

## APPENDIX III Explanation and discussion of data fields

### 1. Species

The common name, as given in the *British Birds* 'List of birds of the West Palearctic' (1984), is used throughout the document. Species are listed in the sequence devised by Voous (1977).

### 2. Race or population

This refers to the particular race (or sub-species) and/or population of the species which occurs in England. There may be very little interaction between races or populations of the same species as they commonly occupy different breeding and wintering grounds and migration stop-overs, which can be separated by hundreds or thousands of miles. As a result, different races and populations can experience different environmental conditions, both natural, such as climate, and un-natural, such as habitat loss and persecution. It is therefore essential that the status, populations and trends of the appropriate race or population is considered when determining the priority for conservation action of a particular species. This approach is widely accepted internationally.

### 3. Status in England

The status of each species in England is summarised as:

R = Resident	S = Migrant breeder
W = Wintering	P = Passage
Se = Seabird	b = Breeds in smaller numbers
(b) = Former breeder	

A lower case letter indicates a status involving much lower numbers but not necessarily of lesser significance. Certain wildfowl species, for example, have been given a status of 'Wb' showing that the main concentration of numbers occurs in winter yet there is a smaller but nonetheless important breeding population that is not necessarily resident.

The term 'resident' includes species which spend much of the non-breeding season away from their breeding grounds but which may remain in England, such as certain waders and moorland raptors. 'Seabirds' include species belonging to six Families of birds that breed in England and are usually dependent on the sea for food (see Lloyd *et al* 1991). Some are resident and their numbers increase in winter (eg gulls), some are summer migrants (eg terns), whilst others spend much of the non-breeding season in marine areas often outside territorial waters (eg auks, Storm Petrel and Gannet).

### 4. Habitat

Most birds are associated with a particular habitat or group of habitats. The major habitat groups utilised by each species in England is provided in Appendix I. These have been largely based on the division of specialisms with the Habitats Branch of English Nature's Science Directorate. For resident species, the habitats utilised may change with season. Wintering habitats are given in brackets where these differ from breeding habitats. A key to the letter codes and an explanation of the habitat groups is provided in the following table:

Code	Habitat	Description
U	UPLAND	Moorland and montane habitats including upland heaths and grasslands, raised and blanket bogs, and upland streams.
WS	WOODLAND AND SCRUB	Broad-leaf, coniferous and mixed woodland, and scrub.
LH	LOWLAND HEATHS & BRECKS	Plant communities containing heather below 250m, including Breckland.
FM	LOWLAND FRESHWATERS AND THEIR MARGINS	Lowland still and running fresh waters, reedswamp, fen and riparian habitats.
WG	LOWLAND WET GRASSLAND	Grassland below 200m, usually subject to periodic flooding. Includes grazing marsh.
DG	LOWLAND DRY GRASSLAND	Downland and other 'unimproved', usually calcareous dry grasslands below 250m.
FA	FARMLAND	'Improved' pastures/leys, arable and other agricultural habitats such as hedges and ditches.
C	COASTAL	Sand dunes, shingle, brackish/salt-water lagoons, rocky coasts (above mean high water) and coastal cliffs.
E	ESTUARINE	Partially enclosed areas of water and soft tidal shore, open to sea water and receiving fresh water. Includes saltmarsh.
M	MARINE	Saltwater below mean low water, but below the 'lichen zone' (mean high water) on rocky coasts.
BE	BUILT ENVIRONMENT	Urban and suburban, derelict land and disused industrial sites.

## 5. Conservation status - Britain

The first column indicates whether the species is a *Red Data Bird* (\*) or 'candidate' *Red Data Bird* (c), as identified by Batten *et al* (1990). The second column lists the criteria upon which the bird species has been selected for *Red Data Bird* status in Britain. The letter codes are explained in the following table:

BI	Breeding in internationally significant numbers in Britain: >20% of the north-west European population.
WI	Non-breeding in internationally significant numbers in Britain: >20% of the north-west European population.
BR	Rare breeder: <300 pairs breeding in Britain.
BD	Declining breeder: >50% sustained decline since 1960.
BL	Localised breeder: >50% of the population occurs in the 10 most populated areas.
WL	Localised non-breeder: >50% of the population occurs in the 10 most populated areas.
SC	Special category: species shows cause for concern or declining numbers but inadequate data exists to quantify the extent of the problem.

Note that the country groupings defined as 'North-west Europe', used to assess the international significance of a population, differ between breeding and non-breeding populations, as explained in section 8.

