WeBSnews

The newsletter of the Wetland Bird Survey

2020/21 SPECIAL EDITION

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WeBS

WeBS News 2020/21 Special Edition

The Wetland Bird Survey (WeBS) is the principal scheme for monitoring the UK's wintering waterbird populations, providing an important indicator of their status and the health of wetlands.

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THE WeBS PARTNERSHIP

The Wetland Bird Survey (WeBS) is a partnership jointly funded by BTO, RSPB and JNCC, with fieldwork conducted by volunteers.

The permanent members of the WeBS Steering Committee in 2020/21 were Teresa Frost (BTO), Dawn Balmer (BTO), James Pearce-Higgins (BTO), Anna Robinson (JNCC), Kirsi Peck (JNCC), Simon Wotton (RSPB), Geoff Hilton (WWT) and Colette Hall (WWT).

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Other national waterbird surveys – details of (and contacts for) other waterbird surveys can be obtained via the websites of the WeBS partner organisations.

ACKNOWLEDGEMENTS

We are indebted to the time and skills of the thousands of WeBS Counters who collected the data used in this newsletter and to the invaluable efforts of the WeBS Local Organisers who are listed on the back cover.

The WeBS Local Organiser Advisory Committee (LOAC) (members listed on page 19) provided advice on behalf of Counters and Local Organisers. The BTO Information Systems team delivered essential technical assistance and continues to develop and provide assistance for WeBS Online and WeBS Report Online.

We are also grateful to the following for providing supplementary information, data inputting and particularly invaluable help in 2020/21: GSMP, Deborah Newman, Kirsi Peck, Royal Air Force Ornithological Society (RAFOS), Shetland Oil Terminal Environmental Advisory Group (SOTEAG) and Chris Waltho. Grateful thanks to all and apologies to anyone who has been inadvertently missed.

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The Wildfowl and Wetlands Trust (WWT) were a funding partner, or associate partner, of WeBS until 2022.

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CITATION

Frost, T.M. & Calbrade, N.A. (Eds.) 2022. *Wetland Bird Survey News 2020/21 Special Edition*. BTO, RSPB and JNCC. British Trust for Ornithology, Thetford.

EDITORIAL

Welcome...

…to this special summer issue of *WeBS News*. Normally spring is the time that *Waterbirds in the UK* would hit doormats, and the WeBS Report Online would be updated with the latest data for waterbird species and their sites. Unfortunately, after careful consideration, this has not been possible for the July 2020–June 2021 WeBS year. Despite record breaking numbers of Counters taking part, and for the first time over 3,000 sites having had at least one visit during the year, many key waterbird locations could not be visited during some of the peak winter months in early 2021 due to pandemic-related restrictions. It was fascinating to see the effect that this unprecedented situation had on the survey results by a simulation analysis, the results of which are summarised on pages 6–11.

Despite the brief hiatus in reporting waterbird trends, rest assured that as Counters your survey efforts during the 2020–21 year were valuable and the data will be used in future. The long-term dataset that you are contributing to is absolutely critical for the conservation of wetlands and waterbirds. Nothing has highlighted the value of WeBS Core Counts to me more than the plethora of papers using WeBS data there have been recently – it was hard to fit summaries of the most novel ones in to this special edition newsletter (pages 12–15). The latest *Birds of Conservation Concern* also depends on WeBS data to identify declines (see below). We have also reviewed the Low Tide Counts scheme and heard from stakeholders how much they value and rely on the extra data collected whilst the tide is low (pages 16–17). Thank you all for the work you do for the Wetland Bird Survey.

Teresa Frost

Teresa Frost WeBS Manager

Waterbird Headlines

WeBS PARTNERSHIP CHANGE

The Wildfowl and Wetlands Trust (WWT) has made the decision to concentrate its efforts for the conservation of waterbirds and their habitats in other work areas and this has particularly affected their long-term monitoring projects. As of April 2022 they are no longer a WeBS associate partner, but we thank them for their work and support over many decades, from the early days of the National Wildfowl Counts in the 1950s onwards.

