

## WADERS

by R.J. Waters

The Birds of Estuaries Enquiry (BoEE) is co-sponsored by the British Trust for Ornithology (BTO), Joint Nature Conservation Committee (on behalf of English Nature, the Countryside Council for Wales, and Scottish Natural Heritage), the Royal Society for the Protection of Birds (RSPB) and the Department of the Environment for Northern Ireland (DoENI), and is organised by staff of the BTO Estuaries Unit based at Thetford, Norfolk. Including the 1969-70 Pilot Study, the twenty-third consecutive season of co-ordinated counts for the BoEE took place between July 1991 and June 1992. Counts are made on selected dates near the middle of each month, timed to coincide with the best tidal conditions for censusing estuarine birds.

### PROGRESS AND DEVELOPMENTS

#### *Staff changes*

The year saw major staff changes in the Estuaries Unit and the launch of an exciting new project. After five years as Head of the Estuaries Unit, Dr Robert Prys-Jones returned to the Tring area to take up the challenging post of Head of Ornithology at the British Museum. We wish Robert well, knowing that his wide-ranging encyclopedic knowledge will be difficult to replace. His successor, Dr John Cayford, arrives from the RSPB with extensive research experience, not only of waders, but also with a wide range of species such as Black Grouse, Barn Owl and Bearded Tit. His papers on waders, often focusing on the feeding biology of the Oystercatcher and co-written with Dr John Goss-Custard, have frequently been listed in previous issues of this report. In 1992, we also welcomed Julianne Evans, our recently appointed organiser of the new National Low Tide Count Programme. Julianne is no stranger at the Nunnery, having worked on several short-term contracts for the BTO, as well as being a keen member of the Wash Wader Ringing Group. Her previous experience of both organising and counting on the Severn and Exe will stand her in good stead in her new job.

#### *National Low Tide Count Programme*

The new National Low Tide Count programme will build on the considerable experience that the BTO has gained from a range of short-term projects, often set up in response to specific development proposals. The aim of this programme is to assess

the distribution of feeding birds within each of the main UK estuaries once every five years or so. This can be achieved by counting about a dozen estuaries each winter on a rotational basis. Fieldwork will normally involve one low tide count each month from November to February. These Low Tide Counts do not in any way replace the existing BoEE scheme, which will continue to produce accurate estimates of the total waterfowl populations on all UK estuaries. Instead, they will augment the BoEE by recording the feeding distribution of the birds within the intertidal areas of these estuaries, thus providing further vital information for conservation purposes.

It is hoped that some recruits for low tide counting will come from existing BoEE counters, who feel they can take on this extra commitment, but further volunteers will also be sought from other birdwatchers, not yet involved in counting birds on estuaries. We hope the existing BoEE counting teams will also contribute their invaluable local knowledge to help draw up detailed count programmes and thank all BoEE counters who have already contributed vital information about their site or offered their services for counting.

During the 1992-93 winter the following estuaries will be participating in this new scheme: Camel, Clwyd, Dengie, Eden, Forth, Hamford Water, Lindisfarne, Montrose Basin, Portsmouth Harbour, NW Solent, Strangford Lough, Swale and Wigtown Bay. Further estuaries will also be covered by counting teams, who have initiated their own low water counts and who have sought BTO advice on methodology. This exciting new programme, funded by the RSPB but run in close collaboration with the JNCC, will also be collating Low Tide Count data from any current, future or past scheme to set up a Low Tide database, which will surely prove a valuable asset for researchers and conservationists alike.

#### *BoEE*

The foundation of most estuarine work, both within the BTO and outside, remains the BoEE and the thousand counters involved are to be congratulated on their enthusiasm and dedication. A recent investigation into waterfowl counting techniques, carried out on the Wash, produced some encouraging findings for those involved in estuarine counting (Yates & Goss-Custard 1991). High water roost counts and low water feeding counts were performed, the results analysed and the two methods compared. The correspondence between the two methods was generally good, with

major discrepancies being few and generally straightforward to resolve. This study also supported the general practice of using peak counts to assess an estuary's importance, as is done in *Wildfowl and Wader Counts*.

Requests for BoEE data continue to increase, with a record of over 90 such requests handled during the 1991-92 season. In particular, requests for amateur research purposes have risen steadily. An important new development is the regular provision of data to the International Waterfowl and Wetlands Research Bureau (IWRB). Following the recent establishment of an international wader database, run by Cor Smit of the Netherlands and supervised by staff at the IWRB headquarters, BoEE count data will in future be supplied annually to IWRB and will greatly strengthen international efforts to conserve waterfowl. Comprehensive sets of BoEE data were as usual supplied to JNCC and RSPB, enabling count data to be readily available to provide the scientific background to conservation issues. JNCC in turn runs an information source to make these data available to country agency staff.

#### *Indexing*

Traditionally year-to-year changes in UK wintering populations of waders have been measured using the "January index". A far more refined population indexing technique has, however, recently been developed by Professor Les Underhill. This new index incorporates counts from more months and covers more sites than used by the traditional January index. By making more use of BoEE data, the 'Underhill Index' permits a more detailed and robust species-by-species review of population trends. The results of this exciting new technique are due to appear as a series of scientific papers in the near future, and it will be adopted as the standard measure of population trends in the next issue of *Wildfowl and Wader Counts*.

#### *Non-estuarine Sites Review*

During 1991 the BoEE Estuarine Sites Review was published (Kirby 1991). This report details the site boundaries, count procedures and counting problems specific to each estuary in the UK. It therefore provides an invaluable reference that helps to ensure consistency and standardisation of BoEE counting on estuaries. The BoEE has always included information from a number of 'non-estuarine' sites, which now make up approximately 30% of the total sites (see below). During 1992, counters of these non-estuarine sites have provided similar key information, which has now been

collated by Ray Waters, in liaison with WWT, to produce a Non-estuarine Sites Review (Waters in prep.). This draft review should be finalised shortly. As well as documenting counting procedure, this review recommends ways of improving coverage of species such as Purple Sandpiper, Turnstone, Sanderling and Ringed Plover, whose wintering populations are largely non-estuarine in the UK.

#### *Wader Productivity Database*

Many of our wintering waders breed in remote, areas of Europe, Greenland, Canada and Russia. It is well-known that the breeding success of waders in the arctic can fluctuate erratically from year to year and it is highly probable that these annual variations in productivity affect the BoEE counts here. Direct monitoring of the breeding success across the vast breeding ranges of these species is clearly impractical. However, wader ringers routinely record the number of first year birds in their catches, thus providing some indication of the breeding success of the previous summer. Results of wader catches are now recorded on revised versions of the return forms, many of which have reached BTO HQ, and been entered on to our database on Wader Productivity. This information has already proved useful in a study being conducted by Jackie Clark into the effects of severe cold weather on waders on the Wash (Clark *et al.* in prep.). It will certainly improve our understanding of trends in wader numbers as shown by BoEE count data, as well as providing new facts relevant to a wide range of future wader research work.

#### *Publications*

The result of the former NCC's review of estuarine conservation (Davidson *et al.* 1991) is certain to prove an invaluable reference for anyone involved in conservation work or any biological studies of estuaries. *Nature conservation and estuaries in Great Britain* brings together a wide array of information on a wealth of topics such as geomorphology, tides, plants, invertebrates and all vertebrates, as well as the influence of man. Also included is a "directory" of British estuaries which documents many of the features of each of our 155 estuaries. A similar exercise is currently being undertaken by JNCC for estuaries in Northern Ireland with funding by DoE(NI).

### *Habitats Advisory Unit*

In addition to the BoEE and Low Tide Count programme, the BTO continues to be involved in shorter-term research projects aimed at providing information to resolve key estuarine environmental issues. These range from specific site based assessments, such as road planning schemes, to studies of the distribution of birds on British estuaries. Short-term contract research on estuaries is now organised by the Habitats Advisory Unit, set up in January 1992 to co-ordinate and carry out applied research work covering all habitats. At the time of writing, this unit comprises three full-time permanent staff and five contract research officers. Although located in different offices, close day-to-day contact between staff of the Estuaries Unit and those in the Habitats Advisory Unit will ensure that long-term monitoring and short-term research projects will complement each other.

The BTO continues to work on several research projects relating to tidal energy, funded primarily by the Energy Technology Support Unit (ETSU) of the Department of Energy (now within the Department of Trade and Industry). Although these studies were set up with a specific objective in mind, they are proving to be of fundamental importance in helping us to understand how and why waterfowl are distributed within estuaries. For example, detailed studies of habitat utilisation by Dunlin on fourteen British estuaries, have indicated an increase in bird density on areas with a higher proportion of silt and clay. The estuaries studied were chosen because their current tidal regimes approximate that predicted for a post-barrage Severn Estuary. These findings indicate that changes in sediment distribution, following the construction of a tidal barrage, could therefore affect the distribution of Dunlin (McCulloch & Clark 1991).

Studies on the Severn and Mersey estuaries have accumulated, respectively, five and four successive years of information on low tide bird distribution (Holloway *et al.* 1992; Warbrick *et al.* 1991). These data are being analysed to investigate year-to-year variability in estuarine bird distributions. These research programmes have been instrumental in refining the methodology proposed for the new National Low Tide Count Programme, which enters its first year in winter 1992-93.

Work is well advanced on the effects of the period of severe winter weather which caused high mortality of waders on the Wash in February 1991 (Clark *et al.* in prep.). Local BoEE counters and

members of the Wash Wader Ringing Group collected over 2,800 corpses from the shores of the Wash. Most of the birds which died were emaciated, obviously unable to obtain enough food at a critical time when their winter fat reserves were depleted. These corpses were measured, aged on plumage characters and dissected to determine sex. BoEE count data and information from our newly established Wader Productivity database have been analysed to provide a fascinating insight into the population structure of the birds which died. In the year following the cold spell (1991-92) Redshank numbers were down on the previous average counts in all months of the year and the proportion of juveniles was almost double the average of the previous 30 years. With other species, such as Oystercatcher and Knot, it was found that smaller individuals were far more susceptible to the cold spell than large ones.

The work of the Habitats Advisory Unit also contributes to site safeguard measures which are the responsibility of government agencies, such as the Countryside Council for Wales (CCW) (part of the former Nature Conservancy Council). For instance, Warbrick *et al.* (1992a) recently completed a report to CCW on the past trends and present use of Swansea Bay by waders.

Increasingly, the BTO is being asked to carry out ornithological site assessments for a wide variety of development proposals. British Gas commissioned the BTO to undertake studies on the Duddon (Warbrick *et al.* 1992b) and north Morecambe Bay during 1991-92, in relation to proposals for new gas pipelines. We have also been called upon to carry out assessments of several sites throughout the country, where new road schemes are planned. Some of these developments potentially impinge on estuaries and research using existing information and new fieldwork is used to good effect to make recommendations for minimising any possible damage.

The provision of impartial, factual information is an essential prerequisite for decision making at all levels in the planning process. The contribution made by volunteers cannot be over-valued. Your hard work, in partnership with a small team of professional staff, has enhanced our knowledge of estuary bird populations enormously. Please keep it up!

## DATA PRESENTATION

The period of year covered comprehensively in this report comprises the entire winter (November-March), although additional information relating to the spring (April-June) and autumn (July-October) is provided for species with notable passage populations. The areas counted at each site have not altered since 1990-91. Where information is available on sites classified as non-estuarine this is also incorporated, but such sites are clearly indicated by an asterisk (\*).

It is necessary to exercise caution when using BoEE information, especially in the summary form as presented here, for making statements regarding the conservation importance of sites. Please refer to the section "Interpretation of waterfowl counts" (p.1) for guidance, or contact Ray Waters, BoEE National Organiser, BTO, (at the address on p.2), who will be happy to advise.

## COVERAGE IN 1991-92

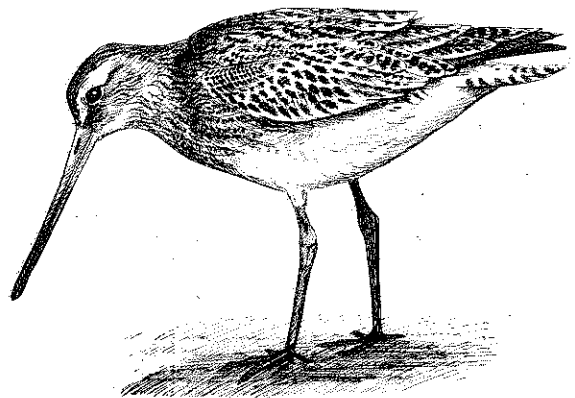
For the second year running and for only the second time ever, winter counting occurred at all 117 estuarine sites shown in Figure 2. The commitment and dedication of our BoEE counting teams attracts the admiration of conservationists across the world. Complete counts were made at least once at all sites except only Lindisfarne, where a sudden changeover in site organiser occurred. Future coverage at this site will be further improved thanks to the efforts of the newly installed local organiser. As well as 117 estuarine sites, 50 sites classified as non-estuarine, and usually open-coast, were counted during the 1991-92 winter (listed on p.84).

## UNITED KINGDOM POPULATION TOTALS

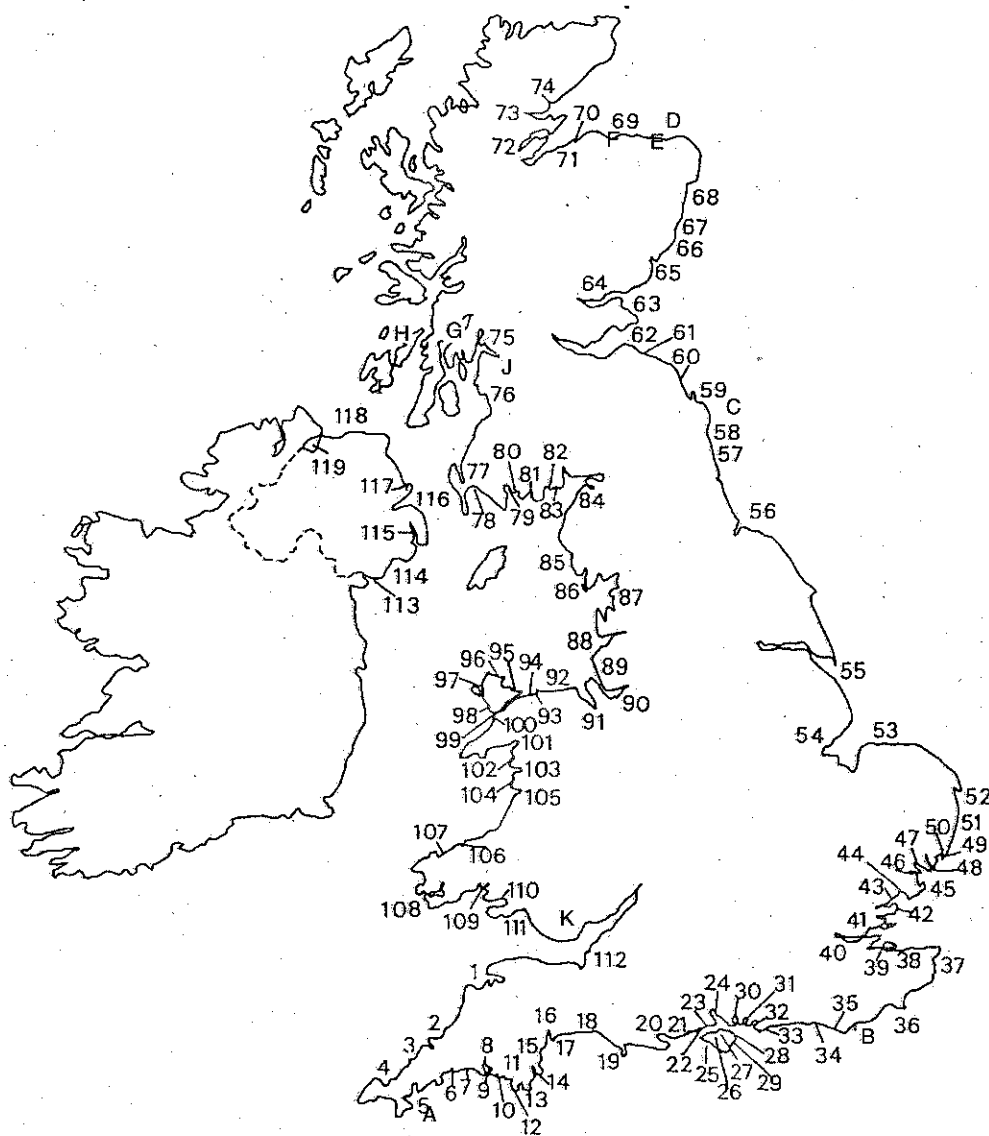
Table 38 shows the total populations of each wader species counted in each winter month of 1991-92 in both Great Britain and Northern Ireland. The numbers of BoEE sites (including both estuaries and non-estuarine sites) covered in each month are also given. Recorded totals of the highly cryptic Jack Snipe and Snipe are likely to be far smaller than the populations of those species actually present on the BoEE sites covered, but for most other species the figures should provide reliable population estimates. The period November 1991 to March 1992 contained no prolonged periods of cold weather (for fuller details see p.1).

The previous monthly record UK total of all wader

species (made in January 1991) was surpassed by just 20,000 birds in January 1992 when 1,727,195 birds were counted. In each of the other winter months UK totals were slightly lower than in the 1990-91 season. Comparisons of simple UK totals can be misleading since differences in coverage are ignored. The use of January indices corrects for these differences to give a better picture of actual population trends although these indices ignore counts from the other winter months and some species are excluded (see below). In the case of 1990-91 and 1991-92, site coverage was similarly high in both winters, enabling more meaningful comparisons of the UK totals of these two winters to be made. The very low UK totals of several species recorded in February and March 1991, almost certainly the result of the very cold spell in February, were comfortably surpassed by the corresponding totals of twelve months later. Furthermore, in one or more months of the 1991-92 winter, counts of Golden Plover, Black-tailed Godwit, Sanderling and Avocet each produced UK totals that were the highest ever recorded for that month. On the negative side, UK totals of Ringed Plover, Snipe and Purple Sandpiper were apparently well down on recent winters in most months. Interpretation of these counts should be made with caution because the BoEE does not adequately monitor Snipe nor Purple Sandpiper and because large numbers of Ringed Plovers winter on open coasts which are not comprehensively covered by the BoEE. Nonetheless the very low counts of these species should be noted and a close eye should be kept on their trends over future winters.



**Figure 2. MAP OF THE BRITISH ISLES SHOWING THE LOCATIONS OF ALL ESTUARIES CONSIDERED IN THIS REPORT.**



**Site numbers are as follows:**

1 Taw/Torridge; 2 Camel; 3 Gannel; 4 Hayle; 5 Fal complex; 6 Fowey; 7 Looe; 8 Tamar complex; 9 Plym; 10 Yealm; 11 Erme; 12 Avon; 13 Kingsbridge; 14 Dart; 15 Teign; 16 Exe; 17 Otter; 18 Axe; 19 The Fleet/Wey; 20 Poole Harbour; 21 Christchurch Harbour; 22 NW Solent; 23 Beaulieu; 24 Southampton Water; 25 Yar; 26 Newtown; 27 Medina; 28 Wootton; 29 Brading Harbour; 30 Portsmouth Harbour; 31 Langstone Harbour; 32 Chichester Harbour; 33 Pagham Harbour; 34 Adur; 35 Newhaven; 36 Rye Harbour/Pett Levels; 37 Pegwell Bay; 38 Swale; 39 Medway; 40 Thames; 41 Crouch/Roach; 42 Dengie; 43 Blackwater; 44 Colne; 45 Hamford Water; 46 Stour; 47 Orwell; 48 Deben; 49/50 Alde complex; 51 Blyth; 52 Breydon Water; 53 N Norfolk Marshes; 54 Wash; 55 Humber; 56 Tees; 57 Blyth; 58 Coquet; 59 Lindisfarne; 60 Tweed; 61 Tynningham; 62 Forth; 63 Eden; 64 Tay; 65 Montrose Basin; 66 Dee; 67 Don; 68 Ythan; 69 Spey; 70/71 Inner Moray Firth; 72 Cromarty Firth; 73 Dornoch Firth; 74 Loch Fleet; 75 Inner Clyde; 76 Irvine; 77 Loch Ryan; 78 Luce Bay; 79 Wigtown Bay; 80 Fleet Bay; 81 Kirkcudbright Bay; 82 Auchencrain Bay; 83 Rough Firth; 84 Solway; 85 Irt/Mite/Esk; 86 Duddon; 87 Morecambe Bay; 88 Ribble; 89 Alt; 90 Mersey; 91 Dee; 92 Clwyd; 93 Conwy; 94 Lavan Sands; 95 Red Wharf Bay; 96 Dulas Bay; 97 Inland Sea; 98 Cefni; 99 Braint; 100 Foryd Bay; 101 Traeth Bach; 102 Arto; 103 Mawddach; 104 Dysynni; 105 Dyfi; 106 Teifi; 107 Nyfer; 108 Cleddau; 109 Carmarthen Bay; 110 Burry; 111 Swansea Bay; 112 Severn; 113 Carlingford Lough; 114 Dundrum Bay; 115 Strangford Lough; 116 Belfast Lough; 117 Lough Larn; 118 Bann; 119 Lough Foyle.