6. Conservation status - EEC

This indicates the status of the species in terms of the EC Directive on the Conservation of Wild Birds (EEC/79/409):

- A = species referred to in Article 4.1 and listed in Annex I which shall be the subject of 'special conservation measures concerning their habitat' by the Member States 'in order to ensure their survival and reproduction in their area of distribution'.
- M = regularly occurring migratory bird species not listed in Annex I but which Member States should take similar measures as for Annex I species.

A full discussion of Britain's obligations under the EC Birds Directive is provided in Stroud *et al* (1990).

7. Legal status (1981)

All species of wild birds, and their eggs, nests and young are protected at all times of the year under the Wildlife and Countryside Act (1981-5). However, some species are listed on special schedules which confer either greater protection, or exemption from the general protection measures. These are indicated in Appendix I as follows:

- 1 Schedule 1 bird species specially protected by increased special penalties and which cannot intentionally be disturbed without a licence when nesting.
- 1(II) Schedule 1, Part II bird species; birds and eggs are protected by special penalties during the close season, but which may be killed or taken at other times.
- 2(I) Schedule 2, Part I bird species which may be killed or taken outside the close season.
- P Species formerly listed on Schedule 2, Part II, that are regarded as pests, and which may be killed or taken by an authorised person at all times. The schedule was disbanded in 1993 and replaced by a series of annually reviewed general licences which will allow authorised persons to undertake pest control.

8. Population estimates

Data has been collated from a wide variety of published and unpublished sources (sources for each species are listed on the right hand side of the table) to provide population estimates for breeding and wintering birds in England, Britain and for the appropriate biogeographic population. In addition, a population estimate for breeding birds within the Member States of the EC has also been provided as this is often used as an international comparison, particularly for the selection of 'Special Protection Areas'.

As can be seen from the table, there are a number of gaps in our knowledge of bird populations. This is particularly true in an international context as, for example, we know very little about the size of breeding wildfowl, gamebird and passerine populations in Europe. In contrast, population estimates for Britain exist for all species, although the quality may vary between species. For example, our knowledge of wintering wildfowl and wader populations is generally accurate and up to date as a result of the National Waterfowl Counts (NWC) and Birds of Estuaries Enquiry (BoEE) organised by the Wildfowl and Wetlands Trust and the British Trust for Ornithology respectively. This contrasts with the estimates for many

breeding bird species that are not rare and do not nest colonially. These are often based on distribution data collected for the first atlas of breeding birds between 1968 and 1972 (Sharrock 1976). The new atlas will update these population estimates (Gibbons *et al in press*).

The accuracy of population estimates for birds in England therefore varies between species, and this is indicated within Appendix I (see section 10). For example, data from species-specific surveys, such as the Nightjar survey (Gribble 1983), and the Rare Breeding Birds Panel are often provided at the county level and so accurate estimates can be made. In contrast, it has not been possible to ascertain population sizes for a number of species in England, including some breeding wildfowl and waders and the more abundant passerines, as the British estimates cannot readily be sub-divided. Indeed, for some species a population estimate for Britain and Ireland is all that is available, and this is indicated in Appendix I as 'B&I'. Note also that the population sizes for breeding Auks are given as individuals (as convention), and this is indicated as 'i'.

The geographical area to which international population estimates refer differs between species and breeding and wintering populations, and this is indicated in Appendix I by a series of letter codes. The country groupings for each biogeographic area are given in the following table:

Code	Full name	Country/area grouping
T	Total	Total world population of a species, race or population.
EURA	Eurasian	Europe & Asia combined.
WP	West Palearctic	Europe, North Africa & the Middle East, as defined in Cramp <i>et al</i> (1977)
EAF	East Atlantic Flyway	Major route for waders on migration along the eastern borders of the Atlantic Ocean, as defined by Smit & Piersma (1989).
EA	East Atlantic	Countries bordering the East Atlantic, as used for seabirds.
NA	North Atlantic	Countries in both Palearctic & Nearctic bordering the North Atlantic, as used for seabirds.
NWE	North-west Europe	<u>Breeding</u> : UK, Eire, Iceland, Faroes, Norway, Sweden, Finland, Denmark, Belgium, Luxembourg, Netherlands, Germany, France, Spain & Portugal, as defined in Batten <i>et al</i> (1990). <u>Wintering</u> : As above but includes only northern Germany, northern & western France, and north-west Spain, with the addition of northern Poland, used primarily for wildfowl as defined in Monval & Pirot <i>et al</i> (1989).
WE	Western Europe	As North-west Europe plus Italy, Switzerland and Portugal, and includes all of France & Spain.
WCE	Western & Central Europe	As Western Europe plus Poland, Czechoslovakia, Austria, Hungary, Yugoslavia, Romania, Bulgaria, Albania & Greece.
NW&CE	North-west & Central Europe	As North-west Europe plus the countries listed above.
M&B&I	Mediterranean, Britain & Ireland	Britain & Ireland & the countries bordering the Mediterranean, solely used for the nominate race of the Barn Owl.