STATUS CHANGES IN BIRDS OF CONSERVATION CONCERN 5

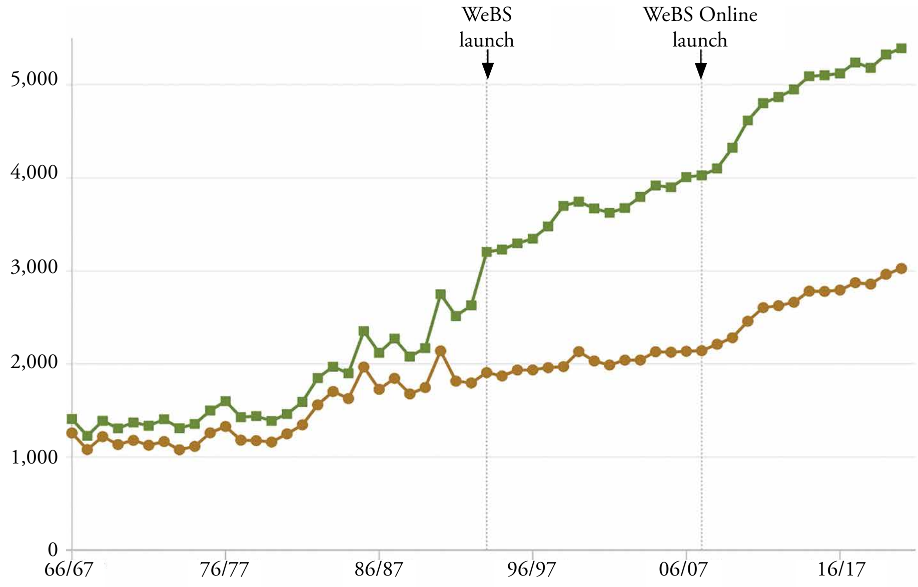
The latest UK Red List for birds added four more waterbirds to the Red List and one to the Amber List due to their winter trends from WeBS and WWT/JNCC/NatureScot Goose & Swan Monitoring Programme (GSMP). Red-breasted Merganser moved from Green to Amber and Bewick's Swan, Goldeneye, Smew and Dunlin moved from Amber to Red. Pressures on waterbirds include illegal hunting, the ingestion of lead ammunition, and the impacts of climate change on their wintering and breeding grounds. Find out more at: **www.bto.org/bocc**

WeBS Core Counts 2020/21 – in numbers

Core Counts were carried out at 5,392 WeBS sectors (count units) at 3,026 sites from July 2020 to June 2021.

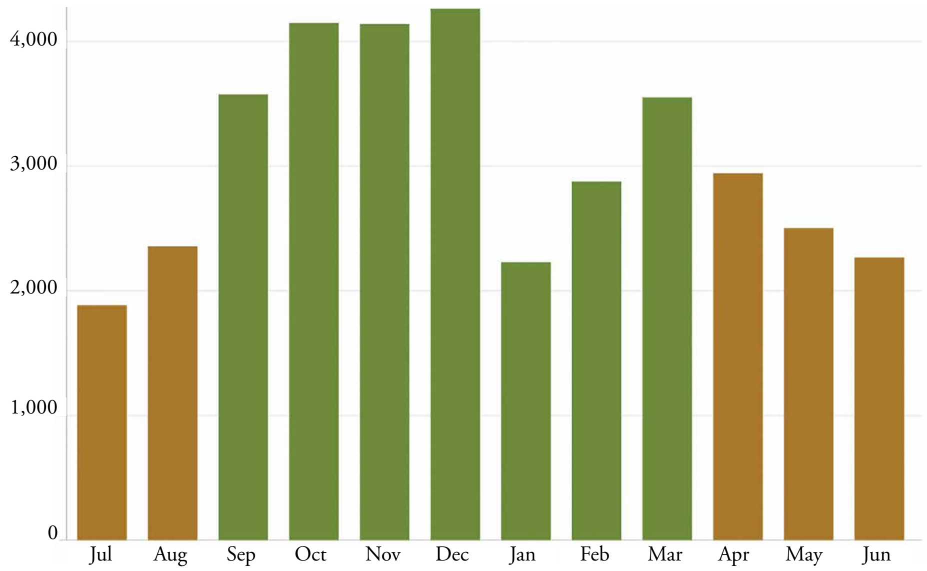
Not all Core Counts are linked to individual Counters in the WeBS Online database, but some are; 2,521 Counters named as the lead counter were associated with WeBS Core Count visits made in 2020/21. Including additional team members, the number of registered WeBS volunteers was 3,590.