Following publication of the Estuaries Review (Davidson *et al.* 1991), several BoEE sites previously treated as non-estuarine will, as from the 1992-93 edition of *Wildfowl and Wader Counts*, be treated as estuarine sites. These newly classified estuarine sites are coded above using a letter: A Helford; B Cuckmere; C South Alnmouth; D Banff; E Buckie Shore; F Lossie; G Loch Gilp; H Loch Gruinart (Islay); I Loch Indaal (Islay); J Hunterston; K Ogmere.

**Table 38. TOTAL NUMBERS OF WADERS RECORDED BY BOEE COUNTS IN THE UNITED KINGDOM DURING WINTER 1991-92**

<b>BRITAIN</b>	<b>November</b>	<b>December</b>	<b>January</b>	<b>February</b>	<b>March</b>
Oystercatcher	228,124	245,523	255,745	221,419	141,441
Avocet	1,258	1,403	1,351	1,402	1,376
Little Ringed Plover	0	0	0	0	2
Ringed Plover	9,095	9,605	8,814	8,270	3,921
Kentish Plover	0	0	0	0	1
Golden Plover	54,707	40,510	53,871	71,971	20,269
Grey Plover	35,054	38,197	47,620	41,627	46,334
Lapwing	120,844	107,988	213,435	159,155	15,366
Knot	276,776	280,905	266,792	213,366	120,249
Sanderling	7,274	5,220	6,665	7,420	6,517
Little Stint	4	2	1	1	1
Curlew Sandpiper	5	1	0	0	0
Purple Sandpiper	683	1,238	1,378	1,345	1,142
Dunlin	430,036	509,097	566,130	448,072	190,626
Ruff	140	155	252	252	110
Jack Snipe	68	36	32	20	18
Snipe	2,041	1,837	1,592	1,421	952
Woodcock	13	2	0	0	0
Black-tailed Godwit	8,358	7,166	6,915	8,388	8,205
Bar-tailed Godwit	28,297	27,908	41,836	56,786	13,428
Whimbrel	25	6	3	2	3
Curlew	53,584	56,025	78,114	83,890	57,380
Spotted Redshank	68	80	79	55	43
Redshank	66,625	69,941	74,128	72,008	57,908
Greenshank	208	268	159	170	96
Green Sandpiper	32	30	18	23	18
Common Sandpiper	19	12	10	15	9
Turnstone	14,692	16,271	16,010	16,684	14,763
Grey Phalarope	1	0	0	0	0
Stone Curlew	0	0	0	0	1
Dotterel	0	0	0	1	0
<b>Total</b>	<b>1,338,031</b>	<b>1,419,426</b>	<b>1,640,950</b>	<b>1,413,763</b>	<b>700,179</b>
<b>No. sites counted</b>	<b>132</b>	<b>144</b>	<b>150</b>	<b>149</b>	<b>133</b>



NORTHERN IRELAND	November	December	January	February	March
Oystercatcher	9,010	13,764	14,183	13,255	7,754
Ringed Plover	548	1,159	905	206	112
Golden Plover	4,840	11,125	6,474	8,523	7,981
Grey Plover	69	104	106	176	77
Lapwing	4,412	14,975	27,352	9,999	1,384
Knot	2,784	4,832	8,376	2,702	519
Sanderling	32	2	9	1	62
Purple Sandpiper	80	130	67	71	67
Dunlin	6,233	15,006	14,535	10,723	2,222
Ruff	4	1	3	5	0
Jack Snipe	2	0	0	1	0
Snipe	73	89	113	67	85
Black-tailed Godwit	54	272	356	111	121
Bar-tailed Godwit	955	374	340	1,592	240
Curlew	2,316	3,115	6,206	6,655	2,988
Whimbrel	0	0	0	0	1
Spotted Redshank	0	0	1	1	0
Redshank	3,152	5,059	5,387	5,086	4,561
Greenshank	66	55	78	60	45
Turnstone	1,597	2,007	1,754	1,762	1,669
<b>Total</b>	<b>36,227</b>	<b>72,069</b>	<b>86,245</b>	<b>60,996</b>	<b>29,888</b>
No. sites counted	6	7	8	6	6
<b>UK Totals</b>	<b>1,374,258</b>	<b>1,491,495</b>	<b>1,727,195</b>	<b>1,474,759</b>	<b>730,067</b>

## INDICES OF WINTERING NUMBERS

The geographical coverage achieved by the BoEE varies from year to year; it is not therefore possible to derive satisfactory data on population changes between winters simply by examining national totals of birds counted. To overcome this problem, an index of wintering numbers has been devised, based on the January counts. The indices have been calculated by the same method as for wildfowl (see p.13), except that 1973 is used as the arbitrary "anchor" year. Species which occur only in small total numbers are excluded. Lapwing and Golden Plover are also excluded because a high proportion of the population occurs on inland fields, with frequent large scale movements between the coast and inland; as a result, the indices for these species would be highly sensitive to cold weather movements rather than reflecting true changes in population levels from year to year.

Four species included in the index registered population changes exceeding 10% compared to January 1991. Curlew increased by 19% to recover from the large decrease shown in January 1991. Grey Plover continued its phenomenal long-term increase, with a rise of 17% to bring the index over the 400 mark for the first time. An 11% increase for

Sanderling caused its January index to reach its highest level for nine years. Only Ringed Plover showed a sizable decline (more than 10%) with the January 1992 index being 12% below that of the previous year. Possible causes of these changes are discussed in the individual species accounts. However, for all species it should be borne in mind that whereas long-term trends in index values almost certainly indicate real changes in overall wintering populations, short-term fluctuations may merely reflect changes in population distribution caused by factors such as the weather.

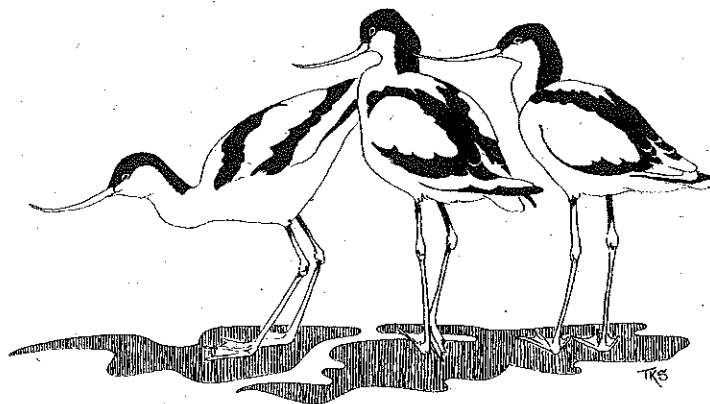


Table 39. JANUARY INDICES FOR WADER POPULATIONS IN THE UNITED KINGDOM, 1971-92

	Mean 1971 to 75	Mean 1976 to 80	Mean 1981 to 85	Mean 1986 to 90	1991	1992
Oystercatcher	116	158	173	214	222	212
Ringed Plover	107	129	141	143	149	131
Grey Plover	115	157	173	286	366	430
Knot	112	84	83	95	113	112
Sanderling	129	120	107	92	108	119
Dunlin	101	93	71	68	92	90
Bar-t. Godwit	101	137	184	153	123	113
Curlew	119	103	93	93	84	100
Redshank	100	97	77	93	85	92
Turnstone	118	143	130	174	160	149

As from 1992-93 it is intended to introduce a new system of indexing population levels of waterfowl (see page 58).

### SPECIES ACCOUNTS

The tables presented in this section rank the principal sites, including all internationally important ones, for each species in the United Kingdom on the basis of the average winter maxima recorded over the last five winters (November - March inclusive). (For explanation of international and national importance and the qualifying levels for each species see Appendix 1). Incomplete counts presented for individual years are bracketed. The five-year averages for each site were in the first instance calculated using only complete counts, but

if any incomplete counts exceeded this initial average they were then also incorporated in order to give the best possible estimate of the average winter peak count (x indicates no winter counts were made in that year). The "recent averages" mentioned below refer to the averages based on the winters 1986-87 to 1990-91, as presented in *Wildfowl and Wader Counts 1990-91*. Although the tables presented below cover the winter period (November - March inclusive), recent notable publications covering any period of the year are mentioned under the species accounts.

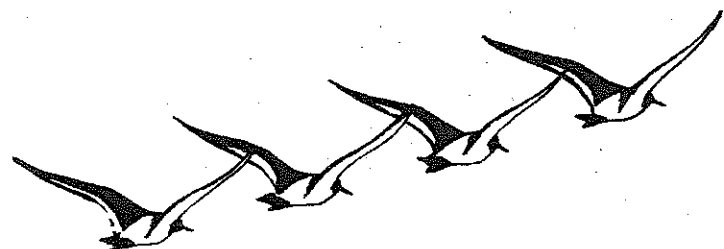
#### Oystercatcher *Haematopus ostralegus*

Internationally important: 9,000  
Nationally important: 2,800

In January 1992 the Oystercatcher UK index was 4% lower than the previous year, taking it to its lowest level for five years. Seven sites remain internationally important for this species in winter and these are listed in Table 40, along with all other nationally important sites that support peak counts averaging over 5,000. Counts at most of these major sites were typical of recent winters.

Oystercatchers are generally considered to be estuarine/coastal birds in winter. However, Dott (1992) has recently reported Oystercatchers

regularly feeding on fields in the parks of Edinburgh during the winter. He showed that flocks of up to 150 birds could regularly be found feeding on playing fields and parks 1-2 km inland from the Firth of Forth. It has long been considered that birds feed inland over the high tide period to supplement their low tide feeding on intertidal flats. However he noted that Oystercatchers could be found on fields at all states of the tide and under many different weather conditions. He was unsure, however, whether these birds were part of the large flocks on the nearby Forth and whether the same groups of individuals came on to the fields each day. In a recent study of a population of Oystercatchers breeding on saltmarsh in the Wadden Sea, Ens *et al.* (1992) found that the pairs breeding right on the edge of the saltmarsh, where their territory covers both saltmarsh and intertidal flats used for feeding, are much more successful than pairs breeding slightly further from the mudflats. When these





inland pairs fly out onto the mudflats to feed they leave their chicks vulnerable to predators and collection of food for the growing chicks is more time consuming than for those pairs closer to the mudflats. By holding a territory immediately adjacent to the coastal birds they are, however, in a prime position to take over a coastal territory when the opportunity arises. They may have to breed inland for many years with extremely low breeding

success before the opportunity arises to move nearer the mudflats.

An Oystercatcher on the Wash in Norfolk recently extended the longevity record for this species, and probably for any wader, as it had been ringed as a chick 31 years and 4 months earlier. It will unfortunately not be extending this record in future as it was picked up freshly dead.

**Table 40. OYSTERCATCHER: WINTER MAXIMA AT MAIN RESORTS**

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Morecambe Bay	61,664	50,776	64,967	56,361	49,157	(Nov)	56,585
Wash	35,421	46,912	40,689	33,791	(28,303)	(Dec)	39,203
Solway	32,916	28,536	(27,959)	40,095	36,533	(Jan)	34,520
Dee (Eng/Wales)	28,890	27,397	33,293	35,774	35,681	(Nov)	32,207
Ribble	15,062	19,271	(15,046)	18,263	16,290	(Dec)	17,221
Burry	19,334	(14,980)	(11,862)	15,151	11,577	(Dec)	15,354
Thames	(9,438)	(8,295)	9,973	(17,378)	9,711	(Dec)	12,354
Forth	(7,574)	(7,600)	5,859	7,374	10,506	(Dec)	7,913
Duddon	6,650	6,401	8,428	5,898	5,880	(Feb)	6,651
Humber	(3,522)	(5,102)	(4,750)	(5,806)	(5,687)	(Jan)	(5,806)
Belfast Lough	6,689	5,594	4,480	5,601	5,787	(Jan)	5,630
Inner Moray Firth	5,423	4,901	5,022	5,060	5,246	(Jan)	5,130

#### **Avocet *Recurvirostra avosetta***

**Internationally important: 700**  
**Nationally important: 50**

The numbers of Avocets wintering in the UK during 1991-92 remained at about the same high level of the previous winter. However, in February and March 1991 numbers dropped heavily around the time of the very cold spell, whereas in 1991-92 no prolonged cold snaps occurred, and numbers did not fall in February nor March. Eight sites now qualify as nationally important for wintering Avocet and these are listed in Table 41. The Thames and the Swale qualify for the first time, with all the remaining sites also recording increased numbers in 1991-92. In addition to these sites, North Norfolk Marshes (93 in March), the Blyth in Suffolk (73 in February) and the Deben (54 in December) all recorded over 50 birds in 1991-92, although their 5 year average peaks still remain below the qualifying level. The Alde complex remains the stronghold for this species and unless unexpectedly low numbers occur in future winters, this site should soon qualify as the first UK site of international importance for wintering Avocet.

Numbers on the Medway typically peaked in early winter, whereas on the Swale the highest counts were, as usual, in late winter. During mid-winter, numbers were low on both the Swale and the Medway but this coincided with the period of the highest counts on the nearby Thames. This pattern strongly suggests

regular movements between these three estuaries and strengthens the case for treating the Thames and its neighbouring estuaries as one unit, "the Greater Thames", as recommended by the RSPB (1992).

In his long-running study of Avocets wintering on the Tamar complex, Reay (1992) discovered during 1991-92 a more dispersed and mobile population than in the previous winter, which he suggests indicates that perhaps some adverse environmental change had taken place. Hill & Carter (1990) investigating Avocet population dynamics constructed a population model based on data from the Havergate Island site and used this to evaluate the effects of manipulating egg loss and chick loss on subsequent breeding pair density and productivity. The results suggest that the decline in the number of young fledged per pair observed at Havergate in recent years was largely due to the increase in chick loss over the period. This was offset by an increased proportion of these chicks returning two years later as breeding adults. Thus breeding populations cannot be increased significantly through manipulation to reduce either egg or chick loss. However, improving chick survival would increase productivity which would create a core of 'dispersers' that could colonise other sites.

Table 41. AVOCET: WINTER MAXIMA AT MAIN RESORTS

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Aide complex	285	514	721	729	946	(Mar)	639
Exe	152	229	379	323	473	(Feb)	311
Tamar complex	(102)	90	185	240	231	(Dec)	186
Hamford Water	(64)	85	(0)	188	227	(Nov)	166
Medway	(16)	(38)	(136)	36	215	(Nov)	129
Poole Harbour	48	65	122	175	144	(Jan)	110
Thames	22	(40)	58	(37)	137	(Dec)	72
Swale	1	(18)	36	(75)	136	(Mar)	62

**Ringed Plover *Charadrius hiaticula***

**Internationally important: 500**  
**Nationally important: 230 (passage 300)**

The January 1992 index for Ringed Plover was 12% below that of the previous year. In fact, UK totals were below the recent averages for all months of the 1991-92 winter. All internationally important sites, plus those of national importance with winter peaks averaging over 400 birds, are shown in Table 42. Numbers at most major sites were generally down on the recent averages, although at some sites these fluctuations were minor in comparison with some recorded in recent years. On the Thames a short-lived peak of over 1,500 birds in December 1991 pushed the Thames to the "top of the table" for the first time for more than six years.

Many sites record passage counts larger than those noted in winter, although rapid turnover during migration means that counts at such times will underestimate the numbers using that site. Seventeen sites recorded at least one passage count exceeding 500 in 1991-92, most of these referring to the autumn period. However, the highest count of

all was 3,018 at Morecambe Bay in May 1992. Other sites recording peaks of over 1,000 birds were the Wash (1,892 in August), the Thames (1,736 in September), North Norfolk Marshes (1,296 in September), the Medway (1,048 in September) and the Ribble (1,037 in May). In a pattern typical since the start of the BoEE, estuaries in north-western England from the Duddon to the Mersey recorded higher spring counts than those made in autumn.

Wintering wader counts have been carried out in Portugal since 1975, although the population trends have been reported only recently by Rufino (1990). Only four major estuarine sites exist in Portugal and inevitable annual variations in coverage mean interpretations of trends must be made with caution. The counts suggest, however, that the wintering population of Ringed Plover in Portugal has increased around fourfold in the past 10 years, although counts from future years are needed to confirm this apparent huge increase.

Table 42. RINGED PLOVER: WINTER MAXIMA AT MAIN RESORTS

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Thames	(505)	605	922	(674)	1,531	(Dec)	1,226
Chichester Hbr	x	924	(2,093)	519	630	(Nov)	1,041
Medway	(1,003)	(971)	(696)	501	581	(Nov)	750
Outer Ards*	710	(753)	623	709	698	(Dec)	698
Hamford Water	(120)	310	(0)	1,427	346	(Mar)	694
Lindisfarne	480	720	311	800	(65)	(Jan)	577
Langstone Hbr	615	542	375	420	344	(Nov)	459
Morecambe Bay	514	497	440	380	435	(Jan)	453
Humber	395	(310)	(305)	(309)	(452)	(Nov)	423
Forth	427	475	382	422	381	(Dec)	417
N. Norfolk	(183)	(142)	403	390	435	(Mar)	409
Blackwater	291	564	613	160	(273)	(Jan)	407

**Golden Plover *Pluvialis apricaria***

**Internationally important: 10,000**  
**Nationally important: 2,000**

UK totals were rather lower than recent averages throughout the 1991-92 winter, with the exception of the highest ever February count of over 80,000. All sites of national importance plus the Humber (our only internationally important site for Golden Plover) are listed in Table 43. Counts at all these sites were close to the recent averages, except at Lough Foyle where the February count of over 5,000 was more than double the recent average, making the Foyle nationally important for wintering Golden Plover for the first time in around ten years. Seven sites, in addition to those listed in Table 43, recorded peak counts of 2,000 or more in the 1991-

92 winter. Hamford Water held 4,417 in February, with 3,274 at North Norfolk Marshes in February, 3,000 on the Camel in February, 2,500 at Montrose Basin in November, 2,300 at Breydon Water in January, 2,121 at Chichester Harbour in February and 2,000 on Carmarthen Bay in January. The 1990-91 winter included a very cold spell in early February and most major sites recorded peak Golden Plover numbers before January. In 1991-92 there were no prolonged periods of very cold weather and most of the main sites recorded peak winter counts in February or March.