Estimates of international population size are often derived from one-off surveys or computations, using different counting methods and with much coarser grained counting units



Our knowledge of the size of bird populations, particularly at an international scale and for certain groups of species, is far from complete. In addition, the quality and the age of population information may differ both between and for the same species. Despite these differences, our appraisal of the relative conservation priorities of birds in England is rarely hampered.

11. Sources

The data sources utilised for the population estimates and trends are given in the final columns in Appendix I. For each species the initial sources refer to those used to provide the population estimates for England and Britain, and the latter sources for the international comparisons. To save space, the sources have been letter coded as given in Appendix II.

Appendix IV Prioritization of species selected for review

Species	Priority Status	Red Data Bird (RDB)	RDB with internationally important breeding population in England	RDB rare breeder of > 10prs with > 80% of population in England	RDB wintering in internationally important numbers with > 85% of population in England	RDB regular rare breeder with < 10 pairs	RDB very rare or occasional breeder	Candidate Red Data Bird	Other species with > 75% of population in England
									Breeding Wintering
Red-throated Diver	High-List 2	*							
Black-throated Diver	High-List 2	*							
Great Northern Diver	High-List 2	*							
Red-necked Grebe	Medium	*					*		(*)
Slavonian Grebe	Low	*							
Black-necked Grebe	High-List 2	*							(*)
Manx Shearwater	High-List 2	*							
Storm Petrel	High-List 2	*							
Gannet	High-List 2	*							
Bittern	High-List 1	*		*					
Little Bittern	Low	*					*		
Bewick's Swan	High-List 1	*			*				
Whooper Swan	High-List 2	*							
Bean Goose	High-List 1	*			*				
Pink-footed Goose	High-List 2	*							
Greylag Goose	High-List 2	*							
Barnacle Goose	High-List 2	*							
Brent Goose (both races)	High-List 1	*			*				
Shelduck	High-List 2	*							
Wigeon	High-List 2	*							
Gadwall	High-List 1	*			*				
Teal	High-List 2	*							
Pintail	High-List 2	*							
Garganey	High-List 1	*		*					
Shoveler	High-List 2	*							
Pochard	High-List 2	*		*					
Scaup	High-List 2	*							
Long-tailed Duck	High-List 2	*							
Common Scoter	High-List 2	*							
Velvet Scoter	High-List 2	*							
Goldeneye	Low	*							
Smew	Medium	*							*
Honey Buzzard	High-List 2	*							
Red Kite ^	High-List 2	*					*		
Marsh Harrier	High-List 1	*		*					
Hen Harrier	High-List 2	*							
Montagu's Harrier	High-List 1	*		*					
Goshawk	High-List 2	*							
Buzzard	Medium	*						*	
Golden Eagle	High-List 2	*							
Merlin	High-List 2	*							
Hobby	Medium	*							*
Peregrine	High-List 2	*							
Red Grouse	High-List 2	*							
Black Grouse	High-List 2	*							
Red-legged Partridge	Low	*						*	
Grey Partridge	High-List 2	*							
Quail	High-List 2	*							
Spotted Crake	High-List 2	*							
Corncrake ^	High-List 2	*					*		
Crane	Medium	*				*			
Oystercatcher	High-List 2	*							
Black-winged Stilt	Low	*					*		
Avocet	High-List 1	*		*					
Stone Curlew	High-List 1	*		*					
Little Ringed Plover	Medium	*						*	
Ringed Plover	High-List 2	*							
Kentish Plover	Low	*							
Dotterel	High-List 2	*							
Golden Plover	High-List 2	*							
Grey Plover	High-List 1	*			*				
Lapwing	High-List 2	(*)						*	
Knot	High-List 1	*			*				
Sanderting	High-List 2	*							
Purple Sandpiper	High-List 2	*							
Dunlin	High-List 1	*			*				
Ruff	High-List 1	*		*					
Snipe	Medium	*						*	
Black-tailed Godwit	High-List 1	*		*					

^ The Red Kite is now a rare breeder in England following early success of a re-introduction scheme. The Corncrake is now a rare, irregular or occasional breeder in England. Both are classified as 'globally threatened' and have therefore been assigned High Priority 'List 2' status.