There were 36,730 count visits, 67% in the core September–March period (green bars on lower graph). The number of visits was lower than usual in the key winter period due to coronavirus pandemic restrictions from January to March 2021 (see impact of this on pages 6–11).



▲ **Number of WeBS count sectors (green squares) and sites (gold circles) covered at least once annually 1966/67–2020/21.**

▼ **Number of WeBS Core Count visits in 2020/21 by month during the core winter period (green bars) and the rest of the year (gold bars).**



Core Count dates in 2020/21

2020	2021
5 July	17 January
23 August	14 February
20 September	14 March
18 October	11 April
15 November	23 May
13 December	13 June

Goose Censuses

The status of some of the UK's native goose populations are reported through the GSMP.

Counts of Taiga Bean Goose are provided by the Bean Goose Action Group (Slamannan Plateau) and RSPB (Mid Yare Marshes). The Icelandic-breeding Goose Census, organised by WWT, covers Pink-footed and Icelandic Greylag Goose. Counts of British Greylag Goose are carried out at a few key sites in Scotland by NatureScot, RSPB and local management groups.

A census of the Greenland White-fronted Goose population is organised by the Greenland White-fronted Goose Study. Greenland Barnacle Goose are counted at key locations in Scotland by NatureScot, RSPB and volunteers, and a census of the Svalbard Barnacle Goose population is organised by WWT.

WWT have recently relinquished organising the GSMP, and the organisation of the scheme from now on is currently being negotiated. Information on the future organising of the GSMP will be announced in the Autumn edition of *WeBS News*.