**Table 43. GOLDEN PLOVER: WINTER MAXIMA AT MAIN RESORTS**

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Humber	(14,219)	(10,346)	(27,249)	(20,168)	25,946	(Feb)	26,597
Strangford Lough	7,333	9,972	7,036	4,136	7,416	(Mar)	7,178
Ribble	3,660	5,111	8,902	2,451	5,503	(Jan)	5,125
Forth	(832)	1,742	(2,999)	6,637	2,007	(Dec)	3,462
Solway	2,762	(4,360)	(3,706)	2,693	3,137	(Jan)	3,331
Thames	(2,767)	(1,832)	(4,412)	(2,572)	2,063	(Feb)	2,953
Wash	2,124	3,568	2,248	(3,591)	(2,202)	(Dec)	2,882
Crouch/Roach	(825)	(2,860)	(2,502)	2,223	2,605	(Dec)	2,547
Lindisfarne	1,300	4,000	3,200	1,600	(2,250)	(Feb)	2,525
Lough Foyle	840	600	1,512	2,828	5,095	(Feb)	2,340
Morecambe Bay	485	1,498	4,426	1,831	2,339	(Mar)	2,115
N. Norfolk	150	45	(1,672)	2,671	3,274	(Feb)	1,996
Outer Ards*	(1,679)	1,697	3,126	1,592	1,565	(Jan)	1,995
Blackwater	1,160	1,551	2,213	3,388	961	(Mar)	1,854

Kirby & Lack (in press) reported that the numbers of Golden Plover wintering in Great Britain fell during periods of cold weather, possibly as a result of birds moving to continental Europe. When the weather became milder, the birds quickly returned. The quick return suggests that the birds do not move far beyond the edge of the cold zone, and thus are well positioned to re-occupy the areas they left when conditions become milder. Similarly Fuller

(1988) found that an influx of Golden Plovers into Buckinghamshire coincided exactly with the onset of heavy snow in the Midlands. Buckinghamshire was on the southern fringe of this cold weather, receiving less snow than farther north. This observed movement to the edge of the cold zone implied that the birds moved south only as far as was necessary to avoid snow conditions that prevented them from feeding.

**Grey Plover *Pluvialis squatarola***

**Internationally important: 1,500**  
**Nationally important: 210**

The substantial rise of 17% in the Grey Plover index in January 1992 pushed the January population index above 400 for the first time. Over the last 20 years, the mid-winter UK population has therefore undergone a staggering fourfold increase. Although the January 1992 count was well up on the previous year, counts made in other months of the 1991-92 winter were similar to those made a year earlier. All

sites of international importance, plus those with average winter peaks above 1,000 birds, are listed in Table 44. No sites, apart from those listed, recorded counts above 1,000 in any month of the 1991-92 winter. Counts even approaching 1,000 birds are still a rarity on Scottish sites, and the monthly totals for all Northern Irish sites combined have not yet reached the 300 mark. In 1991-92, peak

counts at most major UK sites were up, both on the previous winter and compared to the recent averages. Particularly large increases were noted at Chichester Harbour, the Stour, the Dee (Eng/Wales) and the Dengie. On the Blackwater and the Mersey, numbers dropped sharply in 1991-92 after the massive increases shown at these two sites in the previous winter. Typical of recent winters, few major sites recorded their peak winter count before January.

The Winter Shorebird Count of 1984-85 covered Britain and Northern Ireland only. During December 1987, however, over 500 km of non-estuarine coastline on the west coast of the Republic of Ireland was surveyed by Kirby *et al.* (1991c), providing much needed count data for this often neglected region. Perhaps the most surprising finding of this study was the unexpectedly high usage of boulder beaches by Grey Plover, Purple Sandpiper, Redshank and Turnstone, although it was unclear whether these birds were feeding or roosting there.

Table 44. GREY PLOVER: WINTER MAXIMA AT MAIN RESORTS

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Wash	8,385	9,054	8,840	7,432	10,100	(Mar)	8,762
Thames	4,884	8,486	(4,835)	(6,388)	6,170	(Jan)	6,482
Medway	(2,534)	(3,209)	(6,185)	3,435	4,803	(Jan)	4,807
Ribble	3,872	3,539	(3,111)	2,720	4,148	(Mar)	3,569
Chichester Hbr	x	2,791	(1,591)	1,718	3,901	(Mar)	2,803
Humber	(365)	(1,425)	(1,343)	(2,490)	(1,388)	(Jan)	(2,490)
Stour	1,629	1,761	2,473	1,999	4,279	(Jan)	2,428
Blackwater	1,150	905	1,003	4,085	2,549	(Mar)	1,938
Dee (Eng/Wales)	1,800	1,270	1,120	2,004	3,420	(Feb)	1,922
Swale	1,409	(1,362)	1,730	1,559	2,097	(Mar)	1,698
Morecambe Bay	1,146	3,062	1,074	1,466	1,714	(Nov)	1,692
Dengie	1,082	1,375	1,110	1,700	2,800	(Feb)	1,613
Langstone Hbr	1,629	1,870	1,196	1,299	1,682	(Feb)	1,535
Hamford Water	(664)	1,257	(3)	1,780	1,083	(Jan)	1,373
Lindisfarne	1,200	1,825	1,200	1,020	(1,531)	(Feb)	1,355
Colne	1,234	1,063	1,540	1,083	1,294	(Jan)	1,242
Alt	849	1,276	1,340	990	1,051	(Nov)	1,101

### Lapwing *Vanellus vanellus*

Internationally important: 20,000  
Nationally important: 10,000

The monthly totals of Lapwing recorded in the UK in the 1991-92 winter were higher than the averages of the previous five years, particularly in January and February. In contrast, the totals for Northern Ireland were on the low side. BoEE counts of this

species, however, regularly show wide fluctuations both between and within years. These variations in the counts, often enormous, are thought to be due to the large, but very variable, proportion of the UK population that winter inland and are thus missed by the BoEE. All sites with average peak winter counts over 5,000 birds are listed in Table 45. The 1991-92 peaks were above recent averages at most major sites, particularly at Breydon Water and on the Mersey. In contrast, the 1991-92 peak on the Tees was about one quarter of its five year average. The 1991-92 winter differed markedly from the previous year in that at a higher proportion of the major sites the peak winter counts came in January and February, rather than in December. Nevertheless in both winters, among the sites listed in Table 45, all those in Northern Ireland and south-eastern Britain recorded their peak count in January or February, whereas elsewhere the peaks were largely in November or December.

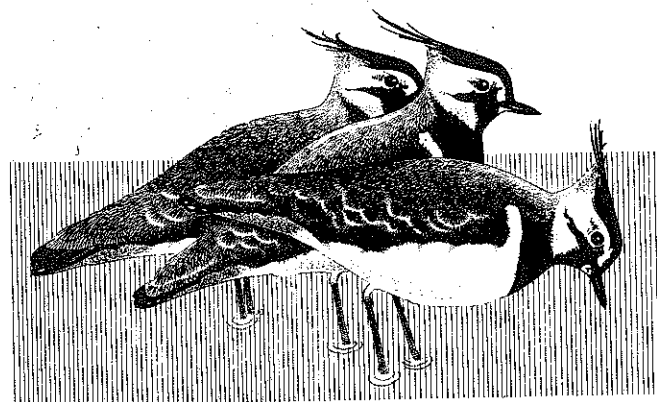


Table 45. LAPWING: WINTER MAXIMA AT MAIN RESORTS

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Ribble	10,883	21,174	32,145	32,590	27,444	(Feb)	24,847
Humber	13,165	(12,644)	(30,892)	(26,506)	(15,009)	(Nov)	21,393
Morecambe Bay	6,672	26,327	24,171	12,247	18,857	(Feb)	17,654
Strangford Lough	18,057	13,592	11,826	10,651	9,074	(Jan)	12,640
Thames	(7,530)	(8,823)	(8,983)	(7,668)	9,643	(Jan)	9,643
Swale	11,184	(3,445)	(5,561)	4,915	8,202	(Jan)	8,100
Breydon Water	2,000	1,500	5,000	12,000	18,000	(Nov)	7,700
Mersey	2,180	2,512	6,150	11,720	12,500	(Nov)	7,012
Solway	(7,959)	(6,883)	(6,989)	3,504	9,697	(Jan)	7,006
Dee (Eng/Wales)	5,490	5,155	11,136	5,083	7,734	(Nov)	6,919
Wash	5,013	4,943	10,261	(3,007)	5,785	(Nov)	6,500
Outer Ards*	(6,060)	6,492	5,688	3,915	9,070	(Jan)	6,291
Forth	(2,792)	4,091	5,124	7,529	5,953	(Dec)	5,674
Tees	3,721	4,352	(6,600)	9,824	1,325	(Jan)	5,164

**Knot *Calidris canutus*****Internationally important: 3,500****Nationally important: 2,200**

The numbers of Knot wintering in the UK in 1991-92 were remarkably similar to those in the previous winter. Within both winters UK totals remained unusually stable across all months, and the January 1992 index was virtually unchanged on the previous year. Nineteen sites remain of international or national importance for wintering Knot and are listed in Table 46. No further sites recorded counts exceeding the international importance threshold of 3,500 birds in the 1991-92 winter. Records were again broken at the Wash with 188,313 Knot present there in October 1991. This is almost 20,000 more than recorded there exactly a year earlier and must surely constitute a new record for the highest ever BoEE count of a wader species in any month of the year. As in most winters, some major sites

recorded well above average counts, whereas at others numbers were well down.

1992 saw the publication of a major review of the migration and distribution of Knot in a 210 page *Wader Study Group Bulletin* supplement, edited by Theunis Piersma and Nick Davidson (1992). This impressive document is the proceedings of a conference held in Ribe, Denmark in 1989. Although it has had a long gestation period it has been well worth the wait as it puts Knot research way ahead of that on all other species. This is mainly the result of international co-operation over 20 years and the enthusiasm of a multitude of researchers. Nevertheless, it is pointed out that even for the best known population, that of *Calidris canutus islandica*, which winters in Britain, we remain uncertain of its precise breeding range within the Canadian arctic. It has long been considered that Knot passing through western Europe on passage and wintering in west Africa breed in the Taimyr peninsular. However this review summarises information which casts doubt on this, as bill lengths of birds on the breeding grounds do not match those found in the wintering area! Larger samples of measured birds, or more precise genetic studies, need to be gathered from the breeding areas in order to confirm or refute these assumptions. The review highlights the use made of 20 years of scientific research in underpinning the conservation of Knot on an international scale, but points out many gaps in our knowledge and conservation provision, especially our poor information about the links between different migration sites and breeding areas.

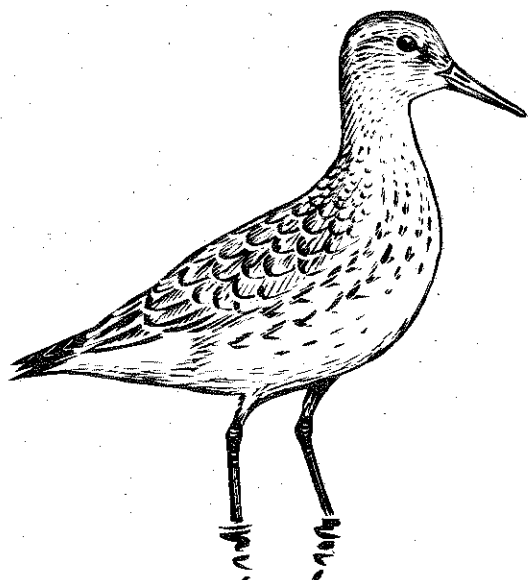


Table 46. KNOT: WINTER MAXIMA AT MAIN RESORTS

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Wash	93,666	75,921	108,570	(164,176)	154,315	(Nov)	119,329
Ribble	52,400	60,030	(45,103)	30,567	42,644	(Feb)	46,410
Alt	40,000	45,000	51,000	28,000	20,001	(Dec)	36,800
Thames	(20,794)	30,160	(21,668)	(23,100)	35,650	(Jan)	35,650
Humber	22,438	(38,465)	(30,894)	(35,292)	(37,093)	(Jan)	32,836
Morecambe Bay	23,968	25,229	23,770	30,958	29,408	(Jan)	26,666
Dee (Eng/Wales)	18,860	13,132	44,715	16,916	21,016	(Jan)	22,927
Solway	(6,668)	(7,311)	(5,943)	15,305	11,604	(Jan)	13,454
N Norfolk Marshes	(4,200)	6,260	(6,524)	13,298	6,142	(Nov)	8,566
Forth	9,803	10,810	7,744	7,163	6,743	(Dec)	8,452
Dengie	5,200	6,390	(7,300)	6,540	11,700	(Feb)	7,457
Strangford Lough	2,918	1,745	7,028	6,376	8,155	(Jan)	5,244
Swale	1,904	(3,503)	(2,101)	(3,208)	5,555	(Feb)	3,729
Tees	5,030	4,484	3,000	1,953	3,403	(Dec)	3,574
Duddon	5,500	600	2,300	5,570	2,743	(Dec)	3,342
Montrose Basin	450	2,000	4,000	4,000	3,500	(Jan)	2,790
Medway	(1,200)	(581)	(940)	3,690	1,539	(Jan)	2,614
Severn	1,419	3,150	(1,637)	4,996	693	(Nov)	2,564
Burry	(5,740)	(1,920)	(2,410)	1,725	180	(Nov)	2,395

**Sanderling *Calidris alba***

**Internationally important: 1,000**  
**Nationally important: 140 (passage 300)**

In 1992 the January index for Sanderling rose for the fourth year in succession to reach its highest level for nine years. In all other months of the 1991-92 winter except December, UK totals were also well up on recent averages. All nationally important sites with average peak counts over 250 birds are shown in Table 47. Only four of these sites recorded peaks lower than recent averages. The largest increase was noted at the Dee (Eng/Wales), where the average peak was pushed up for the third successive winter by the 1991-92 winter peak, which was more than 50% higher than that of the previous winter.

As usual, winter counts at many sites were exceeded by those made in spring, despite population turnover being more rapid during passage periods. The UK total of almost 18,000 in May is well above the recent average. Typically most passage counts over 1,000 were made in May and at sites in north-western England. By far the largest count was made at the Ribble in May when 8,737 were noted. This is the highest ever count at the Ribble for this species and has rarely been exceeded at any site in recent years. In the early 1970s, however, Morecambe Bay regularly recorded counts of around 10,000 Sanderling. Peak passage counts of over 1,000 birds were also made during 1991-92 at Morecambe Bay (2,385 in May), the Wash (1,661 in August), the Solway (1,620 in May), the Humber (1,424 in May), the Alt (1,388 in May) and the Duddon (1,251 in May).

Perhaps unsurprisingly for a high arctic breeding bird with a wide range of wintering latitudes, the Sanderling is able to adapt its energy requirements to local climatic conditions. Castro *et al.* (1992) found that Sanderlings wintering in Texas fed for 90% of the time, whilst those in Peru needed to feed for only 45% of the time.

The long-term studies of individually colour-ringed Sanderlings wintering at Teesside have highlighted some interesting aspects of site fidelity and foraging behaviour. Individual Sanderlings display a marked consistency in returning to the same wintering areas from year to year. Although some birds remain on the Tees all winter, others move away for varying periods but return later (Cooper 1988, Roberts 1991). These findings provide another example of population turnover, which complicates the analysis of count data since far more individuals may use a site than the counts suggest. Differences between individual Sanderling in their degree of mobility between foraging sites probably stems from individual differences in response to changeable food sources. Sanderlings feed mainly on invertebrates inhabiting highly mobile sandy sediments, which are subject to storm-induced erosion. They will also "home in" on deposits of tidal wrack to feed on the associated invertebrates. They are therefore accustomed to 'unpredictable' food supplies and individuals may well adopt different foraging strategies to compensate for this.

In a survey covering much of the west coast of Ireland and using methods similar to those of the Winter Shorebird Count, Green *et al.* (1988) discovered larger numbers of wintering Sanderling than expected. Co-ordinated counts covering the southern and eastern shores of the Republic of Ireland remain a high priority to enable a complete revision to be made of the estimates of the wintering wader population on the coasts of the island of Ireland.

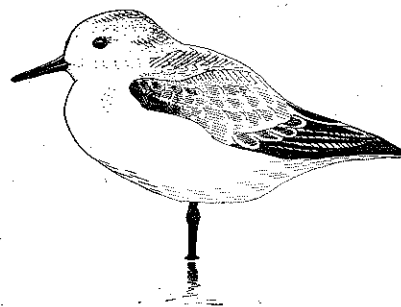


Table 47. SANDERLING: WINTER MAXIMA AT MAIN RESORTS

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Ribble	2,801	3,574	(1,460)	2,200	2,856	(Feb)	2,857
Dee (Eng/Wales)	477	186	823	1,011	1,581	(Jan)	815
Thanet*	722	572	604	566	610	(Feb)	614
Humber	461	(472)	(556)	(559)	761	(Feb)	611
Alt	625	429	680	488	391	(Jan)	522
Duddon	447	388	457	383	600	(Nov)	455
Wash	572	435	471	302	378	(Nov)	431
Carmarthen Bay	0	x	(0)	(484)	(654)	(Nov)	379
Tay	362	336	160	380	300	(Dec)	344
Chichester Hbr	x	300	(432)	253	325	(Mar)	327
Clwyd coast*	225	237	176	458	320	(Jan)	283
Morecambe Bay	177	85	171	414	494	(Nov)	268
Solway	277	222	(214)	(255)	300	(Dec)	266
Jersey*	191	228	285	346	260	(Feb)	262
Thames	(9)	(33)	(11)	(120)	(262)	(Nov)	(262)

#### Little Stint *Calidris minuta*

Only a handful of Little Stint winter in the UK and in 1991-92 only Rye Harbour/Pett Levels held more than two birds, with three present there in November. Far larger numbers move through the UK on passage, especially in autumn. During the autumn of 1991 UK totals were close to the average of the past five years. Passage counts over five were made at 12 sites. The

peak counts, given in brackets, were made in September unless stated otherwise: North Norfolk Marshes (16), the Severn (8), Pagham Harbour (8), the Colne (8), the Tees (8), the Exe (7), Rye Harbour/Pett Levels (7 in October), Breydon Water (7 in May), the Wash (7), Chichester Harbour (6), Morecambe Bay (6) and the Dee (Eng/Wales) (6).

#### Curlew Sandpiper *Calidris ferruginea*

Four Curlew Sandpipers on the Dyfi, one on the Tamar complex in November 1991, plus one at Poole Harbour in December were the only counts made during the 1991-92 winter. As usual, far more were recorded during passage, especially in the autumn. UK totals in autumn 1991 were slightly up on recent averages, with peaks above 25 recorded at ten sites, all in September: Breydon Water (61), Dee (Eng/Wales) (52), Colne (50), Morecambe Bay (50), Humber (47), the Wash (42), Taw/Torridge (37), the Tees (37), Guernsey\* (28) and the Severn (26).

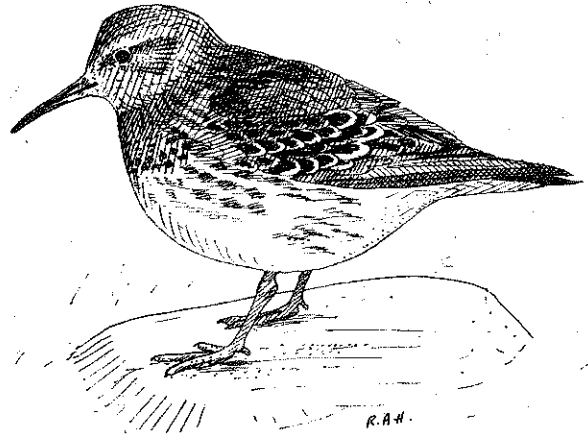
Baccetti, Magnani & Serra (1991) studied Curlew Sandpipers passing through Italian coastal wetlands and observed that adults in active body moult had a significantly higher mean mass than those not in moult. It is suggested that Curlew Sandpipers may suspend their body moult before migration, but may resume it once they reach good refuelling areas. This could explain why freshly arrived birds (i.e. lean ones) have no traces of active moult. Fat score analysis confirmed that moulting individuals tended to possess more body fat than those birds out of moult.

**Purple Sandpiper *Calidris maritima***

**Internationally important: 500**  
**Nationally important: 160**

Since the BoEE began, over 20 years ago, mid-winter counts for the UK have averaged around 2,000 birds. This is only about one-tenth of the likely UK total population, since most birds occur on non-estuarine coastlines, few of which are covered by the BoEE (Moser 1987). Interpretation of BoEE counts must, therefore, be made with caution. However, in 1991-92 UK totals were down on the average of the previous five years in all winter months, and by as much as 30% in some months. Moreover, three major sites recorded winter peaks more than 30% below the recent average, with counts at the other strongholds peaking at around their usual values. Peaks of over 100 birds were recorded in the 1991-92 winter at the following major sites, all in north-eastern Britain: Budle Point - Seahouses\* (201 in January), the Forth (181 in December), the Tees (180 in November), Rosehearty-Fraserburgh\* (168 in March), Lossiemouth\* (150 in January), the Spey Coast\* (142 in December) and Seahouses-Beadnell (134 in March). Although previous winter peaks at Thanet\* averaged just over 100 birds, the highest count made there in the 1991-92 winter was only 82 in December. Taken together, the well below average UK totals of 1991-92 and the very low numbers at three major sites give some cause for concern and count figures in future years should be watched carefully.