Appendix IV (continued) Prioritization of species selected for review

Species	Priority Status	Red Data Bird (RDB)	RDB with	RDB rare	RDB wintering	RDB	RDB	Candidate Red Data Bird	Other species with	
			internationally important breeding population in England	breeder of >10prs with >80% of population in England	in internationally important numbers with >85% of population in England	regular rare breeder with <10 pairs	very rare or occasional breeder		>75% of population in England	Breeding
Curlew	High-List 2	*								
Redshank	High-List 2	*								
Greenshank	Low	*								
Turnstone	High-List 2	*								
Mediterranean Gull	Medium	*				*				
Little Gull	Low	*					*			
Herring Gull	Medium							*		
Kittiwake	Medium							*		
Sandwich Tern	High-List 1	*	*							
Roseate Tern	High-List 2	*								
Common Tern ^	Medium									
Arctic Tern	High-List 2	*								
Little Tern	High-List 1	*	*							
Black Tern	Low	*					*			
Guillemot	High-List 2	*								
Razorbill	High-List 2	*								
Puffin	Medium								*	
Rock Dove	Medium								*	
Turtle Dove	Medium								*	
Barn Owl	High-List 2	*							*	
Short-eared Owl	Medium								*	
Nightjar	High-List 1	*		sc					*	
Kingfisher	Medium								*	
Hoopoe	Low	*					*			
Bee-eater	Low	*					*			
Wryneck	Low	*					*			
Lesser Spotted Woodpecker	Medium								*	*
Woodlark	High-List 1	*		*						
Shorelark	Medium	*								
Sand Martin	Medium							*		
Swallow	Medium							*		
Water Pipit	Medium									*
Yellow Wagtail	Medium							*		
Dipper	Medium							*		
Nightingale	Medium							*		
Black Redstart	Medium	*		*						
Redstart	Medium							*		
Whinchat	Medium							*		
Stonechat	Medium							*		
Wheatear	Medium							*		
Ring Ouzel	Medium							*		
Fieldfare	Low	*					*			
Redwing	Low	*					*			
Cetti's Warbler	High-List 1	*		*						
Savi's Warbler	High-List 1	*		*						
Sedge Warbler	Medium							*		
Marsh Warbler	High-List 1	*		*						
Reed Warbler	Medium								*	
Dartford Warbler	High-List 1	*		*						
Lesser Whitethroat	Medium								*	
Whitethroat	Medium							*		
Firecrest	Medium	*								
Spotted Flycatcher	Medium							*		
Bearded Tit	High-List 1	*		*						
Penduline Tit	Low	(*)					*			
Golden Oriole	High-List 1	*		*						
Red-backed Shrike	Low	*					*			
Raven	Medium							*		
Tree Sparrow	Medium							*		
Brambling	Low	*								
Serin	Low	*					*			
Linnet	Medium							*		
Twite	High-List 2	*								
Parrot Crossbill	Low	*					*			
Scarlet Rosefinch	Low	*					*			
Hawfinch	Medium								*	*
Lapland Bunting	Low	*								
Curlew Bunting	High-List 1	*		*						
Corn Bunting	Medium							*		

^ Common Tern qualifies as Medium priority as it is listed on 'Annex I' of the EC Birds Directive

sc Nightjar qualifies as High Priority 'List 1' as it has been recognised as a species of 'Special Concern' and >80% of the British population occurs in England

Appendix V Priority Indices for bird habitats in England, including lists of high priority species