Assessing the feasibility of reporting on the 2020/21 WeBS year

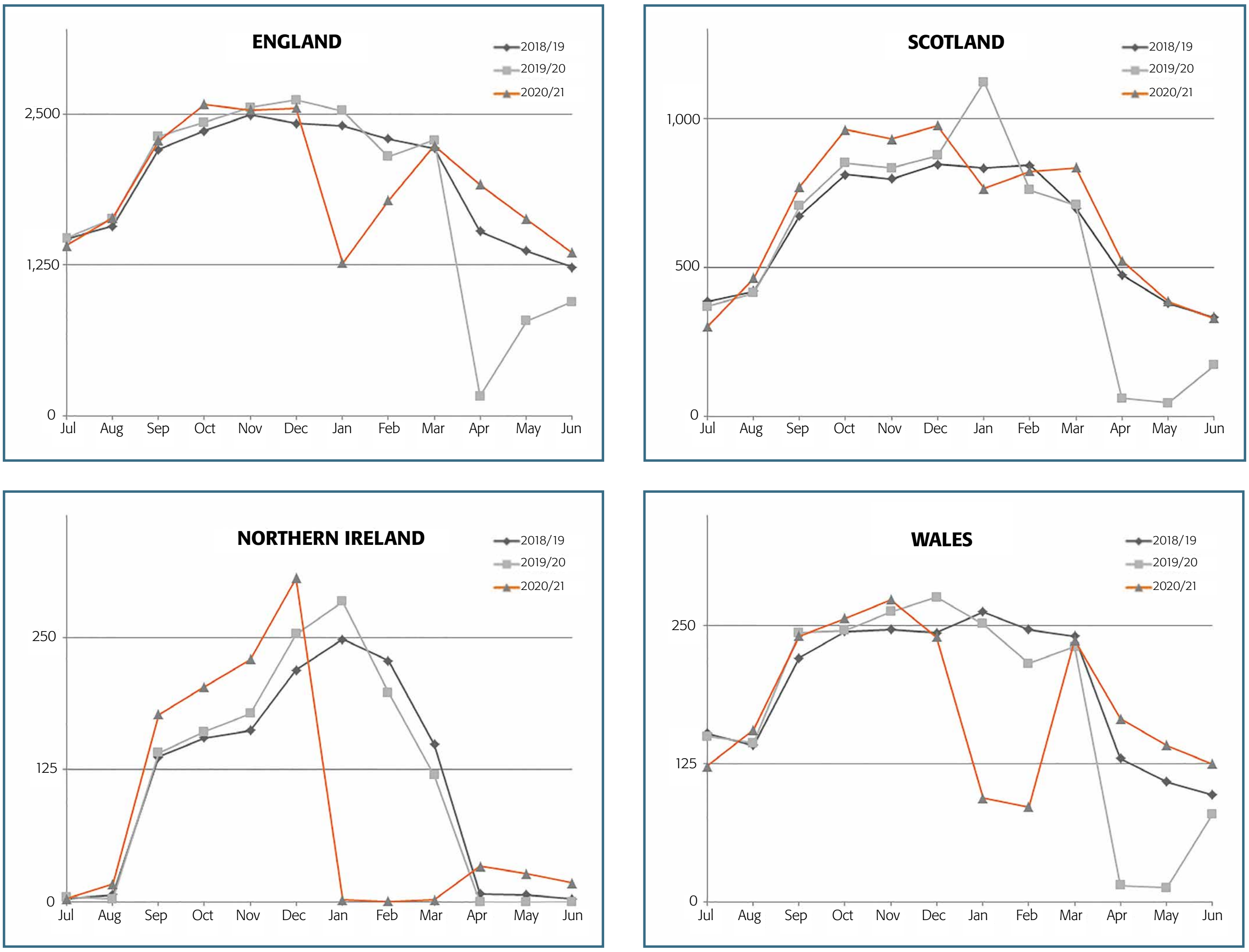
A look at how the decision was made not to publish an annual report due to the effect that COVID-19 pandemic had on counts in 2020/21.

The COVID-19 pandemic from March 2020 onwards had profound impacts on all our lives. As discussed in *WeBS News* 37, the 2019/20 WeBS winter counting season had been completed before restrictions were introduced for the first national lockdown on 23rd March 2020, meaning that results were published as usual in *Waterbirds in the UK 2019/20* in spring 2021.

Restrictions and advice over the following two years, particularly lockdowns starting in November 2020 and January 2021, substantially reduced the number of visits able to be carried out, with biases by location and habitat in the sites that were able to be visited at different times. Following a review of a study simulating the effect of deleting the equivalent visits from the previous year's dataset, the WeBS steering committee concluded that the results were too affected by the missing counts to be able to publish the 2020/21 edition of the WeBS *Waterbirds in the UK* annual report. Here we present the results of that simulation study and why the decision was made.

MIND THE GAP

What if the 2019/20 winter (WeBS Core Counts for September to March) had had similar site coverage to the 2020/21 winter? That was the starting premise of the study. We already had published results for 2019/20 with typical coverage – some sectors missing at large sites in some months; some sites completely without a counter all



▲ **Count comparison of the last three years for the different countries, showing the significant drop in the summer of 2019/20 and in the 2020/21 winter.**

season; but crucially occurring in a fairly random pattern. The analytical methods used for producing report outputs from the dataset usually "fill in the gaps" for missing or incomplete counts, using a model for the national annual and monthly indices, or five-year averages for site totals. In the 2020/21 winter the data gaps were larger, and non-random. Coverage was substantially higher in the autumn months and was lowest in the mid-winter months of January and February, coinciding with the time that the most waterbirds are present. Although we suspected that the pattern and quantity of missing data would bias the results, we needed to test this.