By measuring over 250 Purple Sandpipers on their breeding grounds in Norway and Svalbard, Nicoll *et al.* (1991) found that Svalbard birds were significantly longer in the wings, bill and feet than those on the Norwegian mainland, more than 700 km to the south. This appears to contradict Allen's Rule which predicts that individuals nearer the poles are likely to have smaller appendages than their close relatives present in a more equable climate in order to reduce heat loss from those exposed parts of the body. As found in previous



studies, males were significantly shorter billed than the females.

Closer to home at Portland Bill, Dorset, records of the small winter population of Purple Sandpipers have recently been reviewed by Summers & Rogers (1991). The Portland Bill birds are longer billed than those in north-eastern England and south-eastern Scotland, where far larger numbers winter, and are more similar to the small populations in Cornwall and Kent. The time of main arrival at Portland (mid-October onward) is also similar to that of the Purple Sandpipers in Cornwall whereas in the north-east, birds start arriving in mid-July. These differences in bill length and migration patterns are due to the different populations involved in the two regions. The Purple Sandpipers of southern England migrate through western Sweden in late May to unknown breeding areas, whereas those that winter further north around Northumberland move to southern Norway to breed. Both winter and spring numbers of Purple Sandpiper increased at Portland Bill during the 1970s and early 1980s but have recently declined to around 20 birds.

**Dunlin *Calidris alpina***

**Internationally important: 14,000**  
**Nationally important: 4,300 (passage 2,000)**

For the first time in five years the January index for Dunlin declined from the previous year, albeit by only 2%. The 1991-92 UK totals were, in fact, close to those of the previous year in all winter months, and they remained well above the average of the previous five years. All internationally important sites, plus those of national importance that now average over 10,000 birds are listed in Table 48. Most of these major sites recorded winter peaks in 1991-92 that were not only above the recent

average, but also higher than that of the previous year. The 1991-92 winter peak of 39,832 birds at the Ribble in December was more than double the peak of the previous year, which itself had been the highest winter count there for nearly ten years. However, these counts are below the average peaks recorded in the mid-1970s, when winter counts at the Ribble often exceeded 40,000 birds. As in the previous winter, all major sites in north-western England, especially the Ribble, the Mersey and the



Dee (Eng/Wales), recorded winter peaks above the average of recent years, whereas all the major sites recording lower than average peaks were from the east or south coast of England.

At night, to avoid predators such as owls, Dunlin call far less frequently than whilst feeding during the day (Mouritsen 1992). Any attempt at determining the number of birds feeding at night by the amount of vocal activity is therefore likely to be invalid. Furthermore, the author suggests that Dunlin, when threatened by owls, "freeze" at night rather than fly off. This may be a response to thwart a predator particularly good at detecting sound and movement, but with poor visual resolution. This strategy benefits the Dunlin, allowing them to continue feeding immediately after the threat has receded.

In an Alaskan bay where Dunlin can number 100,000 birds, Handel & Gill (1992) found the largest roosts

were close to intertidal feeding areas, provided an unobstructed view of predators, and were close to bathing waters. Roosts formed more frequently during the day than at night, and seasonal variations in roost behaviour were observed. It is suggested that roosts are not only formed to avoid predators but also help lessen the large energy demands required during migration.

Tubbs *et al.* (1992) recently investigated long-term trends in the numbers of Dunlin wintering in the Solent (an estuarine complex near Southampton and the Isle of Wight containing several BoEE sites). Evidence considered by the authors includes a wildfowler's diary that extends back to the turn of the century. The complexity involved in interpreting long-term trends is well illustrated in this study, which considers such factors as hunting pressure, *Spartina* growth and decline, loss of roost sites, habitat suitability and the size of the national wintering population.

Table 48. DUNLIN: WINTER MAXIMA AT MAIN RESORTS

	1987-88	88-89	89-90	90-91	91-92 (Mth)	Average
Morecambe Bay	40,409	42,987	54,802	76,602	72,113	(Jan) 57,382
Wash	46,239	65,679	56,510	43,233	43,768	(Mar) 51,085
Severn	44,580	44,311	(44,170)	58,705	42,056	(Jan) 47,413
Langstone Hbr	32,900	31,700	37,660	27,720	34,500	(Feb) 32,896
Mersey	16,040	22,000	17,500	52,100	55,000	(Jan) 32,528
Thames	23,892	(24,309)	25,893	29,925	38,556	(Jan) 31,458
Medway	(19,663)	(28,569)	(21,843)	26,442	28,607	(Jan) 27,872
Humber	(16,090)	(21,899)	(22,903)	(26,133)	25,604	(Mar) 25,868
Ribble	12,663	16,684	(14,147)	19,038	39,832	(Dec) 22,054
Dee (Eng/Wales)	19,490	16,772	14,710	24,670	31,368	(Jan) 21,402
Chichester Hbr	x	12,915	(28,268)	24,235	13,972	(Nov) 19,847
Blackwater	11,265	19,785	11,400	19,025	20,900	(Feb) 16,475
Stour	16,134	16,154	16,116	16,429	17,412	(Dec) 16,449
Solway	10,160	(12,443)	(14,537)	12,977	14,404	(Dec) 13,019
Swale	13,276	(13,610)	(12,055)	12,410	11,785	(Jan) 12,770
Colne	9,559	10,933	12,930	12,506	12,092	(Jan) 11,604

#### Ruff *Philomachus pugnax*

Internationally important: 10,000  
Nationally important: 50

UK totals of Ruff in the 1991-92 winter were the highest recorded for at least five years but were still below the level of the early 1970s, when UK totals ranged around the 300 mark. Winter peak counts over 20 were made at eight sites:- Hamford Water (87 in January), North Norfolk Marshes (50 in February), the Humber (48 in November), the Swale (48 in February), Chichester Harbour (33 in December), the Ribble (32 in November), the Crouch/Roach (29 in February) and the Thames (26 in March). Typical of recent winters, these major

wintering sites, except the Humber and the Ribble, were in southern Britain. Autumn passage counts tend to produce the highest counts of the year and in autumn 1991 peak counts over 50 birds were recorded at the Humber (125 in September) and on the North Norfolk Marshes (52 in August). Passage counts of all wader species require careful interpretation as population turnover is more rapid than in the winter. However, the unusually high spring count of 88 at Breydon Water in April is noteworthy.

J.G. van Rhijn (1991) has reviewed many aspects of the biology of the Ruff in a recent monograph. Approximately 10,000 Ruff winter in Europe, of which some 15% occurs in southern Britain and Ireland. BoEE counts locate less than a fifth of the British and Irish wintering birds because most of this population winters on inland wetlands. As in

many other species, juveniles tend to wander further on migration. In addition females have been found to winter further south than males. This may be related to their parental duties which allow males to leave the breeding grounds several weeks before the females, thus allowing them to occupy the nearer wintering sites.

### **Jack Snipe *Lymnocyptes minimus***

Monthly UK totals of Jack Snipe during the 1991-92 winter were around the average of the previous five years, although November's count was an all-time high for that month. However this species is perhaps the most difficult of all wader species to count due to its skulking habits. Double figures were noted only at Rye Harbour/Pett Levels where 14 were counted in November 1991.

Comparatively little field research has ever been carried out on this scarce and possibly decreasing species. A project is now under way on its distribution, population size and ecology in southern Sweden. This much needed work is backed by the Worldwide Fund for Nature and led by M.B. Pedersen. He has also published the results

of a nationwide sample study of both Snipe and Jack Snipe along up to 48 km of streams in Denmark, carried out in January-February 1991. In February, during freezing weather, 101 Snipe and 14 Jack Snipe were counted. Pedersen extrapolated these figures to the whole of Denmark to give a Danish winter population of 10-20 thousand Jack Snipe and 50-100 thousand Snipe, which would make these two species the most numerous wintering waders in Denmark (Pedersen 1991). In Britain, the relative proportions of Snipe and Jack Snipe in shooting bags are uncertain because it is doubtful whether keepers have always separated the two species (Tapper 1992). Jack Snipe of course now enjoys legal protection from hunters under the Wildlife & Countryside Act 1981.

### **Snipe *Gallinago gallinago***

Snipe is a difficult species to count and BoEE totals should be considered as underestimates. It is of concern, nevertheless, that in all months of the 1991-92 winter UK totals were at least 30% below the average of the previous five years, and for the first time for more than 10 years no site recorded a winter count of more than 200 birds

Bag records of Snipe since 1900 have been analysed in a new Game Conservancy book (Tapper 1992).

**Internationally important: 10,000**

**Nationally important: ?**

Recent numbers killed per unit area are about one-third the levels of the early decades of this century. There has, however, been little overall change since the 1962-63 hard winter but retention or creation of Snipe habitat has enabled hunters to kill more birds at some sites. A recent winter survey of Danish streams suggests that Snipe may be by far the most abundant wintering wader in Denmark, with perhaps 50-100 thousand birds along streams alone (Pedersen 1991).

### **Black-tailed Godwit *Limosa limosa***

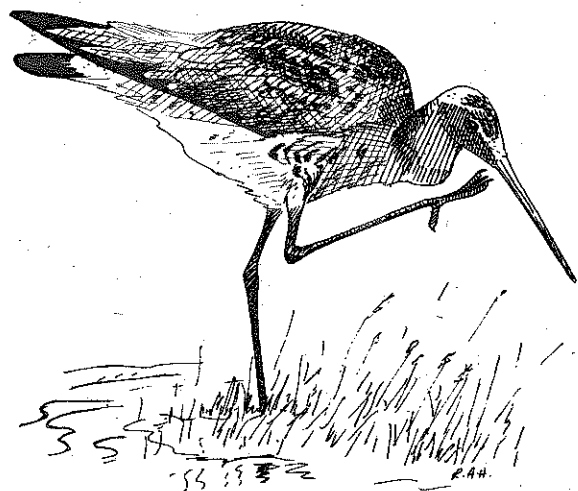
In all months of the 1991-92 winter, UK totals of Black-tailed Godwit were well above the average of the previous five years. They were, however, below the high counts of the previous winter, except in February and March, when low counts were made in 1991, probably associated with the very cold spell in February of that year. The following winter of 1991-92 recorded the highest ever UK totals for both February and March. All internationally important sites, together with those of national importance that average over 400 birds, are presented in Table

**Internationally important: 700**

**Nationally important: 50**

49. Interestingly, most of the sites recorded winter peaks below the recent averages. Major declines were noted at the Ribble, Poole Harbour and the Colne, but a considerable increase in the winter peak was recorded at the Swale and the Dee (Eng/Wales). For the third successive winter numbers on the Dee (Eng/Wales) exceeded those on the nearby Ribble.

In 1991-92 passage counts over 700 were made at 12 sites, compared to seven in the previous year. Peak



passage counts over 1,000 were recorded at the Ribble (3,618 in September), Hamford Water (1,595 in October), the Dee (Eng/Wales) (1,462 in October), the Stour (1,414 in October), the Medway (1,412 in August), the Wash (1,354 in September), the Swale (1,230 in April) and Langstone Harbour (1,100 in October).

Little is known about the migration of Black-tailed Godwits although two recent catches by wader ringers provided some exciting findings. Of 112 Black-tailed Godwits caught on the Eden in October 1991, half were juveniles, four of which were re-caught nine months later in another similar sized catch on the Wash, where they were found to be in wing moult. Several recent breeding biology studies have been published, including investigations into nest defence. On the Ouse Washes, Black-tailed Godwits were seen to mob Carrion Crows and Grey Herons in the vicinity of the nest, but mobbed Kestrels only when they had chicks, seemingly recognising that Kestrels posed a negligible risk to their eggs. However, studies elsewhere, where raptors did take eggs, found communal attacks by godwits included birds of prey as targets during incubation. Presumably past experience had modified the birds' response. Godwits were more effective in deterring nest predators than Lapwings. This is thought to be due to their larger body size (Green *et al.* 1991.)

Table 49. BLACK-TAILED GODWIT: WINTER MAXIMA AT MAIN RESORTS

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Stour	1,067	1,080	(1,734)	2,372	2,169	(Feb)	1,684
Hamford Water	(250)	1,010	(70)	2,241	1,254	(Jan)	1,501
Ribble	1,497	2,490	491	977	561	(Nov)	1,203
Poole Hbr	874	1,099	1,451	1,236	749	(Dec)	1,081
Dee (Eng/Wales)	400	552	1,600	1,233	1,617	(Dec)	1,080
Swale	17	(465)	(34)	(569)	2,115	(Mar)	1,066
Blackwater	(269)	392	(1,037)	743	1,132	(Mar)	826
Chichester Hbr	x	1,125	(750)	367	536	(Feb)	694
Langstone Hbr	869	761	599	651	460	(Nov)	668
Colne	500	1,400	616	378	147	(Dec)	608
Exe	520	542	648	782	480	(Nov)	594
Southampton Water	(750)	427	(997)	311	305	(Jan)	558
Wash	654	132	664	(401)	321	(Jan)	442

#### Bar-tailed Godwit *Limosa lapponica*

Internationally important: 1,000

Nationally important: 610

The January 1992 index was down 8% on the previous year. In fact, in all winter months except February, UK total counts in 1991-92 were below the average of the previous five years. All sites of international and national importance are given in Table 50. In the 1991-92 winter an above average peak count was recorded in a higher proportion of sites from eastern Britain than from elsewhere. At both the Ribble and the Dengie the peak counts of the 1991-92 winter were more than 50% above the recent averages. In contrast at the Alt, the Solway and Lough Foyle the 1991-92 winter peaks were all less than half of the recent average.

During the 1980s the size of the Bar-tailed Godwit population wintering in the UK, as measured by the five year average January index, declined by around 20%, which is more than for any other wader species. Over the same period numbers wintering in Portugal appear to have declined even more drastically, by as much, perhaps, as 70% (Rufino 1990). A recent ringing recovery emphasised the vast distances many of our Bar-tailed Godwits cover during migration. A male ringed in Norfolk in June 1978 was killed in May 1991 in Russia, more than 2,700 km to the east.

Table 50. BAR-TAILED GODWIT: WINTER MAXIMA AT MAIN RESORTS

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Ribble	16,756	7,898	13,350	9,940	18,775	(Feb)	13,343
Wash	10,691	8,403	12,622	14,834	9,807	(Feb)	11,271
Alt	9,001	7,902	5,391	7,095	2,934	(Feb)	6,464
Lindisfarne	7,000	6,010	6,200	4,900	(3,590)	(Jan)	6,027
Thames	2,076	(3,304)	(3,804)	(11,517)	3,969	(Feb)	4,934
Solway	2,310	7,315	(2,831)	3,650	1,536	(Jan)	3,702
Forth	(3,621)	3,372	1,510	2,722	3,075	(Jan)	2,860
Morecambe Bay	3,570	1,844	858	2,568	1,886	(Feb)	2,145
Lough Foyle	651	2,520	(2,222)	3,427	1,115	(Feb)	1,987
Inner Moray Firth	2,308	1,465	1,487	1,987	2,030	(Jan)	1,855
Tay	1,200	1,835	1,400	1,696	2,296	(Feb)	1,685
Humber	659	(1,054)	(1,270)	(2,002)	(1,837)	(Jan)	1,364
Chichester Hbr	x	890	(1,448)	1,056	954	(Dec)	1,087
N Norfolk Marshes	463	423	(1,599)	1,653	1,225	(Feb)	1,072
Cromarty Firth	582	907	801	1,309	913	(Feb)	902
Dee (Eng/Wales)	452	152	396	2,480	837	(Nov)	863
Dengie	756	386	800	1,000	1,200	(Feb)	828
Dornoch Firth	257	633	546	1,515	995	(Feb)	789
Eden	900	892	700	680	490	(Feb)	732

**Whimbrel *Numenius phaeopus***

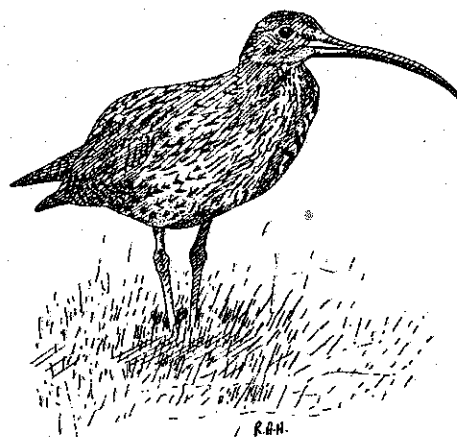
**Internationally important: 700**  
**Nationally important: + (passage) 50**

UK totals of Whimbrel were typically in single figures for most months of the 1991-92 winter. Peak passage counts of over 100 were made at the Wash (272 in August), Breydon Water (224 in April), the Exe (151 in May), the Humber (139 in August) and the Burry (117 in May). In addition passage peaks over 50 were recorded at seven further sites, with only one registering a peak in spring.

The following account is based on work by Grant (1989, 1991a, 1991b, 1992) and Grant *et al.* (1992). A recent three year study on the breeding ecology of the Whimbrel in Shetland looked at the effect of agricultural intensification on this species. Heathland is the preferred nesting habitat, whereas

ploughed or harrowed reseeded areas and older established pastures were preferred for feeding. Perhaps surprisingly, female condition did not appear to influence chick hatching weight even though the heavier chicks in a brood had a better chance of survival. This suggests that the inherent 'quality' of individuals may be partly responsible for their reproductive success.

In a study that could have far-reaching implications, Zwarts (1990) discovered that Whimbrel on migration in the Banc d'Arguin (Mauritania) were able to increase their daily intake to 1.5 times their winter level in order to gain enough weight for onward migration to their European stop-over sites.



**Curlew *Numenius arquata*****Internationally important: 3,500****Nationally important: 910**

Of the ten wader species covered by the January index, the Curlew showed the biggest increase on the previous winter, increasing by 19% in January 1992. This follows, however, the large decline of 24% recorded in January 1991. UK totals in most other months of the 1991-92 winter were also above the average of the previous five years. Nationally important sites averaging over 1,750 birds, together with all internationally important ones are shown in Table 51. Most of these major sites recorded winter

peaks above the recent averages, but a substantial increase was recorded only at the Dee (Eng/Wales).

Berg (1991) suggests that low production of young is probably an important factor in the decline of the breeding population of Curlews on Swedish farmland. He found that destruction by farming practices was, after predation, the second largest cause of nest loss and reproductive success was higher in more natural habitats.

**Table 51. CURLEW: WINTER MAXIMA AT MAIN RESORTS**

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Morecambe Bay	12,888	9,849	10,199	13,174	12,970	(Feb)	11,816
Solway	(8,248)	(3,757)	(4,882)	5,171	7,360	(Jan)	6,926
Wash	4,814	3,796	3,295	3,578	(3,727)	(Dec)	3,870
Humber	4,107	(2,704)	(1,483)	(2,320)	3,414	(Mar)	3,760
Dee (Eng/Wales)	3,840	2,474	2,910	2,892	5,331	(Feb)	3,489
Thames	(3,698)	(3,492)	(3,345)	(3,301)	3,311	(Jan)	3,461
Severn	4,576	2,706	(2,736)	2,505	(3,328)	(Feb)	3,278
Lough Foyle	2,370	3,000	(1,351)	1,925	1,982	(Feb)	2,319
Forth	(2,709)	(1,306)	1,676	2,137	2,520	(Jan)	2,260
Duddon	1,761	2,163	2,300	1,992	2,094	(Jan)	2,062
Inner Moray Firth	1,654	1,355	1,929	2,293	2,520	(Jan)	1,950
Medway	(1,545)	(1,796)	(1,981)	1,868	1,986	(Dec)	1,945
Blackwater	1,216	1,067	2,102	2,401	2,706	(Mar)	1,898
Swale	1,970	(688)	(1,132)	(1,013)	1,749	(Feb)	1,859
Strangford Lough	1,710	2,056	1,483	2,096	1,575	(Jan)	1,784

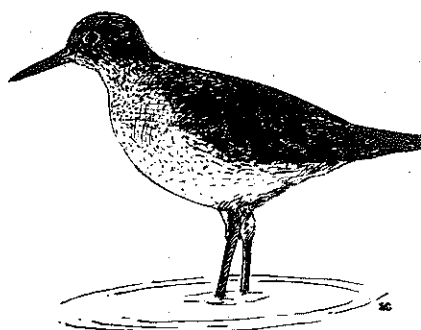
**Spotted Redshank *Tringa erythropus*****Internationally important: ?****Nationally important: 50**

The number of Spotted Redshank wintering in the UK in 1991-92 was close to the recent averages. Winter peaks in double figures were recorded only at the Medway (25 in December) and the Tamar

complex (19 in November). Passage counts in 1991-92 were also unexceptional with peaks over 50 recorded at the Wash (158 in August), the Medway (114 in September) and the Swale (59 in August).

