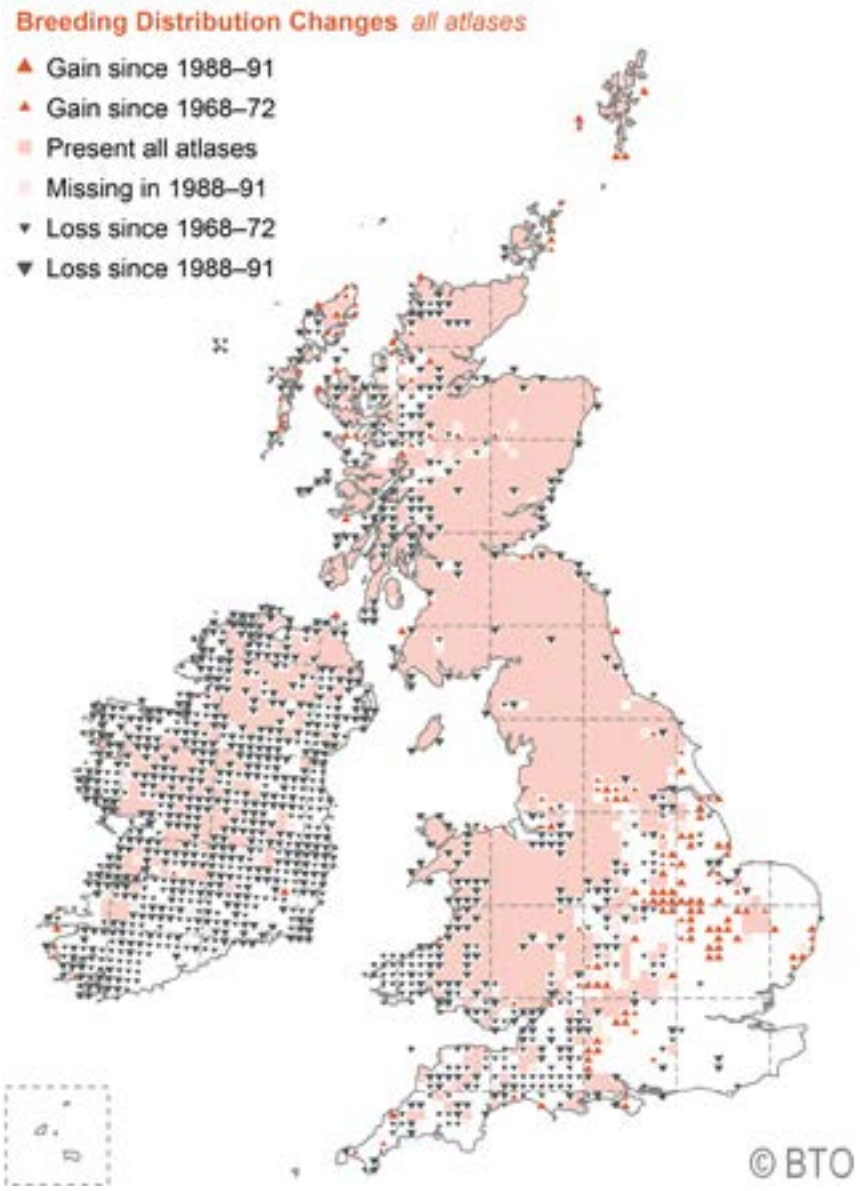
Curlews are in steep decline, and are listed as globally near-threatened by the International Union for Conservation of Nature (IUCN) and as 'red' on the Birds of Conservation Concern (BOCC) list. Between 1995 and 2016 the UK breeding population declined by 48%, with the most severe declines in Wales and Northern Ireland (Robinson *et al* 2016). These declines are due mainly to reduced breeding success, due in particular to nest/chick predation, which may have been exacerbated by historical and ongoing agricultural changes and other impacts on breeding habitat quality, including afforestation and wind farm development (Douglas *et al* 2014; Brown *et al* 2015; Robinson *et al* 2016).