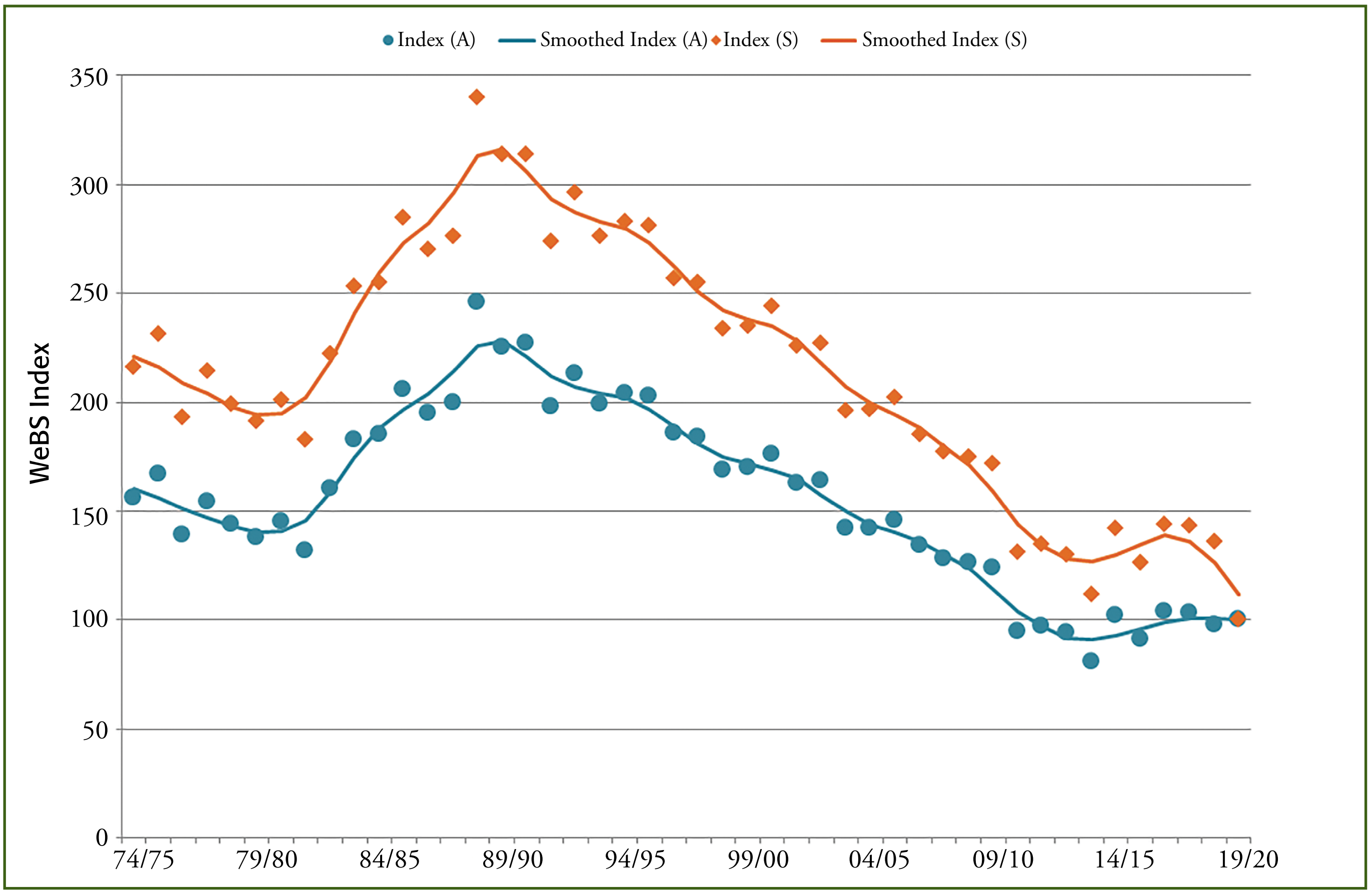
We took a copy of the 2019/20 dataset and month by month looked to see which count sectors had been covered in the 2020/21 season. If they hadn't been counted in 2020/21 as well, then we deleted the visit data. This left us with a 2019/20 dataset that was as patchy as 2020/21 – in reality a tad patchier, due to some sectors being covered in 2020/21 that had been missed in 2019/20, and some late data coming for 2020/21 after the dataset was created, but this affected a negligible number of sites.