**Redshank *Tringa totanus*****Internationally important: 1,500****Nationally important: 750 (passage 1,200)**

Compared to the previous year the January 1992 index was up by 9%, although this was insufficient to compensate for the 21% drop recorded in January 1991. In fact, recorded UK totals for all winter months except March were rather lower than the recent averages. All sites of international importance, plus those of national importance that average over 1,000 birds, are listed in Table 52. About half of these sites recorded 1991-92 winter peaks that were above both those of the previous winter and above the average of the previous five



winters. In contrast particularly low peaks were recorded in the 1991-92 winter at five sites in south-eastern England from the Wash to Chichester Harbour and at the Cleddau in western Wales.

Variation in the breeding success of Redshanks has been shown to be partly related to an individual's breeding experience (Thompson & Hale 1991). By nesting earlier and laying larger eggs, experienced birds produce offspring that are more likely to survive and breed themselves. Experienced birds

are more likely to return to breed from one year to the next and are more site faithful, leading to a greater degree of mate fidelity (Thompson & Hale 1989). Prior knowledge of a breeding site and mate may enable birds to nest earlier and make the most efficient use of available resources resulting in the production of larger eggs. An alternative explanation is that experienced birds returning to breed early may occupy the best breeding sites or they may simply be better quality individuals.

Table 52. REDSHANK: WINTER MAXIMA AT MAIN RESORTS

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Dee (Eng/Wales)	9,930	8,035	7,692	7,330	9,322	(Mar)	8,461
Morecambe Bay	6,575	7,151	6,763	6,379	5,756	(Feb)	6,524
Thames	3,563	(5,163)	6,040	(4,569)	(1,414)	(Mar)	4,921
Medway	(3,557)	(5,087)	(4,664)	3,450	5,355	(Nov)	4,639
Humber	(4,295)	(2,671)	(5,208)	(4,776)	4,219	(Mar)	4,624
Wash	7,501	4,619	3,497	(3,872)	2,391	(Mar)	4,502
Forth	(4,952)	3,464	3,563	4,393	4,526	(Jan)	4,179
Mersey	4,100	2,930	4,458	4,335	4,578	(Dec)	4,080
Lindisfarne	3,800	3,100	3,600	2,600	(1,045)	(Nov)	3,275
Inner Moray Firth	2,635	2,962	3,664	2,827	3,538	(Jan)	3,125
Severn	3,286	2,627	(1,614)	2,166	(2,841)	(Feb)	2,730
Strangford Lough	3,079	2,809	2,771	2,420	2,345	(Jan)	2,684
Swale	2,492	(3,714)	(1,552)	(1,472)	1,817	(Jan)	2,674
Solway	2,075	(1,851)	(1,966)	2,049	(3,127)	(Nov)	2,417
Montrose Basin	1,785	1,983	2,530	2,717	2,202	(Dec)	2,243
Inner Clyde	2,798	2,243	1,546	2,441	1,817	(Feb)	2,169
Belfast Lough	1,999	1,646	2,153	1,043	2,188	(Feb)	1,805
Cromarty Firth	1,817	1,829	1,168	2,304	1,634	(Feb)	1,750
Ribble	1,863	1,449	1,151	1,717	2,013	(Feb)	1,638
Deben	1,760	1,903	1,657	(1,191)	1,089	(Nov)	1,602
Tay	2,506	1,051	(2,139)	711	1,152	(Dec)	1,511
Orwell	1,600	1,373	1,243	1,574	1,531	(Feb)	1,464
Chichester Hbr	x	1,770	(1,595)	1,718	759	(Dec)	1,460
Duddon	1,829	1,878	1,219	1,043	1,319	(Dec)	1,457
Alde complex	1,046	1,128	(1,458)	1,784	1,114	(Dec)	1,306
Cleddau	1,148	1,603	1,629	1,326	729	(Nov)	1,287
Colne	1,280	1,247	1,288	1,152	1,332	(Feb)	1,259
Tees	1,347	1,319	888	1,264	986	(Mar)	1,229
Poole	648	1,997	858	1,012	1,583	(Nov)	1,219
Stour	1,158	905	1,185	1,478	1,279	(Feb)	1,201
Hamford Water	(1,650)	946	(120)	1,245	717	(Nov)	1,139
Burry	1,299	(1,276)	1,001	1,089	793	(Jan)	1,114
Blackwater	968	598	(1,197)	1,023	1,728	(Mar)	1,102
Alt	700	777	1,550	1,100	1,300	(Dec)	1,085

**Greenshank *Tringa nebularia*****Internationally important: ?****Nationally important: 50**

In the 1991-92 winter, UK totals of Greenshank peaked at the high level of 325 in December, but counts in the other winter months were close to the recent averages. Winter peaks above 20 were made at Strangford Lough (37 in January), Kingsbridge (30 in December), Lough Foyle (27 in November), the Tamar complex (24 in February), Taw/Torridge (22 in December) and Chichester Harbour (21 in November). As usual, most of these major wintering sites were in south-western England and Northern Ireland. Interestingly this species, unlike the closely related Spotted Redshank, regularly winters in Northern Ireland in significant numbers.

Passage counts of Greenshank greatly exceed those made in the winter, with nine sites recording peaks over 50 birds in 1991-92. These peak counts were all made in autumn and the majority of sites were from eastern England: the Wash (257 in September), the Thames (197 in September), the Blackwater (96 in August), Langstone Harbour (76 in September), the Colne (63 in August), the North Norfolk Marshes (63 in September), Poole Harbour (62 in September), the Stour (60 in September) and the Medway (60 in August).

**Green Sandpiper *Tringa ochropus***

BoEE counts of Green Sandpipers were unexceptional in 1991-92. Four sites, all in south-eastern England, recorded peaks of five or more during the 1991-92 winter, but none of these relate to the mid-winter period of December - February. The Thames held six birds in November, whilst five were counted on the Tamar complex in March, on the Colne in November and on the Alde complex in

November. The BoEE does not adequately monitor Green Sandpipers during passage periods because population turnover is more rapid than in winter and many birds occur on inland wetlands. Autumn counts generally exceed those in spring, but in 1991 no sites recorded a count of over 50 birds. The UK totals recorded in passage months, however, were close to typical values of recent years.

**Common Sandpiper *Actitis hypoleucos***

Very small numbers of Common Sandpipers winter in the UK, making interpretation of BoEE count figures problematical. During 1991-92 winter peaks above two birds were recorded at Kingsbridge (8 in November), the Thames (4 in December and January), the Teifi (4 in February) and the Tamar

complex (4 in November). Overall UK totals in the winter months were close to the average of recent years. The highest autumn 1991 count was typically at Morecambe Bay (165 in July) with peaks above 50 birds also noted at the Wash (73 in August) and Pegwell Bay (51 in August).

**Turnstone *Arenaria interpres*****Internationally important: 700****Nationally important: 450**

The January 1992 index for Turnstone was 7% below that of the previous year and now, after three successive declines, stands at its lowest level for five years. However, this is still above the index value for all years before 1986, except 1977. UK totals were slightly down on recent averages in most months of the 1991-92 winter. All international sites, plus those of national importance where the average peak exceeds 600 birds, are shown in Table 53. Winter peak counts at most of these major sites were below the recent averages in 1991-92, although a substantial decline was noted only at the Wash. Counts over 700 were recorded at six sites in autumn 1991. Peaks at these sites were 1,952 at Morecambe Bay in October, 1,462 at the Medway in

October, 1,218 at the Wash in August, 946 at the Outer Ards\* in October, 740 at the Tees in October and 714 at Thanet\* in September. Typically, there were fewer large counts made in spring but, as in the previous two years, the highest count all year was made in April, when 2,018 were counted at Morecambe Bay. Even this value should be regarded as a minimum estimate of site usage however, since population turnover is very rapid at this time of the year. Spring peaks above 700, all recorded in April 1991, were also noted at Thanet\* (1,104), the Medway (932) and the Wash (754).

The Orkney and Shetland archipelagos are known to be of major importance for wintering Turnstones,

holding 25% of the total British wintering population. Prys-Jones *et al.* (1992) have recently shed light on the role of the Orkneys as a spring staging post for Turnstones. On Mainland Orkney and South Ronaldsay most birds left in April having put on little weight, suggesting they might be moving north via staging posts in Iceland. In contrast, numbers on Sanday and North Ronaldsay increased in late April and May and birds put on more weight before departing, suggesting that they might be flying directly to more distant breeding grounds in Greenland.

Turnstones were found to occur in larger numbers than expected during a Winter Shorebird Count type survey of much of the west coast of Ireland (Green *et al.* 1988). Co-ordinated counts covering the southern and eastern shores of the Republic of Ireland remain a high priority to enable a complete revision to be made of the estimates of the wintering wader population on the coast of the island of Ireland.

Table 53. TURNSTONE: WINTER MAXIMA AT MAIN RESORTS

	1987-88	88-89	89-90	90-91	91-92	(Mth)	Average
Outer Ards*	1,990	1,775	2,336	1,612	(1,207)	(Nov)	1,928
Morecambe Bay	2,189	1,647	1,651	1,944	1,721	(Jan)	1,830
Thanet*	1,674	1,284	1,144	1,253	1,342	(Feb)	1,339
Forth	1,642	1,184	(869)	(1,188)	1,082	(Dec)	1,302
Wash	1,995	1,282	967	(1,131)	896	(Nov)	1,285
Thames	(640)	(681)	(595)	766	1,379	(Feb)	1,072
Dee (Eng/Wales)	909	960	1,185	853	780	(Dec)	937
Guernsey*	752	602	(664)	936	615	(Nov)	726
Medway	(558)	(524)	(895)	489	588	(Nov)	632
Jersey*	422	624	877	674	485	(Jan)	616
Rosehearty-Fras.*	x	435	698	727	569	(Mar)	607
Belfast Lough	322	575	778	877	476	(Dec)	605





## PRINCIPAL SITES

All estuarine sites in the United Kingdom covered by BoEE counts are listed in Table 54, ranked in order of their average peak winter counts over the five year period 1987-88 to 1991-92. Included with them are non-estuarine sites ranking as of at least national importance in terms of the total numbers of waders they support. Information on peak counts in winter 1991-92 at all these sites is also presented.

For each of the five winters, the combined annual peak count for each site was calculated by summing the highest count for each species between November and March, irrespective of the month in which it was made. The results for the 1991-92 winter are shown in the first column. The numbers in brackets following these indicate the numbers of complete and incomplete counts (before and after the slash respectively) available for each site in winter 1991-92. Where no complete counts were performed, the peak count is itself placed in brackets to indicate that it is no more than a minimum estimate.

The average peak winter count for each site was initially calculated using only the totals from winters in which at least one complete count was conducted. However, in the few cases where totals from other winters exceeded this initial average, they were then also incorporated in order to give the best possible estimate of the average peak count. In the brackets following, the numbers of winters with at least one complete count are given before the slash and the number without after it.

Sites averaging at least 20,000 and 10,000 waterfowl are internationally and nationally important respectively in terms of total numbers. Clearly some sites with less than these levels of waders (as shown in this table) will achieve these thresholds of importance by virtue of the totals of wildfowl also counted here. This importance of key sites for both waders and wildfowl is indicated in Appendix 3.

In 1991-92 most major sites registered overall wader counts above the recent averages, contributing to the higher than average UK totals recorded. Unusually low or high overall wader counts are often the result of unusually low or high counts of four species: Lapwing, Golden Plover, Knot and Bar-tailed Godwit. Lapwing and Golden Plover frequently show massive movements between coastal/estuarine areas and inland areas where they will be missed by the BoEE. Knot and Bar-tailed Godwit are well-known for being highly mobile, often crossing the North Sea, in particular to or

from the Wadden Sea. At Breydon Water in 1991-92 numbers of Lapwing and Golden Plover both peaked at more than double the average of the previous five winters, causing a similarly large increase in the overall wader numbers there. Relatively high numbers of Lapwing and Golden Plover also pushed up the overall wader counts at the Inner Clyde, the Mersey and Carmarthen Bay, although a contributory factor at the latter two sites was the unusually high numbers of Dunlin. For the second successive winter, large increases in overall wader numbers were noted at the three Essex sites, the Dengie, Hamford Water and the Blackwater. The species largely responsible for these high overall counts were Grey Plover, Golden Plover, Knot and Dunlin.

Overall wader counts well below the average of the previous five winters were recorded at the Alt, the Tees, Portsmouth Harbour and Lindisfarne. Incomplete coverage at Lindisfarne, caused by a sudden change in site organiser, probably accounts for the rather low figures recorded there for several species. The new count organiser there has worked hard over recent months to bring together a keen counting team, which should ensure improved coverage in future. At the remaining three sites below average overall counts were caused by low counts of Dunlin (at Portsmouth Harbour), Lapwing (at the Tees) and, for the second successive winter, Knot (on the Alt).



Table 54. OVERALL WADER COUNTS AT BOEE SITES IN WINTER

Site No. +	Site	Peak winter count, 1991-92	Average peak winter count, 1987-88 to 1991-92
54	Wash	262,285 (4/1)	246,738 (5/0)
87	Morecambe Bay	197,182 (5/0)	185,597 (5/0)
88	Ribble	162,169 (5/0)	137,147 (5/0)
55	Humber	121,991 (2/3)	114,188 (2/3)
91	Dee (Eng/Wales)	119,429 (5/0)	101,828 (5/0)
40	Thames	117,201 (3/2)	99,209 (4/1)
84	Solway	89,380 (4/1)	81,641 (4/1)
112	Severn	54,894 (3/2)	61,012 (4/1)
89	Alt	33,019 (5/0)	52,988 (5/0)
39	Medway	53,269 (5/0)	49,324 (2/3)
90	Mersey	77,106 (5/0)	47,714 (5/0)
62	Forth	48,744 (3/2)	42,980 (5/0)
31	Langstone Hbr	42,622 (5/0)	42,336 (5/0)
115	Strangford Lough	39,794 (5/0)	41,682 (5/0)
32	Chichester Hbr	29,617 (5/0)	35,438 (3/1)
38	Swale	39,453 (3/2)	34,324 (4/1)
110	Burry	21,042 (4/1)	32,365 (5/0)
46	Stour	36,028 (5/0)	30,131 (5/0)
43	Blackwater	35,295 (4/1)	29,088 (5/0)
59	Lindisfarne	(20,374) (0/5)	27,302 (4/1)
86	Duddon	24,976 (5/0)	25,116 (5/0)
53	N Norfolk Marshes	24,696 (5/0)	23,699 (5/0)
44	Colne	21,960 (4/1)	22,972 (5/0)
42	Dengie	30,866 (5/0)	22,792 (5/0)
70/71	Inner Moray Firth	22,180 (3/0)	21,595 (5/0)
*	Outer Ards	19,337 (4/1)	17,465 (5/0)
16	Exe	17,011 (5/0)	16,445 (5/0)
45	Hamford Water	18,752 (5/0)	15,433 (3/2)
56	Tees	10,154 (5/0)	14,982 (5/0)
47	Orwell	12,843 (5/0)	14,868 (5/0)
75	Inner Clyde	21,007 (4/1)	14,362 (5/0)
65	Montrose Basin	16,300 (4/1)	14,192 (5/0)
119	Lough Foyle	15,982 (3/1)	14,190 (5/0)
116	Belfast Lough	16,162 (4/0)	14,095 (5/0)
41	Crouch/Roach	16,033 (5/0)	13,877 (2/3)
52	Breydon Water	24,791 (5/0)	12,659 (5/0)
20	Poole Harbour	13,474 (3/0)	11,951 (5/0)
49/50	Alde complex	10,516 (5/0)	11,826 (5/0)
109	Carmarthen Bay	16,533 (1/4)	11,127 (3/1)
24	Southampton Water	9,917 (4/1)	11,006 (5/0)
64	Tay	12,939 (4/1)	10,959 (5/0)
72	Cromarty Firth	10,250 (3/0)	10,589 (5/0)
30	Portsmouth Harbour	7,715 (5/0)	10,191 (5/0)
108	Cleddau	9,310 (4/0)	10,147 (5/0)
94	Lavan Sands	9,362 (3/2)	9,840 (3/2)
48	Deben	7,308 (5/0)	9,385 (5/0)
8	Tamar complex	9,710 (5/0)	9,168 (4/1)
63	Eden	9,340 (5/0)	9,094 (5/0)
1	Taw/Torridge	7,738 (5/0)	8,947 (5/0)
73	Dornoch Firth	10,271 (3/0)	8,176 (5/0)
33	Pagham Harbour	9,622 (5/0)	7,527 (5/0)
79	Wigtown Bay	7,388 (5/0)	7,322 (5/0)
2	Camel	9,058 (4/1)	6,587 (5/0)

Continued/

Site No. +	Site	Peak winter count, 1991-92	Average peak winter count, 1987-88 to 1991-92
36	Rye Hbr/Pett Levels	5,077 (5/0)	6,425 (5/0)
114	Dundrum Bay	5,438 (4/0)	6,423 (5/0)
22	NW Solent	6,972 (4/1)	6,260 (5/0)
76	Irvine	7,212 (5/0)	5,596 (5/0)
68	Ythan	8,049 (3/0)	5,191 (5/0)
111	Swansea Bay	2,909 (4/1)	5,147 (4/1)
74	Loch Fleet	5,297 (3/0)	4,991 (5/0)
82	Auchencairn Bay	9,300 (2/2)	4,469 (5/0)
61	Tynninghame	4,407 (5/0)	4,368 (5/0)
113	Carlingford Lough	3,102 (1/0)	4,358 (5/0)
23	Beaulieu	6,075 (5/0)	4,329 (5/0)
37	Pegwell Bay	4,199 (5/0)	4,234 (5/0)
51	Blyth (Suffolk)	4,449 (4/0)	4,169 (5/0)
97	Inland Sea	2,406 (5/0)	3,804 (5/0)
26	Newtown	4,660 (4/1)	3,769 (5/0)
5	Fal complex	3,533 (5/0)	3,655 (4/1)
105	Dyfi	3,177 (4/1)	3,087 (5/0)
118	Bann	3,276 (5/0)	3,039 (5/0)
93	Conwy	3,068 (5/0)	2,860 (4/0)
117	Lough Larne	2,307 (4/0)	2,756 (5/0)
92	Clwyd	2,514 (5/0)	2,583 (5/0)
4	Hayle	972 (5/0)	2,443 (5/0)
21	Christchurch Harbour	4,421 (5/0)	2,404 (5/0)
34	Adur	2,562 (4/0)	2,377 (5/0)
77	Loch Ryan	2,829 (5/0)	2,361 (5/0)
85	Irt/Mite/Esk	1,087 (1/0)	2,197 (5/0)
95	Red Wharf Bay	1,883 (5/0)	1,897 (5/0)
101	Traeth Bach	1,324 (5/0)	1,883 (5/0)
13	Kingsbridge	2,108 (4/0)	1,773 (5/0)
98	Cefni	1,150 (4/0)	1,692 (5/0)
100	Foryd Bay	1,690 (5/0)	1,654 (5/0)
78	Luce Bay	1,974 (2/0)	1,505 (4/0)
35	Newhaven	1,018 (5/0)	1,303 (5/0)
99	Braint	632 (3/1)	1,172 (5/0)
29	Brading Harbour	1,537 (5/0)	1,120 (5/0)
57	Blyth (Northumberland)	1,543 (4/1)	1,116 (5/0)
19	The Fleet/Wey	1,321 (4/1)	1,043 (3/2)
58	Coquet	1,394 (4/0)	950 (5/0)
83	Rough Firth	865 (4/1)	865 (1/1)
81	Kirkcudbright Bay	1,051 (4/1)	861 (3/1)
27	Medina	920 (5/0)	839 (5/0)
60	Tweed	763 (3/1)	798 (5/0)
9	Plym	745 (4/1)	775 (5/0)
103	Mawddach	724 (4/0)	758 (5/0)
96	Dulas Bay	1,005 (4/0)	683 (2/1)
18	Axe	790 (5/0)	671 (5/0)
104	Dysynni	767 (5/0)	666 (5/0)
3	Gannel	526 (4/0)	576 (3/0)
66	Dee (Scotland)	541 (5/0)	547 (5/0)
106	Teifi	186 (5/0)	468 (5/0)
25	Yar	933 (5/0)	453 (5/0)
28	Wootton	551 (5/0)	357 (4/0)
80	Fleet Bay	921 (5/0)	343 (4/0)
15	Teign	306 (3/0)	299 (5/0)
12	Avon	269 (5/0)	294 (5/0)

Continued/

Site No. +	Site	Peak winter count, 1991-92	Average peak winter count, 1987-88 to 1991-92
107	Nyfer	418 (5/0)	281 (5/0)
102	Artro	279 (5/0)	240 (5/0)
67	Don	306 (5/0)	230 (5/0)
17	Otter	66 (5/0)	158 (5/0)
6	Fowey	143 (4/0)	144 (5/0)
10	Yealm	100 (5/0)	131 (5/0)
7	Looe	58 (2/0)	128 (5/0)
11	Erme	65 (5/0)	101 (5/0)
14	Dart	46 (3/0)	74 (4/0)
69	Spey	117 (5/0)	72 (2/0)

+ see Figure 2

\* non-estuarine site

The following sites classified as non-estuarine were also counted at least once in 1991-92:

AIn, Alnmouth-Boulmer, Amble-Chevington, Ardrossan-Seamill, Arran (Brodick, Cordon, Kildonan, Kilpatrick, Machrie-Waterfoot), Arun-Middleton, Beadnell-Howick, Blyth-Seaton Sluice, Boulmer-Howick, Burghead, Carnoustie-Easthaven, Clwyd coast, Cresswell-Chevington, Cuckmere, Isle of Cumbrae, Deveron, Doon, Glyne Gap-Galley Hill, Goring/Ferring/Kingston, Loch Gruinart, Guernsey, Helford, Holy Loch, Hunterston, Loch Indaal, Jersey, Lossiemouth, Maidens Harbour, North Berwick, Newbiggin-Blyth, Newbiggin-Cresswell, Norman's Bay, Orkney (Newark, Widewall), Rosehearty-Fraserburgh, Saltwick Bay, Seahouses-Beadnell, Seahouses - Budle, Spey coast, St. Mary's Island, Thanet, Troon-Barassie, Turnberry - Dipple, Tyrella/Minerstown.

