

Non-estuarine Waterbird Survey (NeWS) I (and contributing to NeWS in Europe)

Title

Non-estuarine coastal waterbird survey (NeWS) I
(and as the UK contribution to NeWS in Europe)

Description and Summary of Results

The Core Counts of the Wetland Bird Survey (WeBS) monitor the annual changes in the populations of overwintering waders on the UK's estuaries. Prior to 1997, however, the 1984/85 Winter Shorebird Count (WSC) had been the only attempt at a complete survey of the non-estuarine rocky shores and sandy beaches, but it covered Britain only and not all of the UK. The WSC recorded 240340 waders on Britain's non-estuarine coasts, an estimated 19% of Britain's then total wader population, and with particularly high proportions of Ringed Plover *Charadrius hiaticula* (71% of British total), Sanderling *Calidris alba* (68%), Purple Sandpiper *Calidris maritima* (97%) and Turnstone *Arenaria interpres* (78%), all these being internationally important numbers.

The WeBS Non-estuarine Coastal Waterfowl Survey (UK-NeWS) was undertaken during the winter of 1997/98 to update the WSC population estimates, and aimed to repeat the WSC and cover as much of the non-estuarine coast of the UK as possible.

In the event 4959km of UK coast (38%) were covered. The most complete coverage was attained in England (72.4%) and the least in Scotland (30.4%). Coverage in individual counties ranged from under 10% in Shetland to 100% in 4 counties.

Altogether over 170000 waders of 19 species were recorded. The most common were Oystercatcher *Haematopus ostralegus* (over 70000) and Curlew *Numenius arquata* (just over 66000). Mean densities of all species summed were highest in northern England, eastern Scotland, Orkney, the Hebrides and County Down. This pattern was broadly similar to that recorded in 1984/85 but the proportion of waders on the non-estuarine coasts of Wales seemed to have declined.

It was possible to calculate reliable estimates of numbers for 13 species and the UK's coasts were found, as before, to be of particular international importance for Turnstone, Ringed Plover, Redshank, Curlew, Sanderling and Purple Sandpiper.

Eight species had increased and five had declined in the UK since the 1984/85 survey. The largest declines were Ringed Plover (-15%), Sanderling (-20%), Purple Sandpiper (-21%), Bar-tailed Godwit *Limosa lapponica* (-44%) and Turnstone (-16%), all species whose numbers on the UK's non-estuarine coasts are internationally important.

NeWS in Europe

The UK survey was run as part of a survey running at the same time in Europe. In the event 12 different countries participated, covering non-estuarine shores from the Baltic to the Adriatic Seas.

Overall a total of nearly 800000 waders of 27 species were estimated to winter on the non-estuarine coasts of the 12 participating countries (note, this is a minimum estimate as in some, counts were not extrapolated or regions were not covered). Most were found in NW

Europe, with the UK (including the Isle of Man) holding almost half the total estimate, followed by France with nearly 20%, Germany 14% and Ireland 12%. The most abundant species overall were Oystercatcher, Dunlin *Calidris alpina*, Lapwing *Vanellus vanellus* and Curlew, and the key species were the same as for UK alone -- Ringed Plover (39000), Sanderling (38000), Purple Sandpiper (26000) and Turnstone (60000). (Note, however, that Norway, the Faeroes and Iceland were not covered and they are likely to hold quite large numbers, especially of Purple Sandpipers.)

Methods of Data Capture

The methods for NeWS were broadly similar to those for the 1984/85 Winter Shorebird Count. The original count section boundaries were retained, but sectors were subdivided where necessary to keep them to a maximum of 4km as the division of parts of the coast into sections considerably longer than 4km by the WSC was found to influence boot-strapped population estimates.

Waders on each count section were counted once between 1 December 1997 and 31 January 1998, within a 7-hour period starting 3.5 hours before low water and finishing 3.5 hours after low water. Birds in flight were not recorded. The waders located on the intertidal shore and on adjacent areas inland (defined as within 100m of the high water mark) were recorded separately. It was made clear to regional organisers that the selection of sections in each region should be made according to two criteria: 1) the number of available counters would determine the overall coverage; and 2) the coverage should be as representative of the region's coastline as realistically possible. It was strongly emphasized that to make the population estimates as accurate as possible it was essential that sections with both high and low bird densities were counted. However, in some regions this advice was not followed so the analysis had to allow for this bias.

Purpose of Data Capture

The stated aim was to update the estimates of the numbers and distribution of waders along the non-estuarine coasts of the UK previously counted in 1984/85. The survey also extended into Europe.

Geographic Coverage

The aim was to get as complete a sample of non-estuarine coast of the UK as possible, divided into sections ideally of about 2km and no greater than 4km. In practice just under 40% was covered, and although it was strongly emphasised that samples should cover sections thought to hold large numbers and those holding small numbers it was known that there was a bias in some regions towards sections that had supported larger numbers during the Winter Shorebird Count of 1984/85.

In Europe 12 different countries participated: Belgium, Croatia, Denmark, France, Germany, Italy, the Netherlands, Portugal, the Republic of Ireland, Spain and Sweden, as well as the United Kingdom (together with the Isle of Man and Gibraltar).

Temporal Coverage

The 1997/98 winter period with one count on each stretch requested to be carried out in December or January within 3.5 hours either side of low tide.

Other Interested parties

NeWS was carried out as part of the Wetland Bird Survey (WeBS). This is a partnership between the BTO, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee (the last on behalf of English Nature (now Natural England), Scottish Natural Heritage, the Countryside Council for Wales (now Natural Resources Wales) and the Environment and Heritage Service in Northern Ireland), and in association with the Wildfowl & Wetlands Trust (although WWT was an equal partner in WeBS at the time). Northumbria Water provided funds to help cover some of the more remote parts of the UK, and the production of the report of the overall European survey.