Table 1 Percentage drop in number of sector visits on the most complex sites (listed in order of those with the most count sectors) in the simulation compared with true 2019/20 coverage.

Site	July–June Used for: Peak counts 5-yr means Site totals	September–March Indexing period used for: Wildfowl Gulls Others	November–March Indexing period used for: Waders
The Wash	-20%	-35%	-37%
North Norfolk Coast	-13%	-17%	-27%
Loughs Neagh and Beg	-42%	-42%	-60%
Cotswold Water Park	-27%	-35%	-39%
Forth Estuary	4%	-9%	-13%
Dee Estuary (England and Wales)	14%	-20%	-28%
Thames Estuary	-5%	-23%	-29%
Strangford Lough†	-100%	-100%	-100%
Morecambe Bay	-9%	-19%	-25%
Blackwater Estuary	21%	-6%	-8%
Severn Estuary	7%	-7%	-13%
Tees Estuary	45%	17%	9%
Humber Estuary	12%	-13%	-23%
Stour Estuary	-6%	-22%	-29%
Ditchford Gravel Pits	-22%	-28%	-32%
Upper Lough Erne	-63%	-63%	-63%
Lee Valley Gravel Pits	-27%	-40%	-48%
Poole Harbour	31%	0%	-4%
Somerset Levels	-5%	-15%	-16%
Orwell Estuary	-16%	-42%	-54%
Kingsbridge Estuary	11%	-14%	-20%
Solway Estuary††	178%	209%	202%
Burry Inlet	-7%	-30%	-27%
Colne Valley Gravel Pits	-1%	0%	1%
Mersey Estuary	33%	-2%	-1%
River Thame	6%	-10%	-15%
Swale Estuary	1%	-13%	-15%
Cleddau Estuary	-27%	-29%	-42%
Chichester Harbour	-4%	-17%	-23%
Ribble Estuary	25%	-3%	-6%

† Data from Strangford Lough was received after this analysis was undertaken.

†† Apparent increase in Solway Estuary due to location structure changes in the database, with two sectors being split into 50 compartments, increasing the number of sectors to 240% of what they were.



▲ **Ringed Plover actual indices and smoothed index for data up to 2019/20 (blue) and using the covid simulated 2019/20 dataset (orange).**

SIMULATING OUTPUTS

The next step was to run what we fondly call the "annual number crunch" on the simulated dataset. This processes the raw data we get from WeBS Counters. For multi-sector sites, the programs generate a completeness code for each species, depending on which sectors have been covered within the site and where the species usually occurs on the site. Combined with data from counters on whether the count was incomplete, this gives us site-level data and whether the count is considered complete, incomplete or missing. This site-level dataset forms the basis of all the Core Count outputs in the WeBS Report Online and the accompanying summary report. The rest of the number crunch generates these outputs, from the headline national trend figures to the Great Britain and Northern Ireland maximum monthly count totals. We could then compare each of these simulated outputs for 2019/20 with the actual 2019/20 outputs and see how the extra gaps in the dataset had affected them.