## WADERS AT INLAND SITES

by P.A. Cranswick

Waders were systematically recorded by the NWC at inland sites for the first time 1991-92. Although the vast majority of waders in the UK are found on the coast, these inland data complement those of the BoEE, allowing important inland sites for waders to be identified and allowing more accurate population estimates, particularly for species whose distribution also has a significant inland component. However, as with the coastal wader data and wildfowl data presented in the other sections of this booklet, such evaluations ideally require a long run of data, gathered over several years. The presentation of results in this year's report is thus necessarily brief. However, we hope that you will continue to provide counts of waders at inland sites so that we are better able to assess the importance of UK wetlands for waterfowl.

In analyzing these data, counts from coastal habitats have been excluded, even if not counted by the BoEE, as have those from inland bodies which comprise part of a BoEE site due to their close proximity to the coast. Inevitably, however, a small number of land-locked sites are situated near to the coast and receive appreciable numbers of essentially coastal waders e.g. some sites in Orkney.

## TOTAL NUMBERS

The total numbers of each species of wader at inland sites in 1991-92 are given in Tables 55 and 56. The number of sites that supported at least one wader and the total number of inland sites counted, as defined above, are also given for each month. However, the numbers of waders were not recorded at some sites, although these only formed a small proportion of the total and are likely to have held few waders. The species accounts that follow have not allowed for the difference in the number of sites counted in each month and this should be borne in mind when interpreting seasonal variation. However, these differences were small and will have had little effect on the general pattern. Forty-two sites held a total of 1,000 or more waders in at least one month and, of these, at least 40 sites were counted in all months (with the exception of September, when 37 were counted). This high degree of consistency also suggests that analyses will be little affected by not accounting for the difference in the number of sites counted.

Many species are almost wholly coastal in their

distribution, even on migration, and only very small numbers feature in the accounts below (e.g. Knot, Sanderling, Purple Sandpiper), accounting for less than 0.1% of the numbers at coastal sites. Some species regularly occur inland in significant numbers throughout the winter, although these represent only a small part (1-2%) of the UK population which is concentrated on the coast e.g. Curlew, Redshank. Lapwing and Golden Plover are widely distributed both inland as well as on the coast, and numbers recorded by the NWC inland comprise between one quarter and half of the total counted by the BoEE in Great Britain and, although more variable, over half the total in Northern Ireland. Ruff and Green Sandpiper are two species that exhibit particularly marked inland wintering distributions, and these counts greatly augment those of BoEE in censusing these species.

One of the most striking features of Table 55 is the large increase in numbers of several species in February and March e.g. Oystercatcher, Curlew and Redshank, reflecting the return of birds to inland breeding sites in Great Britain from coastal wintering areas. In general, a higher proportion of counted sites held waders during migration times: 33% in September and 36% in March, compared with 26% to 29% in the intervening months.

**Table 55. TOTAL NUMBERS OF WADERS RECORDED BY THE NWC AT INLAND SITES IN GREAT BRITAIN DURING WINTER 1991-92**

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Coastal Peak	Month
No. sites with waders	415	390	371	351	364	378	492		
No. inland sites counted	1,245	1,341	1,369	1,359	1,421	1,412	1,379		
Oystercatcher	254	211	276	259	181	2,983	5,767	255,745	(Jan)
Little Ringed Plover	32	0	0	0	0	0	6	2	(Mar)
Ringed Plover	124	45	131	30	5	118	226	9,605	(Dec)
Golden Plover	2,412	6,913	9,466	4,614	11,667	14,101	5,013	71,971	(Feb)
Grey Plover	1	28	6	23	0	0	0	47,620	(Jan)
Lapwing	27,304	35,985	44,096	19,040	62,452	67,451	13,678	213,435	(Jan)
Knot	17	0	1	1	0	0	0	280,905	(Dec)
Sanderling	1	0	0	0	0	0	0	7,420	(Feb)
Little Stint	21	10	1	4	0	0	2	4	(Nov)
Curlew Sandpiper	4	0	0	0	0	0	0	5	(Nov)
Purple Sandpiper	0	0	1	0	0	0	0	1,378	(Jan)
Dunlin	793	1,292	1,747	861	1,141	1,316	1,784	566,130	(Jan)
Ruff	314	95	122	31	64	89	179	252	(Jan)
Jack Snipe	9	53	19	15	32	23	16	68	(Nov)
Snipe	2,454	3,840	3,614	2,024	2,715	2,151	2,256	2,041	(Nov)
Black-tailed Godwit	54	36	42	1	4	7	1,489	8,388	(Feb)
Bar-tailed Godwit	4	1	1	4	16	0	1	56,786	(Feb)
Whimbrel	12	2	0	0	0	0	10	25	(Nov)
Curlew	958	994	1,486	1,168	1,868	2,916	8,392	83,890	(Feb)
Spotted Redshank	43	29	4	2	2	0	12	80	(Dec)
Redshank	419	521	451	342	437	546	1,116	74,128	(Jan)
Greenshank	155	39	13	5	4	15	6	268	(Dec)
Green Sandpiper	224	102	78	24	35	33	44	32	(Nov)
Wood Sandpiper	5	0	0	0	0	0	3	0	
Common Sandpiper	241	75	10	5	4	2	9	19	(Nov)
Turnstone	0	0	0	0	0	2	10	16,684	(Feb)
<b>Total</b>	<b>35,855</b>	<b>50,271</b>	<b>61,697</b>	<b>28,455</b>	<b>80,267</b>	<b>91,753</b>	<b>39,998</b>		

**Table 56. TOTAL NUMBERS OF WADERS RECORDED BY THE NWC AT INLAND SITES IN NORTHERN IRELAND DURING WINTER 1991-92**

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Coastal Peak	Month
No. sites with waders	10	16	8	16	16	11	10		
No. inland sites counted	95	115	139	124	125	114	123		
Oystercatcher	2	1	0	0	0	0	2	14,183	(Jan)
Ringed Plover	7	0	0	0	0	0	0	1,159	(Dec)
Golden Plover	16	1,638	1,974	4,428	10,175	5,021	1,166	11,125	(Dec)
Lapwing	625	1,821	2,774	14,835	12,600	13,727	511	27,352	(Jan)
Dunlin	38	357	161	149	358	281	110	15,006	(Dec)
Ruff	11	1	0	0	1	0	2	5	(Feb)
Snipe	31	61	35	77	59	55	24	113	(Jan)
Black-tailed Godwit	4	1	0	0	15	14	12	356	(Jan)
Whimbrel	0	0	0	0	0	0	1	1	(Mar)
Curlew	46	97	292	205	449	404	203	6,665	(Feb)
Redshank	3	9	20	17	11	42	101	5,387	(Jan)
Greenshank	3	1	1	0	0	0	0	78	(Jan)
Green Sandpiper	1	0	0	0	0	0	0	0	
Common Sandpiper	4	0	0	0	0	0	0	0	
<b>Total</b>	<b>791</b>	<b>3,987</b>	<b>5,257</b>	<b>19,711</b>	<b>23,668</b>	<b>19,544</b>	<b>2,132</b>		

## PRINCIPAL SITES

One thousand or more waders were recorded at 50 inland sites by the NWC in 1991-92, and those supporting more than 2,000 waders are listed in Table 57. The total count at many of these sites is heavily influenced by Lapwings and, to a lesser

extent, Golden Plovers. Since this is the first winter in which waders have been recorded by the NWC at these sites, any interpretations of these data must be regarded as preliminary. However, it is notable that the numbers of waders at Loughs Neagh & Beg would be of international significance if maintained over a number of years.

**Table 57. PEAK COUNTS AT INLAND SITES AT WHICH 1,000 OR MORE WADERS WERE RECORDED BY THE NWC DURING WINTER 1991-92**

Lo. Neagh/Beg	24,422
West Sedgemoor	15,571
Pulborough Levels	7,840
Ouse Washes	5,828
Clifford Hill GP	4,554
Willington GP	4,443
Cotswold Water Park West	4,080
Nene Washes	4,036
Netherfield GP	4,011
Tealham & Tadham Moor	3,470
Fairburn Ings	3,189
Aller Moor	3,083
Lo. Leven	2,963
Saintear Lo.	2,780
Broomhill Flash	2,707
Fiddlers Ferry Lagoons	2,538
Colliford Rsr	2,466
R. Lune: Caton to Hornby	2,410
Ogston Rsr	2,383
Burham Marsh	2,155
Annaghroe	2,150
Bardolf Water Meadows	2,081
Whitteldene Rsrs	2,067

## SPECIES ACCOUNTS

A full treatment of numbers at coastal sites and current research on waders is given, as usual, in the Waders section of this report (page 57). The following accounts are thus brief, providing in most cases only a simple comparison with coastal numbers or anecdotal information. For each species, the size and timing of the UK coastal peak total for the winter period (November to March) is given separately for Britain and Northern Ireland in each account, although counts of passage birds

made outside this period are also referred to in the accounts. The sites supporting the largest numbers of birds are also given. No strict qualifying levels have been used in listing counts at individual sites as the minimum level of either national or international numbers used in the rest of this booklet would exclude virtually all sites. It is interesting, however, to note the occurrence of some sites in accounts for several species, especially those that do not feature in the Wildfowl section.

### Oystercatcher *Haematopus ostralegus*

**GB coastal peak: 255,745 (Jan)**  
**NI coastal peak: 14,183 (Jan)**

Some 200 to 250 birds were recorded in Britain in each month in early winter, but numbers rose markedly to almost 3,000 in February and over 5,700 in March as birds returned to breeding sites. Virtually no birds were recorded in Northern Ireland. The following sites, mostly in northern

Britain, held more than 100 birds: Carsebreck and Rhynd Lochs (466, March), River Lune: Caton to Hornby (438, February), River Lune: Arkholme to Whittington (300, March), River Tay: Perth (250, February), River Tweed: Junction Pool to Coldstream (217, February), Loch of Harray (210,

February), Castron Quarry (205, March), Morfa Bychan Pools (170, February), Stantling Craigs and Bunting Craig Reservoir (150, March), River Teviot: Nisbet (130, March), Loch Leven (125, February),

Cloddach Gravel Pit (117, March), Lake of Menteith (116, March), Ruslands Pool (113, March) and Nosterfield Quarry (107, March).

**Little Ringed Plover *Charadrius dubius***

**GB coastal peak: 2 (Mar)**

**NI coastal peak: 0**

This species was recorded on passage in autumn and early spring, with a peak of 32 in September in

Britain. Eight birds at Rookery Pit in September was the only count of more than five birds.

**Ringed Plover *Charadrius hiaticula***

**GB coastal peak: 9,605 (Dec)**

**NI coastal peak: 1,159 (Dec)**

Small numbers of birds were recorded sporadically at inland waters throughout 1991-92, with a peak of 226 in March during spring passage. The following

sites held more than five birds: Alton Water (124, November) and Saintear Loch (45, February).

**Golden Plover *Pluvialis apricaria***

**GB coastal peak: 71,971 (Feb)**

**NI coastal peak: 11,125 (Dec)**

Numbers counted in Great Britain increased to a peak of over 14,000 in February, coinciding with the timing of the peak at coastal sites. Similarly, the low counts in December were evident both inland and on the coast. Although this decline was mirrored by a rise in numbers at coastal sites in Northern Ireland, the peak inland total in Northern Ireland of 10,175 occurred in January, almost as large as the peak coastal count in December. The following sites

held more than 1,000 birds: Loughs Neagh/Beg (10,025, January), Clifford Hill Gravel Pit (3,000, February), Netherfield Gravel Pit (3,000, February), West Sedgemoor (2,208, February), Colliford Reservoir (2,000, November), Broomhill Flash (1,600, November), Fairburn Ings (1,500, January), Whittledene Reservoirs (1,500, October), Ouse Washes (1,406) and Aller Moor (1,050, November).

**Grey Plover *Pluvialis squatarola***

**GB coastal peak: 47,620 (Jan)**

**NI coastal peak: 176 (Feb)**

This coastal species was only recorded sporadically inland, most often on autumn passage. The following sites held more than five birds: South

Forty Foot Drain (14, December), Rutland Water (10, October), Queen Mary Reservoir (9, December) and Hallington Reservoir (6, October).

**Lapwing *Vanellus vanellus***

**GB coastal peak: 213,435 (Jan)**

**NI coastal peak: 27,352 (Jan)**

As with Golden Plover, monthly totals of Lapwings at inland sites were largely coincident with the fluctuations on the coast, with a marked low in December followed by a high count in January. However, numbers rose further still to an inland peak in excess of 67,000 in February, compared with a sharp decline on the coast. The largest totals in Northern Ireland, both inland and on the coast, were recorded in December, January and February,

although the high peak on the coast in January was not seen inland. The following sites held more than 2,000 birds: Loughs Neagh/Beg (13,501, December), West Sedgemoor (12,402, February), Pulborough Levels (7,200, February), Willington Gravel Pits (4,000, January), Nene Washes (3,581, January), Tealham and Tadham Moor (2,950, December), Ogston Reservoir (2,250, November), Aller Moor (2,030, January) and Burham Marsh (2,000, November).



**Knot *Calidris canutus***

GB coastal peak: 280,905 (Dec)  
 NI coastal peak: 8,376 (Jan)

Despite a large UK wintering population, Knot were recorded at only five inland sites, and all records,

except at Benacre Broad (15, September), were of single birds.

**Sanderling *Calidris alba***

GB coastal peak: 7,420 (Feb)  
 NI coastal peak: 62 (Mar)

Only one bird, at Hickling Broad in September, was recorded at inland sites, emphasising the strict

coastal distribution of this species.

**Little Stint *Calidris minuta***

GB coastal peak: 4 (Nov)

This diminutive wader is most commonly seen on autumn passage. Although it might be expected that birds would be more frequently seen inland as a result of the close scrutiny of virtually all waders at such sites, the peak of at least 80 birds at coastal sites in September greatly exceeds the 21 birds

recorded inland. A small number of birds overwinter in Britain, as indicated by four birds recorded in December. The following sites held five or more birds: Broomhill Flash (7, October), Rutland Water (7, September) and Chew Valley Lake (5, September).

**Curlew Sandpiper *Calidris ferruginea***

GB coastal peak: 5 (Nov)

The autumn passage of this species was virtually unrecorded at inland sites, despite higher than average numbers on the coast. Birds at Blagdon

Lake (3, September) and Daventry Reservoir (1, September) were the only records.

**Purple Sandpiper *Calidris maritima***

GB coastal peak: 1,378 (Jan)  
 NI coastal peak: 130 (Dec)

One at Blithfield Reservoir in November was the

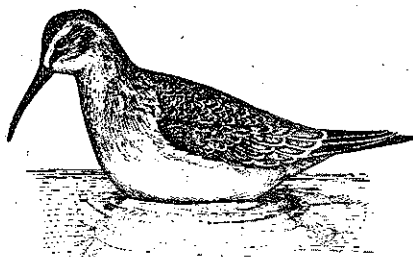
only inland record of this most coastal of waders.

**Dunlin *Calidris alpina***

GB coastal peak: 566,130 (Jan)  
 NI coastal peak: 15,006 (Dec)

This is one of the commonest of the essentially coastal waders at inland sites in Britain, with over 1,700 in November. However, birds are often transient and numbers are quite variable even at sites, notably large reservoirs, which regularly support flocks of birds. The peak of 1,748 in Britain occurred in March, and of 358 in Northern Ireland in January. The following sites held more than 100 birds: Ouse Washes (775, March), Loughs

Neagh/Beg (358, January), North Warren (300, February), Loch Leven (290, October), Rutland Water (250, November), West Sedgemoor (225, February), Blithfield Reservoir (180, November), Pitsford Reservoir (170, November), Catcott Heath (150, January), Walton Reservoirs (126, February), Chew Valley Lake (125, November) and Fiddlers Ferry Lagoons (135, March).



**Ruff *Philomachus pugnax***

GB coastal peak: 252 (Jan)  
NI coastal peak: 5 (Feb)

Numbers of Ruff counted at inland sites in Britain peaked during passage months in 1991-92, with 314 in September and 179 in March. Smaller numbers occurred throughout winter, with 122 in November. Ruff were virtually absent from Northern Ireland except for 11 in September. Ruff are often overlooked, especially inland, where they may feed in flooded fields away from wetlands (Sorenson 1986). Ruff are quite widespread in Britain, but with

notable concentrations on the south coast, on parts of the east coast and in east central England. The following sites held more than 10 birds: Ouse Washes (116, November), Martin Mere (50, March), Pulborough Levels (36, January), Rutland Water (15, September), Chew Valley Lake (12, September), Loch Leven (12, September) and Loughs Neagh/Beg (11, September).

**Jack Snipe *Lymnocyptes minimus***

GB coastal peak: 68 (Nov)  
NI coastal peak: 2 (Nov)

This unobtrusive species is easily overlooked and often only seen when directly disturbed. Birds are thus inevitably under-recorded by the NWC and BoEE. The species is widely distributed and is probably absent from only the higher ground, although its secretive nature prevents a comprehensive assessment (Harradine 1986). The contribution of this species to shooting bags has

been used to give an estimate of up to 100,000 birds for Britain and Ireland. It is not surprising that very few are recorded on counts, and the peak was of only 53 birds in October. Five or more birds were recorded at only four sites: Whittledene Reservoirs (9, October), the Nene Washes (5, October), Pitsford Reservoir (5, October) and Tealham and Tadham Moor (5, January).

