

## WINTERING WADERS IN DECLINE

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*Mark Rehfisch, Graham Austin and Andy Musgrove, of the BTO's Wetland and Coastal Ecology Unit, report on the new wader population estimates that have identified major declines in some of GB's internationally important species of wintering coastal waders.*

### ZANCUDAS INVERNANTES EN DECLIVE

Mark Rehfisch, Graham Austin y Andy Musgrove, de la Unidad de Ecología de Costas y Marismas del BTO informan sobre las nuevas estimaciones poblacionales de zancudas que reflejan declives importantes en especies de Gran Bretaña de importancia internacional.

The East Atlantic Flyway (EAF), the Atlantic seaboard of Europe and Africa, has been estimated to be the wintering ground for 7.5 million waders, many of which winter in Great Britain (GB = England, Scotland and Wales). These birds originate from breeding areas in Siberia, northern Europe and Russia, Iceland, Greenland and NE Canada, and are attracted in such large numbers by a combination of relatively mild winters and large tidal ranges that ensure that extensive areas of intertidal mudflats are exposed at low tide. GB's estuaries and non-estuarine coasts are not only important as wintering areas, but also as moult sites and as staging posts during onward migration to wintering grounds such as Morocco and the Banc d'Arguin in Mauritania. The total number of individual waders that make use of GB's coasts throughout the year is unknown but will be greater than the winter population estimates presented here due to passage birds and some population turnover.

### ESTIMATING THRESHOLDS

The principal aim of the BTO/WWT/RSPB/JNCC Wetland Bird Survey (WeBS) is to monitor the long-term trends in waterbird populations in GB and Northern Ireland and to provide the data needed to assess population sizes. WeBS is based on monthly counts of waterbirds made at over 2,000 coastal and inland wetland sites throughout the UK. It includes all the main estuarine sites, and periodic surveys carried out to estimate the number of waterbirds present in habitats that are less well covered by the monthly counts. The 1997/98 Non-estuarine Coastal Waterfowl Survey (NEWS) (Rehfisch et al. 2003b) is such a survey that provided estimates of the numbers of waders wintering on open rocky and soft sediment non-estuarine shores.

The waterbird population estimates for the EAF/NW Europe (NWE) and by analogy those of GB are used to generate "1% thresholds" for individuals of a biogeographic population of a

species or subspecies of waterbird. To attain protection under international or national legislation a site must “regularly” support a sufficient number of waterbirds to meet the international or national 1% threshold qualifying levels, respectively. “Regularly supporting” is normally defined as being the mean winter maxima from the last five seasons. Three previous population estimates have been made for GB’s wintering coastal waders, based on data collected between 1969-75, 1981-1985 and 1987-1992. Excluding Golden Plover, Lapwing, Ruff, Jack Snipe, Common Snipe, Green Sandpiper and Common Sandpiper (species of wader that principally winter inland and that are not considered further in this article), these population estimates suggested that during the three periods respectively, approximately 1.4, 1.3 and 1.6 million waders wintered on the coasts of GB.

## THE APPROACH

Estuary and non-estuarine coast count data were analysed separately before being combined. WeBS data for Northern Ireland feeds into the All-Ireland population estimates. The application of the new, improved methods used to generate the new population estimates for waders and wildfowl are described in Rehfish et al. (2003a, 2003b) and Kershaw and Cranswick (2003), respectively.

## WADER NUMBERS IN GB

Wader count data were obtained from 121 estuaries and 4,836 km (38%) of GB’s non-estuarine coastline.

During 1997-98, NEWS estimated that there were 361,300 waders of 19 species on GB’s non-estuarine coasts. The 68,100 Oystercatcher estimated to be present on non-estuarine coasts make it the most common wader in this habitat. Altogether over 1,760,000 waders were present on GB’s estuaries during 1994/95-1998/99. Dunlin was the most common wader on estuaries with a total of 528,200 representing 40% of the flyway population (Stroud et al. in press). GB’s estuaries also held an important proportion of the flyway population of several species: in numerical order, 61% of Knot, 24% of Oystercatcher, 18% of Redshank, 18% of Curlew, 48% of Bar-tailed Godwit, 20% of Grey Plover,

43% of Black-tailed Godwit, 11% of Turnstone, 12% of Ringed Plover, 6% of Sanderling, 5% of Avocet and relatively small numbers of other waders.

GB’s estuaries are clearly of international importance for waders. Of the species considered here, less than 1% of their remaining British population was found inland.