INDICES AND TRENDS

WeBS annual population indices are fixed to the reference value of 100 in the latest year, so the effects of removing data in the simulation is on earlier values in the time series, rather than the 2019/20 data point itself. Annual index values will always vary due to measurement uncertainty, missing and incomplete data as well as genuine year-to-year fluctuations in the population residing in the UK and so are typically presented with a smoothed line to highlight overall tendencies in the time series. 10- and 25-year trends are measured to one year back from the end, due to edge calculation effects.

For Ringed Plover, the one-year change from 2018/19 to 2019/20 was stable at +2%, but in the simulation this was a dramatic drop of -26%, taking the index to a new low. As a declining UK Red-listed species, that appears to have stabilised in the most recent years, this is a misleading result, falsely making it appear that the decline had resumed. Although the effect is somewhat mitigated in the trends calculated from the smoothed values, there is still an impact, with the 10-year trend being -26% rather than -10%, and the 25-year trend at -55% rather than -50%.

QUANTIFYING IMPACTS ON TRENDS

Concentrating on the 46 species trends based on WeBS data robust enough to be routinely reported in the summary report, the study followed the example of the UK BTO/JNCC/RSPB Breeding Bird Survey (BBS) in assessing impacts. The simulated values were compared with arbitrary acceptability limits around the true value, set in such a way that the bounds were greater around large positive values but smaller around large negative values, and if the real trend is 0 then a simulated value that fell between -5% and +5% was deemed acceptable. For example, the Bewick's Swan 25-year UK trend of -88% had acceptable range [-89.0,-87.9] and the Little Egret trend of +1400% had acceptable range [1326.8, 1476.9].

Table 2 Simulated values outside arbitrary acceptable bounds of true value for 25-year and 10-year trends, and percentage point differences in 1-year index change between simulated value and true value for, the UK and constituent countries.

Species/population	UK 25	UK 10	UK 1	Eng 25	Eng 10	Eng 1	Sco 25	Sco 10	Sco 1	NI 25	NI 10	NI 1	Wal 25	Wal 10	Wal 1
Dark-bellied Brent Goose	X	X	-47	X	X	-47	-	-	-	-	-	-	X	X	-24
Svalbard Light-bellied Brent Goose	X	X	-84	X	X	-83			-3	-	-	-	-	-	-
Canada Goose		X	-27	X		-18			-17	X	X	-26			-28
Naturalised Barnacle Goose	X	X	-12	X	X	-14	-	-	-4	X	X	42	X		15
British/Irish Greylag Goose	X		-25			-26		X	-	-	-	-59			38
European White-fronted Goose	X	X	-7	X	X	-8	-	-	0	-	-	-16			3
Mute Swan			-20			-22			0			-			-
Bewick's Swan			-8			-9	-	-	-4	X	X	-7			-11
Whooper Swan			-8			-3			0	X	X	-26			-10
Egyptian Goose			-4			-4	-	-	-	-	-	-	-	-	-
Shelduck	X	X	-17	X	X	-23			-1			6	X	X	-15
Mandarin			-1			-1	-	-	-	-	-	-	-	-	-
Shoveler			-4			-3	X	X	-28	X	X	18	X	X	-25
Gadwall			-7			-7			-8			0		X	-27
Wigeon			-11			-14			-4	X	X	-23			1
Mallard			-6			-8			-1			11			-7
Pintail			-11	X	X	-17			0			2	X	X	-18
Teal			-6			-7			-4			0			-10
Pochard			-6			-4			2	X	X	-14	X	X	-78
Tufted Duck			-8			-6			-2			-8	X	X	-20
Scaup			-1			-7			9	X	X	-21			-18
Eider *	X		-12			-10			-9	X		-16	X	X	-99
Goldeneye			-4			-9			-9			5			17
Goosander			-4	X		-6			0	-	-	-	X		8
Red-breasted Merganser			-8	X	X	-19			-2			12			0
Little Grebe			-4			-9			1			13	X	X	-17
Great Crested Grebe			-1			-1			-6			14			5
Little Egret	X	X	-19	X	X	-20	-	X	-18	-		-3	X		-10
Cormorant		X	-16	X	X	-19			-8	X	X	31			-11
Moorhen	-		-4	-		-4	-		0	-		-11	-		-5
Coot			-3			-3			0			-10			-3
Oystercatcher	X	X	-28	X	X	-40			-3	X	X	22	X	X	-20
Avocet	X	X	-24	X	X	-25	-	-	-	-	-	-	-	-	-
Lapwing			-12			-14			-8			13			-13
Golden Plover			-16	X	X	-21			-2			0	X	X	24
Grey Plover	X	X	-31	X	X	-33			10	X	X	77			-14
Ringed Plover	X	X	-29	X	X	-32		X	-17			-12	X	X	-32
Curlew	X	X	-26	X	X	-36			-9			1			-10
Bar-tailed Godwit	X	X	-40	X	X	-46			7		X	14	X	X	-17
Black-tailed Godwit			-13			-16			-1	X		-7			-9
Turnstone	X	X	-32	X	X	-35			-12	X	X	-21			-3
Knot	X	X	-45	X	X	-45			-38	X	X	398			-11
Sanderling	X	X	-26	X	X	-29		X	12	X	X	79	X	X	-64
Dunlin	X	X	-22	X	X	-26			-9			-15			-11
Purple Sandpiper			-8			-7			-7			-9	-	-	-
Redshank	X	X	-22	X	X	-27			-1	X	X	-30			-11