**Snipe *Gallinago gallinago***

GB coastal peak: 2,041 (Nov)  
NI coastal peak: 113 (Jan)

As is the case with Jack Snipe, large numbers of this species must be undetected at many sites due to their secretive nature. The peak of 3,840 birds at inland sites in Britain occurred in October, with at least 2,000 birds in all other months. Considerably fewer were recorded in Northern Ireland, with a peak of only 77 birds in December. Walking through suitable areas often reveals the presence of many birds which take to the air and which would not otherwise have been seen. Although birds may then be double counted, a large total of 1,000 birds was

estimated to be present at Saintear Loch in November and December after counts made in such a way. More than one hundred birds were also recorded at the following sites: Aller Moor (698, January), Pulborough Levels (575, November), Bardolf Water Meadows (266, December), the Nene Washes (179, October), the Ouse Washes (165, October), Clifford Hill Gravel Pit (143, March), Leighton Moss (110, November), St. Benet's Levels (110, January) and Tealham and Tadham Moor (104, November).

**Black-tailed Godwit *Limosa limosa***

GB coastal peak: 8,388 (Feb)  
NI coastal peak: 356 (Jan)

After an autumn passage peak of 54 birds at inland sites in Britain, only a handful of birds were recorded in mid winter, although 15 were counted in Northern Ireland in January (Table 56). The count of almost 1,500 birds in March was a result a large group on the Ouse Washes, which consist mainly of Icelandic breeding birds (J. Kirby, pers. comm.). However,

there was no corresponding decrease in numbers recorded on coastal sites in this month. The following sites held more than 10 birds: the Ouse Washes (1,469, March), Durleigh Reservoir (36, November), Holywell Pond (18, September), Upper Quoile (15, January) and Minsmere (12, March).

**Bar-tailed Godwit *Limosa lapponica***

GB coastal peak: 56,786 (Feb)  
NI coastal peak: 1,592 (Feb)

No more than four birds were recorded in any month on inland sites with the exception of January,

when there was a peak of 16 birds, 15 of which were at Doxey Marshes.

**Whimbrel *Numenius phaeopus*****GB coastal peak: 25 (Nov)****NI coastal peak: 1 (Mar)**

Peak numbers of Whimbrel were recorded on passage, with 12 in September and 10 in March in

Britain. Ten birds were at Horsey Mere in September.

**Curlew *Numenius arquata*****GB coastal peak: 83,890 (Feb)****NI coastal peak: 6,655 (Feb)**

Around 1,000 or more Curlew were recorded at inland sites in Britain in each month of the winter. This figure rose dramatically to almost 3,000 in February and almost 8,400 in March. As with several other species which winter primarily on the coast, this probably represents a return to inland breeding areas in Britain or staging sites before migrating to breeding areas in countries further north. There was a peak of 449 birds in Northern Ireland in January but no spring peak was observed

at inland sites. The following sites held 200 or more birds: River Lune: Caton to Hornby (1,400, March), Whitmore Reservoir (1,200, March), Aird Meadow (974, March), Cameron Reservoir (652, March), Liddel Loch (650, February), Alaw Reservoir (437, November), Loch Leven (400, March), Merryton Ponds (305, March), Loch of Harray (300, February), Saintear Loch (300, January), Castle Loch, Lochmaben (250, March), Fiddlers Ferry Lagoons (220, December) and Tabley Mere (200, February).

**Spotted Redshank *Tringa erythropus*****GB coastal peak: 80 (Dec)****NI coastal peak: 1 (Jan)**

The small numbers of Spotted Redshank that winter in the UK are found mainly on estuaries. Inland, peak numbers occur on passage, with a maximum of 43 birds in September. Very few appear to overwinter on inland waters, with just two birds in

each of December and January. Four sites held more than five birds: Chew Valley Lake (11, September), Martin Mere (9, March), Rutland Water (9, September) and Benacre Broad (8, September).

**Redshank *Tringa totanus*****GB coastal peak: 74,128 (Jan)****NI coastal peak: 5,387 (Jan)**

Numbers of Redshank at inland sites in Britain fluctuated between 350 and 550 in 1991-92. There was a March peak of 1,116 birds reflecting the return of birds to inland breeding areas from their coastal wintering sites. A similar pattern was observed in Northern Ireland, although numbers involved were much smaller, with a mid-winter peak of 20, and 101 birds in March. In both cases, total counts comprise

only a very small proportion of the UK total. The following sites held more than 50 birds: Shibdon Pond (153, October), Washington WWT (138, October), the Ouse Washes (135, March), Liddel Loch (90, February), Loughs Neagh/Beg (67, March), Tophill Low Reservoirs (55, January) and Ancum Loch (53, September).

**Greenshank *Tringa nebularia*****GB coastal peak: 268 (Dec)****NI coastal peak: 78 (Jan)**

Comparatively large numbers of this scarce wintering wader were seen at inland sites on migration, with a peak of 155 in Britain in September. Numbers declined rapidly to a midwinter figure of around five birds in total (Table 55). A maximum of three birds was recorded in

Northern Ireland, again on passage. The following sites held more than five birds: Rutland Water (21, September), Pitsford Reservoir (10, September), Tophill Low Reservoirs (9, February), Benacre Broad (8, September), Blithfield Reservoir (6, September) and Broomhill Flash (6, September).

**Green Sandpiper *Tringa ochropus*****GB coastal peak: 32 (Nov)****NI coastal peak: 1 (Nov)**

This species is comparatively widespread in southern Britain, and most birds occur away from coastal sites (Smith 1986). The British and Irish wintering population is estimated at between 500 and 1,000 birds. However, the species often occurs singly on quiet streams, sewage farms or cress beds and may be easily missed. Peak numbers are recorded on passage in late summer, and 224 were counted on inland sites in September. Numbers fell slowly to around 30 birds in mid-winter, before

recovering slightly in March. The following sites held more than five birds: Arlesford Pond (14, September), Hoveringham/Bleasby Gravel Pits (12, September), Waltham Brooks (11, October), Horsey Mere (10, September), Brandon Grounds (9, November), Strumpshaw Fen (9, September), Chew Valley Lake (8, August), Clifford Hill Gravel Pit (7, September and October) and Broomhill Flash (6, September).

**Wood Sandpiper *Tringa glareola*****GB coastal peak: 0****NI coastal peak: 0**

Small numbers of Wood Sandpipers are typically recorded on passage, and none was counted between November and March by the BoEE in 1991-92. Five birds were recorded in September on

inland sites and three in March. Only three sites held more than one bird: Arlesford Pond (2, March), Horsey Mere (2, September) and Waltham Brooks (2, September).

**Common Sandpiper *Actitis hypoleucos*****GB coastal peak: 19 (Nov)****NI coastal peak: 0**

Although a common and widespread breeder in Wales and northern Britain, most Common Sandpipers vacate the British Isles during the winter. The peak of 241 in Britain and four in Northern Ireland, both in September, comprise migrating birds. Mid-winter counts numbered around five individuals. The following sites held

more than five birds: Stanwick Gravel Pits (30, October), Loch Quen (18, September), Blagdon Lake (12, September), King George V Reservoir (12, July), Willington Gravel Pits (7, September), Eglwys Nunydd Reservoir (7, September), Pitsford Reservoir (6, September) and Sutton Bingham Reservoir (6, September).

**Turnstone *Arenaria interpres*****GB coastal peak: 16,684 (Feb)****NI coastal peak: 2,007 (Dec)**

Turnstones are almost entirely coastal and inland occurrences are very rare. A flock of 132 birds at Alton Water in November must have provided a particularly unusual sight. Turnstone were

recorded at only three further inland sites: Cresswell Ponds (9, March), Whittledene Reservoirs (2, February) and the Ouse Washes (1, March).

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## Appendix 1. INTERNATIONAL AND NATIONAL IMPORTANCE

Criteria for International Importance have been agreed by the Contracting Parties to the Ramsar Convention on Wetlands of International Importance (Ramsar Convention Bureau 1988). Under one criterion, a wetland is considered Internationally Important if it regularly holds 1% of the individuals in a population of one species or subspecies of waterfowl, while any site regularly holding a total of 20,000 waterfowl also qualifies. Britain and Ireland's wildfowl belong to the north-west European population (Pirot *et al.* 1989), and the waders to the east Atlantic flyway population (Smit & Piersma 1989). A wetland in Britain is considered Nationally Important if it regularly holds 1% of the estimated British population of one species or subspecies of waterfowl. Table 58 gives the current qualifying levels among wildfowl and waders for both these categories of importance. Note that the category of National Importance applies to Great Britain only; equivalent criteria and figures have not yet been produced for Ireland.

There are now 72 Contracting Parties to the Ramsar Convention, which have designated a total of 36,578,570 ha in 581 sites. This represents an increase of 8 Parties, over 3 million ha and almost 40 sites since the publication of the last *Wildfowl and Wader Counts*. The UK has designated seven new sites in this time, namely Loch Spynie (Grampian),

Loch Ken & Dee Marshes (Dumfries & Galloway), Walmore Common (Gloucestershire), Chippenham Fen (Cambridgeshire), Old Hall Marshes (Essex), the Exe Estuary (Devon), Cors Caron (Dyfed) and the Burry Inlet (West Glamorgan and Dyfed), and has extended the Upper Solway site to include nearly all of the Inner Solway Firth (Dumfries & Galloway and Cumbria). A very welcome total of 19 new sites was classified as Special Protection Areas (SPAs) under the EC Wild Birds Directive during the same period. These include all of the new Ramsar sites, apart from Chippenham Fen and Cors Caron. The Solway extension also gained SPA status. Abberton Reservoir (Essex), Loch of Lintrathen (Tayside), Lindisfarne (Northumberland) and Minsmere to Walberswick (Suffolk), previously designated as Ramsar sites, were also newly classified as SPAs. The remaining new SPAs were Traeth Lafan (Gwynedd), Ynys Feurig (Gwynedd), Flannan Isles (Western Isles), St. Kilda (Western Isles), Shiant Isles (Western Isles), Fowlsheugh (Grampian), Porton Down (Wiltshire), Glannau Ynys Gybi (Gwynedd), Glannau Aberdaron (Gwynedd) and Swan Island (Co Antrim), with all but the first two being non-wetland sites. This is an encouraging step towards the UK more fully meeting its obligations under the Directive (see Stroud *et al.* 1990). There are now a total of 58 Ramsar Sites and 61 SPAs in the UK.

(R) = Ramsar site only; (S) = SPA only; the remainder have dual designation.

Abberton Reservoir	Glac-na-Criche	Moor House (S)
Abernethy Forest (S)	Gladhouse Reservoir	North Norfolk Coast
Ailsa Craig (S)	Glannau Aberdaron (S)	Old Hall Marshes
Alt Estuary	Glannau Ynys Gybi (S)	Orfordness/Havergate (S)
Bridgend Flats	Grassholm (S)	Ouse Washes (R)
Bridgwater Bay (R)	Gruinart Flats	Pagham Harbour
Bure Marshes (R)	Handa Island (S)	Porton Down (S)
Burry Inlet	Hickling Broad/Horse Mere (R)	Priest Island (S)
Cairngorm Lochs (R)	Holburn Lake and Moss	Rannoch Moor (R)
Chesil Beach/Fleet	Hoselaw Loch	Redgrave and South Lopham Fens (R)
Chew Valley Lake (S)	Irtinghead Mires (R)	Rhum (S)
Chichester/Langstone Harbours	Laggan Peninsula (S)	Ribble Estuary (part) (S)
Chippenham Fen (R)	Leighton Moss	Rockcliffe Marshes
Claish Moss (R)	Lindisfarne	Rostherne Mere (R)
Coquet Island (S)	Llyn Idwal (R)	Rutland Water
Cors Caron (R)	Llyn Tegid (R)	Shiant Isles (S)
Cors Fochno/Dyfi (R)	Loch An Duin (R)	Silver Flowe (R)
Dee Estuary	Lochs Druidibeg/a'Machair/Stillgary	Skokholm and Skomer Islands (S)
Derwent Ings	Loch Eye	St. Kilda (S)
Eilean na Muice Duibhe (Duich Moss)	Loch Ken/Dee Marshes	Swan Island (S)
Esthwaite Water (R)	Loch Leven (R)	The Wash
Exe Estuary	Loch Lomond (R)	The Swale
Fala Flow	Loch of Lintrathen	Traeth Lafan (S)
Farne Islands (S)	Loch of Skene	Upper Severn Estuary
Feur Lochain	Loch Spynie	Upper Solway
Flannan Isles (S)	Loughs Neagh/Beg (R)	Walmore Common
Forth Islands (S)	Martin Mere	Ynys Feurig (S)
Fowlsheugh (S)	Minsmere/Walberswick	

Table 58. QUALIFYING LEVELS FOR NATIONAL AND INTERNATIONAL IMPORTANCE

	National (G.B.)	International
Great Crested Grebe	100	?
Mute Swan	180	1,800
Bewick's Swan	70	170
Whooper Swan	60	170
Bean Goose	*+	800
Pink-footed Goose: Iceland/Greenland	1,100	1,100
European White-fronted Goose	60	3,000
Greenland White-fronted Goose	100	220
Greylag Goose: Iceland	1,000	1,000
Barnacle Goose: Greenland	200	320
Svalbard	100	100
Dark-bellied Brent Goose	900	1,700
Light-bellied Brent: Canada/Greenland	*+	200
Svalbard	*30	40
Shelduck	750	2,500
Wigeon	2,500	7,500
Gadwall	50	120
Teal	1,000	4,000
Mallard	5,000	**50,000
Pintail	250	700
Shoveler	90	400
Pochard	500	3,500
Tufted Duck	600	7,500
Scaup	*40	1,500
Eider	700	**20,000
Long-tailed Duck	200	**20,000
Common Scoter	350	8,000
Velvet Scoter	*30	2,500
Goldeneye	150	3,000
Smew	*+	150
Red-breasted Merganser	100	1,000
Goosander	50	1,250
Coot	1,000	15,000
Oystercatcher	2,800	9,000
Avocet	*5	700
Ringed Plover	230 (passage: 300)	500
Golden Plover	2,000	10,000
Grey Plover	210	1,500
Lapwing	10,000	**20,000
Knot	2,200	3,500
Sanderling	140 (passage: 300)	1,000
Purple Sandpiper	160	500
Dunlin	4,300 (passage: 2,000)	14,000
Ruff	*15	10,000
Snipe	?	10,000
Black-tailed Godwit	50	700
Bar-tailed Godwit	610	1,000
Whimbrel	+ (passage: 50)	700
Curlew	910	3,500
Spotted Redshank	*2	?
Redshank	750 (passage: 1,200)	1,500
Greenshank	*4	?
Turnstone	450	700

**Notes to Table 58:**

? Population size not accurately known

+ British population too small for a meaningful figure to be obtained.

\* Where 1% of the British wintering population is less than 50 birds, 50 is normally used as a minimum qualifying level for national importance.

\*\* A site regularly holding more than 20,000 waterfowl qualifies as Internationally Important by virtue of absolute numbers.

Sources of qualifying levels for International Importance: for wildfowl see Piro *et al.* (1989) and for waders see Smit & Piersma (1989); see Scott (1982) for species they do not cover, namely Golden Plover, Lapwing, Ruff, Snipe.

Sources of qualifying levels for National Importance: for wildfowl see Owen *et al.* (1986), updated where necessary from NWC data, and for waders see Moser (1987); see Prater (1981) for species they do not cover, namely Avocet, Golden Plover, Lapwing, Ruff, Snipe, Whimbrel, Spotted Redshank and Greenshank.

## Appendix 2. LOCATIONS OF NATIONAL WILDFOWL COUNT SITES

The location of all count sites or areas mentioned in the wildfowl section of this booklet are given here. Sites are listed in alphabetical order, with the 1 km square grid reference for the centre of the area and the county or district. Estuaries are not listed but can be located on Figure 2.

Site	1 km square	County
Abberton Reservoir	NT 4581	Lothian
Abbots Moss	NY 5142	Cumbria
Aird Meadow	NS 3658	Strathclyde
Alaw Reservoir	SH 3968	Gwynedd
Aller Moor	ST 3929	Somerset
Alton Water	TM 1536	Suffolk
Alvecote Pools	SK 2504	Warwickshire
Annaghroe	H 7344	Tyrone
Ancum Loch	HY 7654	Orkney
Appin/Eriska/Benderloch	NM 9138	Strathclyde
Ardleigh Reservoir	TM 0328	Essex
Ardoch Loch	NN 8408	Tayside
Arlesford Pond	SU 5933	Hampshire
Arundel WWT	TQ 0207	West Sussex
Bardolf Water Meadows	ST 7795	Dorset
Barn Elms Reservoirs	TQ 2277	Greater London
Belvide Reservoir	SJ 8610	Staffordshire
Benacre Broad	TM 5383	Suffolk
Berney Marshes	TG 4605	Norfolk
Besthorpe/Girton Gravel Pits	SK 8165	Nottinghamshire
Bewl Water	TQ 6733	East Sussex
Blagdon Lake	ST 5150	Avon
Blenheim Park Lake	SP 4316	Oxfordshire
Blickling Lake	TG 1729	Norfolk
Blithfield Reservoir	SK 0524	Staffordshire
Borth/Ynyslas	SN 6092	Dyfed
Bosherston Lake	SR 9794	Dyfed
Brandon Grounds	SP 4176	Warwickshire
Broad Bay	NB 4733	Western Isles
Broomhill Flash	SE 4102	South Yorkshire
Buckden/Stirloe Gravel Pits	TL 2066	Cambridgeshire
Burham Marsh	TQ 7362	Kent
Caban Coch Reservoir	SN 9163	Powys
Caistron Quarry	NU 0001	Northumberland
Cameron Reservoir	NO 4711	Fife
Carron Valley Reservoir	NS 6884	Central
Carsebreck/Rhynd Lochs	NN 8609	Tayside
Castle Howard Lake	SE 7170	North Yorkshire
Castle Loch, Lochmaben	NY 0881	Dumfries & Galloway
Catcott Heath	ST 4041	Somerset
Cheddar Reservoir	ST 4454	Somerset
Cheshunt Gravel Pit	TL 3602	Hertfordshire
Chew Valley Lake	ST 5659	Avon
Chichester Gravel Pits	SU 8703	West Sussex
Clifford Hill Gravel Pit	SP 8061	Northamptonshire
Cloddach Gravel Pit	NJ 2059	Highland
Clumber Park Lake	SK 6347	Nottinghamshire
Colliford Reservoir	SX 1871	Cornwall
Cotswold Water Park East	SU 1999	Gloucestershire/Oxfordshire
Cotswold Water Park West	SU 0595	Gloucestershire/Wiltshire