Bird habitat	Area	Past losses	Predicted losses	'List 1' score	Number of 'List 2' species	High Priority score	Priority Index	Priority Rating	'List 1' species	'List 2' species
Montane	3	2	2	1	6	7	84	3		EA ME PE RG GP DO
Upland heaths	3	3	3	2	10	12	648	2	DN	EA GI HH ME PE RG BK GP CU TW
Upland mires	3	3	3	2	6	8	432	2	DN	HH ME PE RG GP CU
Uplands grasslands	3	1	2	1	8	9	54	3		HH GI ME PE GP L CU TW
Broad leaved woods/scrub	3	3	1	4	3	7	252	2	NJ WL OL	HZ KT GI
Lowland heath	3	4	3	5	3	8	1440	1	TN NJ WL DW	HH P CU
Dry grassland	3	4	3	3	5	8	864	2	TN MO	P HH Q CU BO
Swamps/fen/carr	3	3	2	11	10	21	4158	1	BI GA GY PO MR MO CW VI MW BR	BN WS GJ WN T PT SV HH AK RK
Lowland wet grassland	3	4	3	8	13	21	6048	1	BS BE GA GY PO RU BW	WS BY WN T PT SV AK CE GP L CU RK BO
Marine	1	1	1	3	15	18	54	3	TE AF	RH BV ND BN MX TM GX SP LN CX VS RS AE GU RA
Inshore waters	1	1	1	4	15	19	76	3	BG TE AF	RH BV ND BN MX TM GX SP LN CX VS RS AE GU RA
Sea cliffs and rocks	3	1	1	2	12	14	84	3	DN	MX TM GX PE OC RP SS CU RK TT GU RA
Intertidal flats	2	2	3	7	16	23	1932	1	BG AV GV KN DN BW	PG GJ BY SU WN T PT OC RP GP L SS BA CU RK TT
Saltmarsh	3	2	3	7	19	26	3276	1	BG AV GV KN DN BW	PG GJ BY SU WN T PT HH ME OC RP GP L SS BA CU RK TT TW
Shingle & sand	3	3	3	3	4	7	567	2	TE AF	OC RP SS AE
Coastal lagoons	3	3	2	5	5	10	900	2	PO AV BW AF	SU WN T PT SV
Oligo/mesotrophic waters	3	1	1	2	5	7	42	3	PO	WS PG GJ WN T
Eutrophic waters	3	2	2	4	9	13	624	2	BS PO GA	BN WS PG GJ SU WN T PT SV
Rivers & streams	3	2	2	2	0	2	48	3	MW	
Plantations	3	1	1	3	2	5	45	3	NJ WL	ME GI
Extraction pits and reservoirs	3	1	1	3	6	9	81	3	GA PO	BN SU WN T SV RP
Arable	2	1	2	7	13	20	560	2	BS BG MR MO TN CL	WS PG GJ BY WN T KT HH P Q GP L BO
Improved pastures & leys	2	2	2	6	13	19	912	2	BS BE BG MR MO	WS PG GJ BY WN T KT HH P Q GP L BO
Built up areas	2	1	1	2	0	2	8	3	PO	

- Note: (1) Area refers to the proportion of England's land and sea covered by the habitat, based on the following classes: 1 = >40%, 2 = 10-40%, 3 = <10%.  
 (2) Past losses refers to the proportion of habitat lost since World War II, and predicted losses to the proportion of the existing areas at risk over the next 25 years. Both are based on the following classes:-  
 1 = 0-10%, 2 = 11-40%, 3 = >40%  
 (3) 'List 1' score = (number of 'List 1' species) + 1 and High Priority score = 'List 1' score + number of 'List 2' species.  
 (4) Priority Rating : 1 = >1000 (High); 2 = 100-1000 (Medium); 3 = 0-100 (Low).

Sources: Habitat data based on Bibby et al 1989 (summarised in Housden et al 1991).

Key to species codes:-

AE= Arctic Tern, AF= Little Tern, AK= Spotted Crake, AV= Avocet, BA= Bar-tailed Godwit, BE= Bean Goose, BI= Bittern, BK= Black Grouse, BG= Brent Goose, BN= Black-necked Grebe, BO= Barn Owl, BR= Bearded Tit, BS= Bewick's Swan, BV= Black-throated Diver, BW= Black-tailed Godwit, BY= Barnacle Goose, CE= Cormorant, CL= Cirl Bunting, CU= Curlew, CW= Cetti's Warbler, CX= Common Scoter, DO= Dotterel, DN Dunlin, DW= Dartford Warbler, EA= Golden Eagle, GA= Gadwall, GI= Goshawk, GJ= Greylag Goose, GP= Golden Plover, GU= Guillemot, GX= Gannet, GY= Garganey, HH= Hen Harrier, HZ= Honey Buzzard, KT= Red Kite, L= Lapwing, LN= Long-tailed Duck, ME= Merlin, MO= Montagu's Harrier, MR= Marsh Harrier, MW= Marsh Warbler, MX= Manx Shearwater, ND= Great Northern Diver, NJ= Nightjar, OL= Golden Oriole, OC= Oystercatcher, P= Grey Partridge, PE= Peregrine, PG= Pink-footed Goose, PO= Pochard, PT= Pintail, Q= Quail, RA= Razorbill, RG= Red Grouse, RH= Red-throated Diver, RK= Redshank, RP= Ringed Plover, RS= Roseate Tern, RU= Ruff, SP= Scaup, SS= Sanderling, SU= Shelduck, SV= Shoveler, T= Teal, TE= Sandwich Tern, TM= Storm Petrel, TN= Stone Curlew, TT= Turnstone, TW= Twite, VI= Savi's Warbler, VS= Velvet Scoter, WL= Woodlark, WN= Wigeon, WS= Whooper Swan.