Between the five-year periods 1987/88-1991/92 and 1994/95-1998/99 there has been a total 5% decrease in the number of the predominantly coastal waders on GB’s coasts, six species have increased and eight species decreased by over 5%, including all four species that are found predominantly on non-estuarine coasts: Ringed Plover, Sanderling, Purple Sandpiper and Turnstone (Table 1). The overall decrease has been driven principally by the large numerical declines in Oystercatcher, Dunlin and Knot numbers, but Ringed Plover, Purple Sandpiper, Bar-tailed Godwit and Turnstone have all experienced decreases of over 10%. Avocet, Black-tailed Godwit, Spotted Redshank and Common Greenshank have experienced increases of over 30%.

Between 1981-1985 (January counts) and 1987/88-1991/92, 11 species of wader increased and only Bar-tailed Godwit decreased. Thus, interestingly, the new population estimates presented here provide evidence that the historical increases in the number of predominantly coastal waders reported during the three previous population estimate revisions appear to be coming to an end.

In spite of these declines GB’s coasts remain of considerable international importance for overwintering waders (Table 1) and therefore highlight the necessity to maintain long-term monitoring programmes such as WeBS. The continued development and loss of intertidal areas reinforces the need for up to date information on the distribution and number of waterbirds to help drive conservation actions.

## POSSIBLE CAUSES OF POPULATION CHANGE

The observed changes in the wintering wader population could be due to a variety of factors. For example, high lemming abundance on the northern breeding grounds of waders leads to decreased predation of nests, whilst the spread

TABLE 1. Population estimates and changes of wintering waders.

	Revised GB population estimate	Changes in population size between 1987/88-1991/92 & 1994/95-1998/99 (%)	EAF/NWE 1% thresholdsb	Flyway population (%)c
Oystercatcher	315,200	-13	10,200	31
Avocet	3,395	122	730	5
Ringed Plover	32,450	-15 a	730	44
Grey Plover	52,750	14	2,500	21
Knot	283,600	-8	4,500	63
Sanderling	20,540	-16	1,200	17
Purple Sandpiper	17,530	-18	1,650	11
Dunlin	555,800	-6	13,300	42
Black-tailed Godwit	15,390	50	350	44
Bar-tailed Godwit	61,590	-12	1,200	51
Curlew	147,100	19	4,200	35
Spotted Redshank	136	35	1,000	0
Redshank	116,100	2	4,450	26
Common Greenshank	597	55	3,100	0
Turnstone	49,550	-24	1,000	50

a Based on WeBS index.

b Based on Stroud *et al.* in press.

c The percentage of the relevant international population that winters in GB.

Population estimates, population change and the percentage of the respective EAF/NWE populations of waders wintering in GB between 1994/95 and 1998/99. For full details see Rehfishch *et al.* (2003a), but please note that some of the percentages of the flyway population estimates given differ from those in this paper as a consequence of the threshold values having been very recently revised.

of invasive cord grass may have lessened the carrying capacity of British estuaries. The breeding performance of the waders that overwinter in GB could have changed since the early 1990s. A large proportion of the waders that winter in GB breed to the north and east of GB in areas such as Greenland, Fennoscandia, Siberia and Russia, an area that is incompletely monitored and where it could take a long time for declines in productivity to be noticed. The UK breeding populations of Oystercatcher, Curlew and Redshank have declined on lowland wet grassland — see *BTO News* 247 pp 12–13. In continental Europe, the breeding populations of Dunlin, Black-tailed Godwit, Curlew and Redshank are thought to be declining.

Changes in the quality of the wintering grounds could also be affecting populations. Decreasing amounts of nutrients entering into coastal waters as a result of the Bathing Water and Urban Wastewater Treatment Directives could be leading to coastal areas being able to sustain a smaller biomass of the invertebrate

prey of some wader species and therefore potentially fewer waders.

Furthermore, increasing mean minimum winter temperature in GB partially explains a northward and eastward shift between 1984/85 and 1997/98 in the non-estuarine coastal distributions of six of seven common species of wader studied and an eastward shift over the last 15 years in the estuarine distributions of five of nine common species of wader studied. Although there is only anecdotal evidence of changing distributions of overwintering waders in continental Europe, it is possible that some of the waders that used to winter in GB may now be wintering elsewhere as milder conditions make previously unsuitable areas available. Ongoing work for WeBS is attempting to determine whether this is the case.

## CONSERVATION IMPLICATIONS

It is necessary to determine why several of Britain's internationally important populations

of wader are declining, and in particular why such species as Ringed Plover, Sanderling, Purple Sandpiper and Turnstone that are found predominantly along GB's non-estuarine coasts and breed largely in the far North are all declining. On balance, the present evidence indicates that climate change may be leading to a redistribution of wader populations. It is quite possible that such a redistribution could be followed by major declines in total flyway population size if the habitat and predator diversity in the largely northern breeding grounds of the waders changes considerably over this century with increasingly temperate conditions. Tackling climate change has to be a major priority.

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