An International Single Species Action Plan has been put in place across Europe (Brown, 2015), and the curlew has been named Britain's highest conservation priority bird species (Brown *et al* 2015). This is due to the rate of recent declines and conservation status of the curlew, and the fact that the UK is of crucial importance to curlew, sustaining up to a quarter of the global population in both summer and winter (Brown *et al* 2015).

Curlews winter mainly in large flocks on intertidal mudflats, coastal grasslands, farmland, and (to a lesser extent) inland wetlands. During March-July, curlews breed in a range of wetland and agricultural habitats, including lowland wet grassland, arable croplands and upland moorland. However, in the UK, recent severe declines in the lowlands mean that most breeding curlew are now concentrated in the uplands of northern England and Scotland (typical population density 1-2 pairs per km^2). Exceptionally high concentrations are found in the Northern Isles of Orkney and Shetland (reaching population densities of around 20 pairs per km^2), where the absence of foxes and a mosaic of lowland agricultural and moorland habitats is likely to be particularly beneficial to breeding curlew (D. Douglas, A. Leitch & S. Sankey pers. comm.).

In the UK, curlews start to lay eggs in mid to late April. An average of four eggs are laid (Austin & Crick 1994), which are incubated for approximately 31 days, with both male and female taking turns. Chicks leave the nest within two days of hatching, and are dependent on their parents for the next few weeks, foraging independently but unable to fly until 5-6 weeks of age.

Historic changes in the distribution of the Eurasian curlew
(reproduced with permission of the BTO, from Balmer *et al* 2013)



Confidence in climate change impacts[22]

Distribution change: **HIGH CONFIDENCE** Mechanism: **LOW CONFIDENCE**

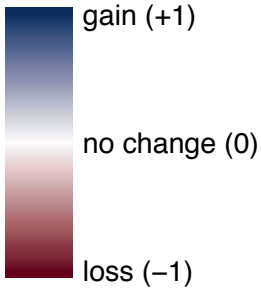
Curlews are expected to show population declines and northward range contractions in response to climate change under a 2°C global temperature rise scenario. Climate envelope modelling suggests that the UK population of breeding curlews could drop by 20-25% (Renwick *et al* 2012), possibly linked to increased summer warming, with more southerly, westerly and lowland populations suffering the worst declines. Under more extreme warming (4°C), the southern range limit is likely to move into northern England, with the English population being restricted to upland areas from the Pennines northwards, and

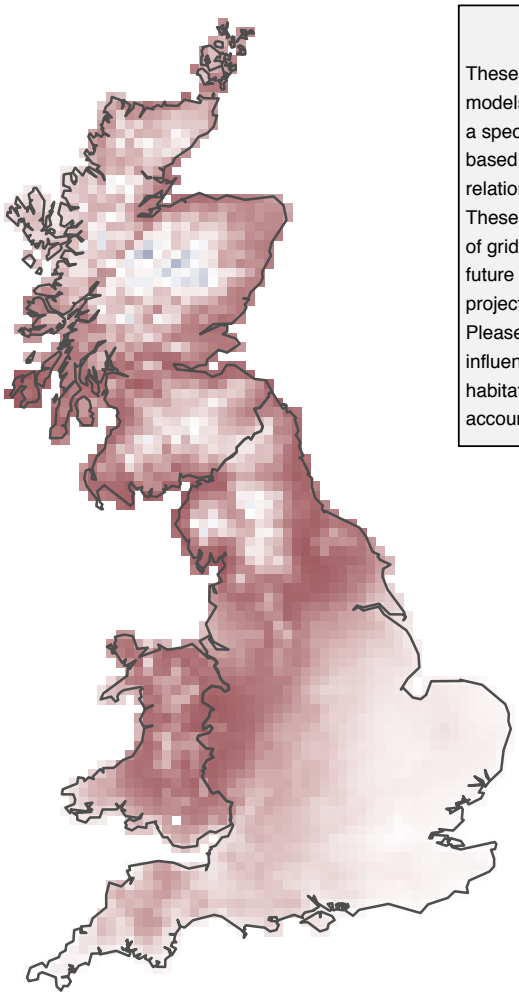
22 An assessment of the strength of evidence that distributions are changing and the mechanisms causing change are understood. Refer to Part B, section 5 of the species section introduction for more information.