## APPENDIX VI Examples of work in progress and work proposed

### Primary Survey

In progress:

- surveys of moorland birds on Exmoor.

Proposed:

- comprehensive primary bird survey of the Pennines to the north of Skipton, for North Yorks Moors and for the Cheviots, including enclosed upland as well as open moorland

### Population Monitoring

We suggest the following requirements:

- annual assessments of distribution, population size, population trends and productivity for the whole population of high priority species with a breeding population of less than 300 pairs;
- annual population monitoring (density and breeding success) based on samples of the population for other high priority species, together with an assessment for the whole population every five to ten years;
- an assessment of population size and distribution every 20 years for all other breeding species. For key indicator species in this group, annual population monitoring of density and productivity based on sampling the population is required;
- for all High Priority 'List 1' species wintering in England, annual assessments of distribution and numbers should be made. Estimates of productivity in the previous summer should also be made. For wintering waders and wildfowl in the High Priority 'List 2' category, annual estimates of distribution and abundance should be made;
- wintering species in other priority groups should be similarly censused every 20 years, but for key indicator species an annual index of population size should be obtained.

In progress:

- Wetland Birds Survey (BoEE and NWC combined) run through the JNCC managed contract with BTO and WWT on our behalf;
- Seabirds Monitoring Programme, run by JNCC on our behalf;
- Rare Breeding Birds Panel contract managed by JNCC on our behalf;
- integrated population monitoring programme at BTO managed by JNCC on our behalf;
- development of a monitoring scheme for Schedule 1 breeding birds in England through the licensing process.

Proposed:

- expand the range of species, habitats and natural areas represented within a national breeding birds monitoring scheme.

#### Population and Site Safeguard

In progress:

- licensing of visits to nests of Schedule 1 birds;
- preparation of briefs and citations for proposed Special Protection Areas and Ramsar sites;
- provision of advice to MAFF on prescriptions and other matters concerned with new and existing ESA's and the management of set-aside;
- direct management of NNR's and encouragement of owners or managers of SSSI's
- determination of and target setting for characteristic and indicator species for natural areas and prime bio-diversity areas;
- development of bird habitat action plans for reedswamps and lowland wet grasslands;
- production of draft Species Action Plans with RSPB, SNH, CCW, JNCC and others;
- production of estuary management plans.

Proposed:

- publish English Nature Species Action Plans for birds to set objectives, identify priority actions and establish implementational responsibilities. Integrate the requirements of birds into all our work programmes;
- Implement these plans in accordance with our priorities taking action for suites of bird species, co-ordinated through agreed bird-habitat action plans. Action for single species may be appropriate in certain circumstances.

#### Research

In progress:

- A study of the habitat requirements of breeding Golden Plover.

Proposed (in priority order):

- autecological studies of bird habitat requirements in relation to land management, particularly in the uplands. Key species will include Curlew, Ring Ouzel and Twite;
- the potential impact of sea-level rise and climate change for birds, especially those associated with the coast;
- the factors affecting low-tide distribution, abundance and foraging activity of estuarine waterfowl;

- the significance of the impacts of recreational disturbance on breeding upland birds and on waders and wildfowl on estuaries, the coast and inland freshwaters;
- the significance of predation on ground nesting birds with emphasis on upland breeding waders and coastal breeding terns;
- the impacts and mitigation of habitat fragmentation on birds with special reference to heathlands. Emphasis will be placed on determining remedial actions;
- the importance of the coastal fringe for non-waterfowl bird species and assemblages.

### Communications

#### In progress:

- develop and publish an English Nature bird conservation strategy;
- make the results of our in-house and commissioned research available rapidly as English Nature Research Reports;
- ensure that our research is published in refereed scientific journals wherever possible;
- take all available opportunities to publish popular accounts dealing with birds in England and the role of English Nature;
- contribute to a Species Conservation Handbook by providing information sought or generic solutions to problems encountered by a wide range of internal staff.

#### Proposed:

- produce an annual report, in popular format, concerning the status of the 27 High Priority 'List 1' species in England.