Continued/

Site	1 km square	County
Cowgill Reservoirs	NT 0327	Strathclyde
Cresswell Ponds	NZ 2993	Northumberland
Crombie Loch	NO 5240	Tayside
Danna/Keils Peninsula	NR 7383	Strathclyde
Daventry Reservoir	SP 5763	Northamptonshire
Dinnet Lochs	NJ 4800	Grampian
Dorchester Gravel Pits	SU 5795	Oxfordshire
Doxey Marshes	SJ 9024	Staffordshire
Drakelow Gravel Pit	SK 2320	Derbyshire
Drift Reservoir	SW 4328	Cornwall
Drummond Pond	NN 8518	Tayside
Dungeness	TR 0619	Kent
Dupplin Loch	NO 0320	Tayside
Durleigh Reservoir	ST 2636	Somerset
Eccup Reservoir	SE 2941	West Yorkshire
Eglwys Nunydd Reservoir	SS 7984	West Glamorgan
Endrick Mouth, Loch Lomond	NS 4388	Strathclyde
Essenside Loch	NT 4520	Borders
Eyebrook Reservoir	SP 8595	Leicestershire
Fairburn Ings	SE 4627	North Yorkshire
Fala Flow	NT 4258	Lothian
Farmoor Reservoirs	SP 4406	Oxfordshire
Farmwood Pool	SJ 8173	Cheshire
Fedderate Reservoir	NJ 8652	Grampian
Fen Drayton Gravel Pits	TL 3470	Cambridgeshire
Fiddlers Ferry Lagoons	SJ 5585	Cheshire
Fleet Pond	SU 8255	Surrey
Frensham Ponds	SU 8440	Surrey
Gladhouse Reservoir	NT 2953	Lothian
Grafham Water	TL 1568	Cambridgeshire
Gunthorpe Gravel Pits	SK 6744	Nottinghamshire
Gunton Parks	TG 2234	Norfolk
Haddo House Lakes	NJ 8734	Grampian
Hallington Reservoir	NY 9776	Northumberland
Hamilton Low Parks	NS 7257	Strathclyde
Hamner Mere	SJ 4539	Clwyd
Hanningfield Reservoir	TQ 7398	Essex
Hardley Flood	TM 3899	Norfolk
Hay-a-Park Gravel Pits	SE 3658	North Yorkshire
Heaton Park Reservoir	SD 8205	Greater Manchester
Hickling Broad	TG 4121	Norfolk
Hilfield Park Reservoir	TQ 1595	Hertfordshire
Hirsel Lake	NT 8240	Borders
Holburn Lake and Moss	NU 0536	Northumberland
Holden Wood Reservoir	SD 7722	Lancashire
Holme Pierrepont Gravel Pits	SK 6239	Nottinghamshire
Holywell Pond	NZ 3175	Northumberland
Horseley Mere	TG 4415	Norfolk
Hoselaw Loch	NT 8031	Borders
Hoveringham/Bleasby Gravel Pits	SK 7047	Nottinghamshire
Hule Moss	NT 7149	Borders
Kedleston Park	SK 3141	Derbyshire
Kilconquhar Loch	NO 4801	Fife
King George V Reservoir	TQ 3796	Greater London
Kingsbury Water Park/Coton Pools	SP 2096	Warwickshire

Continued/

Site	1 km square	County
Kings Mill Reservoir	SK 5159	Nottinghamshire
Kinmount Ponds	NY 1468	Dumfries & Galloway
Lackford Gravel Pits	TL 7971	Suffolk
Lake of Menteith	NN 5700	Central
Lancaster Canal	SD 4766	Lancashire
Leighton Moss	SD 4875	Lancashire
Leighton/Roundhill Reservoirs	SE 1678	North Yorkshire
Leybourne/New Hythe Gravel Pits	TQ 6959	Kent
Liddel Loch	ND 4583	Orkney
Little Paxton Gravel Pits	TL 1963	Cambridgeshire
Llyn Penrhyn	SH 3077	Gwynedd
Llyn Traffwl	SH 3276	Gwynedd
Loch Bee	NF 7743	Western Isles
Loch Calder	ND 0760	Highland
Loch Eye	TH 8379	Highland
Loch Heilen	ND 2568	Highland
Loch Ken	NX 6870	Dumfries & Galloway
Loch Leven	NO 1401	Tayside
Loch Linnhe	NM 9862	Highland
Loch Mahaick	NN 7006	Central
Loch Na Keal	NM 5038	Strathclyde
Loch of Boardhouse	HY 2725	Orkney
Loch of Harray	HY 2915	Orkney
Loch of Kinnordy	NO 3655	Tayside
Loch of Lintrathen	NO 2754	Tayside
Loch of Skene	NJ 7807	Grampian
Loch of Strathbeg	NK 0758	Grampian
Loch Quien	NS 0659	Strathclyde
Loch Watten	ND 2256	Highland
Loch Scarmclate	ND 1859	Highland
Loch Spynie	HU 3716	Shetland
Loch Tullybelton	NO 0034	Tayside
Looe Pool	SW 6424	Cornwall
Loughs Neagh & Beg	J 0575	Down/Antrim/Derry/ Tyrone/Armagh
Lour	NO 4746	Tayside
Machrie Bay, Arran	NR 8933	Strathclyde
Machrihanish	NS 6922	Strathclyde
Maidens Harbour/Turnberry	NS 1902	Strathclyde
Martin Mere	SD 4105	Lancashire
Mere Sands Wood	SD 4415	Lancashire
Merryton Ponds	NS 7654	Strathclyde
Middle Yare Marshes	TG 3504	Norfolk
Minnis Bay to Reculver	TR 2569	Kent
Minsmere	TM 4666	Suffolk
Morfa Bychan Pools	SH 5537	Gwynedd
Murcar, Aberdeen	NJ 9510	Grampian
Nene Washes	TF 3300	Cambridgeshire
Netherfield Gravel Pit	SK 6339	Nottinghamshire
North Warren	TM 4658	Suffolk
Nosterfield Quarry	SE 2780	North Yorkshire
Ogston Reservoir	SK 3760	Derbyshire
Ormesby Broads	TG 4614	Norfolk
Ouse Washes	TL 5394	Cambridgeshire
Pannel Valley	TQ 8815	East Sussex

Continued/



Site	1 km square	County
Pawston Lake	NT 8632	Northumberland
Pensthorpe Lakes	TF 9428	Norfolk
Pentney Gravel Pits	TF 7013	Norfolk
Pitsford Reservoir	SP 7669	Northamptonshire
Port Meadow	SP 4908	Oxfordshire
Pulborough Levels	TQ 0416	West Sussex
Queen Elizabeth II Reservoir	TQ 1167	Surrey
Queen Mary Reservoir	TQ 0769	Surrey
Queen Mother Reservoir	TQ 0076	Berkshire
Ranworth and Cockshoot Broads	TG 2515	Norfolk
Rhunahaorine	NR 7049	Strathclyde
River Avon: Blasford to Hucklesbrook	SU 1408	Hampshire
River Avon: Fordingbridge	SU 1617	Hampshire
River Avon: Ringwood	SU 1408	Hampshire
River Eden: Rockcliffe to Armathwaite	NY 4758	Cumbria
River Lune: Arkholme to Whittington	SD 5871	Lancashire
River Lune: Caton to Hornby	SD 5566	Lancashire
River Severn: Shrewsbury	SJ 4815	Shropshire
River Soar: Leicester	SK 5805	Leicestershire
River Tay: Perth	NO 1125	Tayside
River Teviot: Nisbet	NT 6725	Borders
River Tweed: Kelso to Coldstream	NT 7737	Borders
River Tyne: Corbridge to Blaydon	NZ 1064	Northumberland/Tyne & Wear
Rookery Pit	TL 0141	Bedfordshire
Rostherne Mere	SJ 7484	Cheshire
Ruslands Pool	SD 3486	Cumbria
Rutland Water	SK 9207	Leicestershire
Ryton Willows	NZ 1462	Tyne & Wear
St Benets Levels	TG 3815	Norfolk
Saintear Loch	HY 4347	Orkney
Sandbach Flashes	SJ 7259	Cheshire
Scarmclate	ND 1959	Highland
Seahouses to Budle Point	NU 2231	Northumberland
Shibdon Pond	NZ 1962	Tyne & Wear
Slains Lochs/Ythan Estuary	NK 0230	Grampian
Somerset Levels	ST 4040	Somerset
South Forty Foot Drain	TF 2843	Lincolnshire
South Muskham & North Newark Gravel Pits	SK 7956	Nottinghamshire
Stanford Reservoir	SP 6080	Leicestershire
Stantling Craigs and Bunting Craigs Reservoirs	NT 4339	Borders
Stanwick Gravel Pits	SP 9773	Northamptonshire
Stodmarsh	TR 2061	Kent
Stranraer Lochs	NX 1161	Dumfries & Galloway
Stratfield Saye	SU 7061	Hampshire
Strumpshaw Fen	TG 4306	Norfolk
Sutton Bingham Reservoir	ST 5410	Somerset
Swillington Ings	SE 3828	West Yorkshire
Swithland Reservoir	SK 5513	Leicestershire
Tabley Mere	SJ 7276	Cheshire
Talkin Tarn	NY 5458	Cumbria
Tay/Ilsa Valley	NO 1438	Tayside
Tealham and Tadham Moor	ST 4145	Somerset
Tentsmuir	NO 5024	Fife
Thorpe Water Park	TQ 0268	Surrey
Thrapston Gravel Pit	SP 9979	Northamptonshire

Continued/

Site	1 km square	County
Tophill Low Reservoirs	TA 0748	Humberside
Twyford Gravel Pit	SU 7875	Berkshire
Upper Glendevon Reservoir	NN 9004	Tayside
Upper Loch Erne	H 3231	Fermanagh
Upper Quoile	J 4846	Down
Upton Warren	SO 9367	Hereford & Worcester
Walland Marsh	TQ 9824	Kent
Walmore Common	SO 7425	Gloucestershire
Waltham Brooks	TQ 0112	East Sussex
Walthamstow Reservoir	TQ 3589	Greater London
Walton Reservoirs	TQ 1268	Surrey
Washington WWT	NZ 3356	Tyne & Wear
Watch Water Reservoir	NT 6656	Borders
Water Sound	ND 4694	Orkney
Wayoh Reservoir	SD 7301	Lancashire
Westfield Marshes	ND 0664	Highland
Westhay Heath	ST 4142	Somerset
Westhay Moor	ST 4544	Somerset
West Sedgemoor	ST 3525	Somerset
West Water Reservoir	NT 1252	Borders
Whitemore Reservoir	SD 8473	Lancashire
Whittledene Reservoirs	NZ 0667	Northumberland
Willington Gravel Pits	SK 2828	Derbyshire
Windermere	SD 3995	Cumbria
Woolston Eyes	SJ 6588	Cheshire
Wraysbury Gravel Pits	TQ 0073	Berkshire
Yare Valley	TG 3504	Norfolk
Ynys-hir	SN 6896	Dyfed

### Appendix 3. INTERNATIONALLY IMPORTANT WATERFOWL SITES IN THE UNITED KINGDOM OVER THE PERIOD 1987-88 TO 1991-92

This summary table ranks the principal sites in terms of overall waterfowl conservation importance. All sites regularly holding a total of at least 20,000 waterfowl and/or supporting at least one species with a population level that qualifies as Internationally Important, according to average maxima calculated over the five year period 1987-88 to 1991-92, are included. Sites are ranked according to their total waterfowl populations. Also shown are values for total wildfowl, total waders and the number of species with Internationally Important Populations at each site. As with the Principal Sites tables, there may be some sites which are of critical importance to certain waterfowl species or populations which are not included in this list. These may include, for example, sites that do not regularly support large numbers, but become important only in times of severe weather or during migratory periods.

However, despite needing careful interpretation,

this table does serve to identify some of the UK's best wetlands and emphasises the range of species for which each site is important. A total of 105 sites feature in the table, with 47 supporting 20,000 or more waterfowl. The Wash, as after 1990-91, supported the highest numbers of waterfowl by a considerable margin. The five year average for the Ribble Estuary has grown steadily to make this site the second most important in the UK in terms of total numbers. Twenty sites held five or more Internationally Important Populations, the maximum count of 15 being on the Ribble Estuary. The sites holding the highest total numbers of waterfowl generally also support large numbers of Internationally Important Populations, comprising mainly estuaries. There are also some notable inland sites, such as Loughs Neagh and Beg and the Ouse Washes, which can be expected to climb higher in the table once five year averages for waders at inland sites are available.

Site name	Waterfowl	Wildfowl	Waders	*IIP	Species codes
Wash	320,673	73,935	246,738	12	PG,Bd,SU,PT,OC,GV,KN,DN,BA,CU,RK,TT
Ribble Est.	223,846	86,699	137,147	15	BS,WS,SU,WN,T,PT,OC,GV,L,KN,SS,DN,BW,BA,RK
Morecambe Bay	215,535	29,938	185,597	11	PG,SU,PT,OC,GV,KN,DN,BA,CU,RK,TT
Thames Est.	133,875	34,666	99,209	9	Bd,OC,RP,GV,KN,DN,BA,RK,TT
Humber Est.	133,405	19,217	114,188	10	Bd,SU,L,GP,GV,KN,DN,BA,CU,RK
Dee (Eng/Wales)	131,685	29,857	101,828	11	SU,T,PT,OC,GV,KN,DN,BW,CU,RK,TT
Solway Est.	121,325	39,684	81,641	10	WS,PG,BY,PT,SP,OC,KN,BA,CU,RK
Lo. Neagh/Beg	95,701	95,701	-	6	WS,BS,PO,TU,SP,GN
Severn Est.	83,329	22,317	61,012	6	BS,We,SU,GA,DN,RK
Mersey Est.	78,015	30,301	47,714	5	SU,T,PT,DN,RK
Medway Est.	71,525	22,201	49,324	3	Bd,SU,PT,RP,GV,DN,RK
Forth Est.	68,501	25,521	42,980	6	PG,SU,KN,BA,RK,TT
Strangford Lo.	64,122	22,440	41,682	3	BI,KN,RK
N Norfolk Marshes	63,417	39,718	23,699	6	PG,Bd,WN,PT,KN,BA
Ouse Washes	59,809	59,809	-	7	BS,WN,GA,T,PT,SV,WS
Swale Est.	56,276	21,952	34,324	6	Bd,WN,GV,KN,BW,RK
Alt Est.	54,758	1,770	52,988	2	KN,BA
Lindisfarne	54,317	27,015	27,302	6	GJ,BI,WN,RP,BA,RK
Langstone Hbr	53,763	11,427	42,336	3	Bd,GV,DN
Chichester Hbr	51,904	16,466	35,438	5	Bd,RP,GV,DN,BA
Montrose Basin	47,658	33,446	14,192	2	PG,RK
Blackwater Est.	47,197	18,109	29,088	4	Bd,GV,DN,BW
Inner Moray Fth	45,556	23,961	21,595	5	PG,GJ,RM,BA,RK
Burry Inlet	42,563	10,198	32,365	2	PT,OC
Lo. of Strathbeg	40,326	40,326	-	3	WS,PG,GJ
Stour Est.	40,101	9,879	30,131	3	GV,DN,BW
Lo. Foyle	38,931	24,741	14,190	5	WS,BI,WN,BA
Dupplin Lo.	36,360	36,360	-	1	PG
Abberton Rsr	34,732	34,732	-	3	GA,T,SV
Colne Est.	33,142	10,170	22,972	1	Bd
West Water Rsr	31,789	31,789	-	1	PG
Duddon Est.	31,505	6,389	25,116	1	PT

Site name	Waterfowl	Wildfowl	Waders	*IIP	Species codes
Lo. Leven	30,048	30,048	-	5	WS,PG,GJ,GA,SV
Dornoch Fth	29,478	21,302	8,176	2	GJ,WN
Hamford Water	27,618	12,185	15,433	3	Bd,RP,BW
Dengie	26,802	4,010	22,792	3	Bd,GV,KN
Tay Est.	26,534	15,575	10,959	3	E,BA,RK
Martin Mere	25,461	25,461	-	4	BS,WS,WN,PT
Crouch/Roach Est.	24,640	10,763	13,877	1	Bd
Cromarty Fth	23,941	13,352	10,589	5	WS,PG,GJ,WN,RK
Exe Est.	23,268	6,823	16,445	1	Bd
Alde Complex	22,345	10,519	11,826	0	
Inner Clyde	21,580	7,218	14,362	1	RK
Slains Lo.	21,548	21,548	-	1	PG
Rutland Water	21,427	21,427	-	2	GA,SV
Tees Est.	20,799	5,817	14,982	1	KN
Orwell Est.	20,093	5,225	14,868	0	
Poole Hbr	20,001	8,050	11,951	1	BW
Hule Moss	19,443	19,443	-	1	PG
Outer Ards	18,829	1,364	17,465	2	RP,TT
Wigtown Bay	18,284	10,926	7,322	1	PG
Belfast Lo.	18,205	4,110	14,095	1	RK
Dinnet Lo.	17,739	17,739	-	1	GJ
Breydon Water	17,326	4,667	12,659	1	BS
Carsebreck/Rhynd Lo.	15,369	15,369	-	2	PG,GJ
Fleet/Wey	15,365	14,322	1,043	1	Bd
Deben Est.	15,147	5,762	9,385	1	RK
Portsmouth Hbr	14,944	4,753	10,191	1	Bd
Lo. Eye	14,432	14,432	-	3	WS,PG,GJ
Pagham Hbr	13,282	5,755	7,527	1	Bd
Lo. of Harray	12,693	12,693	-	1	WS
Lo. of Skene	12,542	12,542	-	2	WS,GJ
Castle Lo., Lochmaben	10,640	10,640	-	1	PG
NW Solent	10,468	4,208	6,260	1	Bd
Fala Flow	9,611	9,611	-	1	PG
Chew Valley Lake	9,597	9,597	-	2	GA,SV
Cameron Rsr	8,826	8,826	-	1	PG
South Down	8,809	-	8,809	2	RP,TT
Lo. of Kinnordy	7,307	7,307	-	1	PG
Thanet Coast	6,505	508	5,997	1	TT
Lo. Spynie	6,468	6,468	-	1	GJ
Upper Lo. Erne	6,061	6,061	-	1	WS
Drummond Pond	5,865	5,865	-	1	GJ
Haddo House Lo.	5,642	5,642	-	1	GJ
Nene Washes	5,419	5,419	-	1	BS
Gladhouse Rsr	4,617	4,617	-	1	PG
Lo. of Lintrathen	4,588	4,588	-	1	GJ
Crombie Lo.	4,459	4,459	-	1	PG
R. Avon: Blashford	4,418	4,418	-	1	GA
Lour	4,290	4,290	-	1	PG
Lo. Mahaick	3,700	3,700	-	1	PG
Lo. Tullybelton	3,603	3,603	-	1	PG
Lake of Menteith	3,445	3,445	-	1	PG
Hoselaw Lo.	3,392	3,392	-	1	GJ
Holburn Moss	3,231	3,231	-	1	GJ
Guernsey Coast	3,029	11	3,018	1	TT
Fedderate Rsr	3,005	3,005	-	1	GJ
Lo. Ken	2,969	2,969	-	1	Wg

Site name	Waterfowl	Wildfowl	Waders	*IIP	Species codes
Cowgill Rsr	2,875	2,875	-	1	PG
Endrick Mouth, Lo. Lomond	2,240	2,240	-	1	Wg
Chestnut Gp.	2,157	2,157	-	1	GA
Gunton Park Lakes	1,519	1,519	-	1	GA
Berney Marshes	1,118	1,118	-	1	BS
Rhunahaorine	1,107	1,107	-	1	Wg
Machrihanish	1,104	1,104	-	1	Wg
St Benet's Levels	1,071	1,071	-	1	BS
Stanford Meres	863	863	-	1	GA
Caithness Lo.	-	-	-	2	Wg,GJ
Islay	-	-	-	2	Wg,BY
Walland Marsh	-	-	-	1	BS
SW Lancashire	-	-	-	1	PG
Coll	-	-	-	1	Wg
Tiree	-	-	-	1	Wg
Tay/Isla Valley	-	-	-	1	GJ
Stranraer Lo.	-	-	-	1	GJ

- indicates that no total count is available

\* Internationally Important Populations

#### Species codes

Little Grebe	LG	Scaup	SP
Great Crested Grebe	GG	Eider	E
Cormorant	CA	Long-tailed Duck	LN
Mute Swan	MS	Goldeneye	GN
Bewick's Swan	BS	Red-breasted Merganser	RM
Whooper Swan	WS	Goosander	GD
Pink-footed Goose	PG	Coot	CO
European White-fronted Goose	We	Oystercatcher	OC
Greenland White-fronted Goose	Wg	Avocet	AV
Greylag Goose	GJ	Little Ringed Plover	LP
Canada Goose	CG	Ringed Plover	RP
Barnacle Goose	BY	Golden Plover	GP
Dark-bellied Brent Goose	Bd	Grey Plover	GV
Light-bellied Brent Goose	Bl	Lapwing	L
Shelduck	SU	Knot	KN
Wigeon	WN	Sanderling	SS
Gadwall	GA	Dunlin	DN
Teal	T	Black-tailed Godwit	BW
Mallard	MA	Bar-tailed Godwit	BA
Pintail	PT	Whimbrel	WM
Shoveler	SV	Curlew	CU
Pochard	PO	Redshank	RK
Tufted Duck	TU	Turnstone	TT

NB Not every species covered by the NWC and BoEE schemes has a corresponding qualifying level for international importance e.g. divers, grebes, Cormorant, Canada Goose. Hence these species do not feature in this table.





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