southern populations likely to be lost entirely. Analysis of Curlew abundance data suggests that numbers tended to increase and were higher in areas of cooler temperatures and higher summer rainfall (Franks *et al* 2017). The increased frequency of extreme weather events such as drought and flooding could also threaten curlew populations, for instance by destroying nests on flood-prone areas (already an important cause of breeding failure in some studied populations (see refs in Brown 2015), and by reducing food availability e.g. through the seasonal drying-out of blanket bog, or by limiting foraging opportunities.

The abundance of key insect food sources may be altered through climate change, as has been shown for cranefly larvae, which are an important food source for breeding waders in the UK uplands (Pearce-Higgins *et al* 2010), although very little is known about how this is likely to impact on curlews specifically. Climate change could also bring about more subtle impacts, such as longer growing seasons leading to altered cutting and mowing dates for hay and silage, which could affect curlews through various mechanisms, including direct nest destruction, altered predation pressure and disruption to foraging opportunities.

Projected change in potential distribution of curlew in the UK with a temperature rise of 2°C (Pearce-Higgins *et al* 2015)





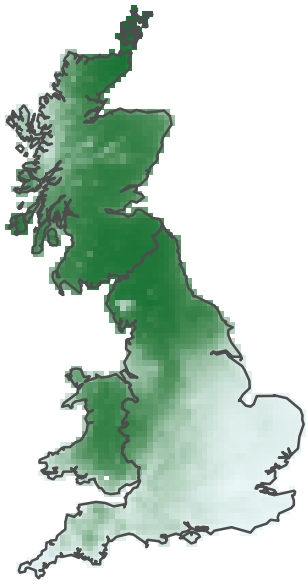
Climate suitability

These maps are created using statistical models which describe the probability that a species will be found in a 10 km grid square, based on its current distribution and its relationship to a number of climatic variables. These can be used to model the suitability of grid squares for a species under possible future climates when climate change projections are taken into account.
Please note that other variables that influence species distributions, such as habitat and land–use change, are not accounted for in the modelling process.

Confidence of change

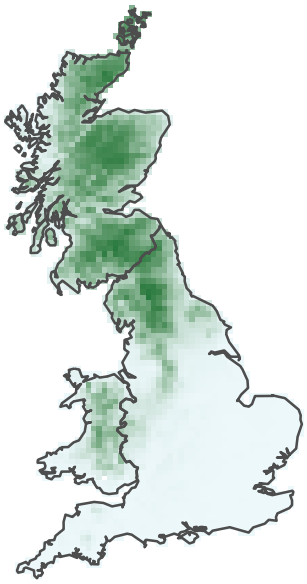
An assessment of the available data and other factors, as part of Natural England's Research Report NECR175, suggests that our confidence in this projection is very high. N.B. many confidence assessments are rated as low because there is a lack of published information on the likely influence of climate on the species concerned.

Current climate scenario



Climate suitability

Low (2°C change) climate scenario



Created by:	University of York	Created for:	Natural England	Created on:	August 17 2016

Further information on these projections can be found in the introduction to the species section (Part A, Section 3 and Part B Section 5). Note that this is a guide to where a species may be able to survive, it does not capture other issues such as habitat availability and fragmentation – see text above for further details. Contains public sector information licensed under the Open Government Licence v3.0. Please also see acknowledgement and copyright at the beginning of this manual.

Please read this case study alongside the relevant habitat sheets.