Organiser(s)

In the UK, it was run by Steve Holloway and Andy Musgrove (with a Pilot Survey in 1996/97 run by Stephen Browne). The European element was coordinated by Steve Holloway and Niall Burton although the actual surveys were organised within each individual country.

Current Staff Contact

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Publications

The main report of the UK survey is:

Rehfishch, M.M., Holloway, S.J. & Austin, G.E. 2003. Population estimates of waders on the non-estuarine coasts of the UK and the Isle of Man during the winter of 1997-98. *Bird Study* 50: 22-32.

The results also contributed a large part to:

Rehfishch, M.M., Austin, G.E., Armitage, M.J.S., Atkinson, P.W., Holloway, S.J., Musgrove, A.J. & Pollitt, M.S. 2003. Numbers of wintering waterbirds in Great Britain and the Isle of Man (1994/95-1998/99): II. Coastal waders (Charadrii). *Biological Conservation* 112: 329-341.

And played a major role in:

Rehfishch, M.M., Austin, G.E., Freeman, S.N., Armitage, M.J.S. & Burton, N.H.K. 2004. The possible impact of climate change on the future distributions and numbers of waders on Britain's non-estuarine coast. *Ibis* 146 (Supp): S70-S81.

The survey was noticed in *BTO News* numbers 192, 207, 209, 213, 216/7 and 225 and later in respect of NeWS II in 264 and 272.

NeWS in Europe was summarised in:

Burton, N.H.K., Rehfishch, M.M., Stroud, D.A. & Spray, C.J. (eds) 2008. The European non-estuarine coastal waterbird survey. *International Wader Studies* 18. 108pp. International Wader Study Group, Thetford.

This consists of an individual paper on the survey in each participating country -- the UK paper is reproduced from the *Bird Study* paper noted above -- and some summary chapters.

Available from NBN?

No.

Computer data -- location

The WeBS part of the BTO Windows network.

Computer data -- outline contents

Definitive bird data are held in an Excel Workbook. There is also an associated GIS project defining coverage and an Excel extraction from this. Data for all three surveys (Winter Shorebird Count of 1984/85, this one (NeWS I) in 1997/98 and NeWS II in 2006/07) are contained in these files.

Computer data -- description of contents

GIS data, Count data and Visit data are in separate files.

Information held in BTO Archives

1 Archive box and 4 Transfer Cases contain the data, maps and associated analyses and letters. 1 Transfer Case holds the results from the Pilot Survey.

The European (non-UK) data are held by the individual countries.

Notes on Access and Use

NeWS was supported by WeBS therefore data can be provided free to WeBS partners. Otherwise they are available as a standard data request via WeBS.

Other information needed

Notes on Survey Design

Specific Issues for Analysis

All incorrectly completed forms were excluded from analysis. In addition the results from the 1984/85 Winter Shorebird Count were reanalysed to allow for areas not covered (this was not done in the original).

The near complete coverage of non-cliff, non-estuarine coasts obtained by the Winter Shorebird Count in 1984/85 (75% of Scotland, 89% of Wales, 94% of Northern Ireland and

95% of England) made it possible to test whether there was any evidence of bias in the selection of sections counted in 1997/98. Using the WSC data, for each coastal county, the density of each species of wader on the sections counted by UK-NeWS was compared with that on the sections not counted by UK-NeWS. Results indicated that, in some regions, sections counted for UK-NeWS held higher densities than those not.

For uncommon species -- Jack Snipe *Lymnocyptes minimus* and Common Snipe *Gallinago gallinago* because they are highly cryptic, and Black-tailed Godwit *Limosa limosa*, Spotted Redshank *Tringa erythropus*, Greenshank *T. nebularia* and Common Sandpiper *Actitis hypoleucos* because they were recorded too infrequently for bootstrapped confidence intervals to be meaningful -- the estimates of the numbers present on the UK's non-estuarine coasts were made by extrapolation from the coverage in each country.

The approach for the commoner species for each country depended on whether there was any bias in the coverage of any of its coastal counties.

1) For species with no evidence of biased coverage in any county, the total number of birds on the surveyed sections was added up. The numbers on the uncounted length of coast were then estimated by randomly selecting (with replacement) counts from counted sections in the same county until the total length of the county coast had been filled. The procedure was then repeated for all the other counties in the area considered and each was repeated 999 times with replacement.

2) For areas with some evidence of a bias towards unrepresentative count sections in one or more coastal counties, the counted sections would be expected to hold higher or lower densities of waders in 49 and 5 species-county combinations, respectively. Such bias was particularly apparent in the Western Isles, Strathclyde and the Highlands where it was expected that the county totals of respectively 12, 10 and 6 species generated from the sampled coastal stretches would be overestimated. As above, a population estimate and its 95% confidence limits were calculated for the area excluding the biased counties. These 95% confidence limits were converted into percentages of the population point estimate for that part of the country that showed no evidence of biased coverage, and these percentages were subsequently used as an indication of the likely error around the overall country population estimate. To estimate the number of birds in a county with biased coverage, the proportional change recorded by the paired comparison of the WSC and UK-NeWS counts was used to derive an estimate from the 500th ranked bootstrapped sample for the WSC (calculated specifically for this purpose). Thus, if between the WSC and UK-NeWS a paired comparison indicated that there had been a 20% increase in a county that had been estimated to hold 100 birds during the WSC, it was estimated that it held 120 birds during UK-NeWS. No confidence limits were calculated for such counties, as they would have implied a potentially misleading level of confidence in the estimates. The overall area population estimate was the sum of the point estimate for all of the unbiased counties and the estimate(s) for the biased county or counties, and its 95% confidence limits were those generated from that part of the country that showed no evidence of biased coverage.