Adaptation options

Adaptation for the curlew should focus on a combination of habitat restoration and predation management, often at the landscape scale. In terms of habitat management, the most important actions are the maintenance and restoration of a structurally diverse sward and wet areas and reversing the effects of drainage activities by undertaking drain blocking. These will increase the availability of high quality nesting sites, increase foraging opportunities and reduce the susceptibility of the habitats to drying. For other upland breeding waders, it has been suggested that land management which aims to increase the abundance of insect food sources can offer a successful method of mitigating against the impacts of climate change (Pearce-Higgins *et al* 2010), and similar methods are also likely to benefit the curlew.

Predation management should consider lethal control of key nest and chick predators, particularly in areas supporting high numbers of breeding curlew. This may be required as a short-term measure, but also possibly in the longer term. However, solutions must also address the root causes of high generalist predator populations. This could include appropriate siting of forest plantations that support nest and chick predators such as corvids and foxes, ensuring that farming activities minimise the abundance of carrion in the landscape, and giving attention to the role of released gamebirds as a source of biomass for predators.

This combination of habitat and predation management should greatly improve the breeding success of individual pairs, as well as increasing the overall number of breeding pairs able to be supported by a landscape and help buffer curlew populations against the negative impacts of climate change. Several specific habitat management practices that could be considered are listed below:

- Avoid over grazing and under grazing. Maintaining a minimum stocking rate of 0.05 livestock units (LUs) per hectare for a period of 4 months between 1 June and 30 September will avoid the development of rank and excessively dense swards. The exception should be on areas of deep peat or blanket bog, where lower densities may be required to avoid peat damage.
- Graze with cattle, ponies or goats (in preference to sheep) where possible, to ensure that rushes and other tough plant species are grazed and root stocks of dominant species are broken up to prevent infestations. Avoid grazing cattle on deep peat or blanket bog.
- Maintain wetlands, including peat bogs, other mires and hillside flushes. Where possible, remove grips/drains, create wet features such as pools and scrapes, and re-vegetate areas of bare peat.
- Use cutting in preference to burning as a vegetation management tool. If essential, burning should be used only with extreme care (following the Defra Heather and Grass Burning Code) and avoiding peatlands.
- Remove non-native conifers and restore the land to bog or heathland.

In general, efforts should focus on upland areas that currently support the majority of the English breeding population. Remnant populations in lowland areas are likely to face more extreme pressures, both in terms of climatic warming and habitat factors (intensive farming, urban development, human disturbance, etc.). Although their conservation may be more complex in the south and west, conservation actions there may also be open to different opportunities than in the uplands.

Relevant Countryside Stewardship options

Several Countryside Stewardship options exist for lowland and upland marginal farmland and moorland that are likely to offer benefits for breeding curlew, and thus should help reduce potential negative impacts of climate change. The most relevant options are listed below:

GS2 Permanent grassland with very low inputs (outside SDAs)

GS5 Permanent grassland with very low inputs in SDAs

GS6 Management of species-rich grassland

GS7 Restoration towards species-rich grassland

GS9 Management of wet grassland for breeding waders and wildfowl

GS13 Management of grassland for target features

GS15 Haymaking supplement

UP1 Enclosed rough grazing

UP2 Management of rough grazing for birds

UP3 Management of moorland

UP4 Management of moorland vegetation supplement

UP5 Moorland re-wetting supplement

WN1 Grip blocking

Case Study

Blanket bog restoration at Dove Stone RSPB reserve

Since 2010, a partnership between RSPB and United Utilities has been restoring 2,500 hectares of degraded peatland at the 4,000 ha RSPB Dove Stone reserve in the Peak District National Park. Working with tenant farmers, the project involved re-vegetating bare peat, blocking eroded gullies to hold water back and slow flows, and planting over 300,000 individual handfuls of peat-forming *sphagnum* moss. The work is ongoing, but there have been increases in breeding dunlins, golden plovers, curlews and red grouse. For curlew, the population has increased from 35 to 42 pairs between 2010 and 2014, and it is hoped that these actions will help make such populations of curlew more resilient to climate change.

References and further reading

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