*Eider data excludes birds on Shetland (of *faeroeensis* race).

Columns UK25, Eng25, Sco25, NI25 and Wal25 relate to the 25-year smoothed trend for United Kingdom, England, Scotland, Northern Ireland and Wales respectively. The 25-year smoothed trend was calculated for the 25-year period 1993/94 to 2018/19 for the true and simulated datasets†. An X denotes that the simulated value fell outside the arbitrary acceptable bounds of the true value as described in the text; – denotes no value available.

Columns UK10, Eng10, Sco10, NI10 and Wal10 relate to the 10-year smoothed trend for United Kingdom, England, Scotland, Northern Ireland and Wales respectively. The 10-year smoothed trend was calculated for the 10-year period 2008/09 to 2018/19 for the true and simulated datasets†. An X denotes that the simulated value fell outside the arbitrary acceptable bounds of the true value as described in the text; – denotes no value available.

Columns UK1, Eng1, Sco1, NI1 and Wal1 relate to the 1-year index change for United Kingdom, England, Scotland, Northern Ireland and Wales respectively. The 1-year change is the difference between the unsmoothed index for 2018/19 and 2019/20 (the 2019/20 index is always set to equal 100). The figure given is the 1-year change for the true dataset minus the 1-year change for the simulated dataset.

† Note, it is customary to truncate the final year when reporting smoothed trends, so whilst data from 2019/20 have been used in creating the smoothed index values, the trend period assessed and reported is until 2018/19.

Around half the medium- and long-term simulated trends fell within the arbitrary margin of acceptability. The ones that were not within these margins are denoted with a cross in Table 2. For the UK, 52% of the 46 species for which 10- and 25-year trends are tabulated in the summary report were within the arbitrary acceptability limits, with ducks being the least affected group (93%) and the most affected being waders (27%). There was a suggestion of a habitat influence, with coastal species (e.g. Eider, Shelduck, Cormorant, Curlew) clearly more affected than species using more inland habitats (e.g. Mute Swan, Egyptian Goose, Teal, Lapwing). Additional trends that are considered less robust and only routinely published online, such as the gull trends, were not assessed.

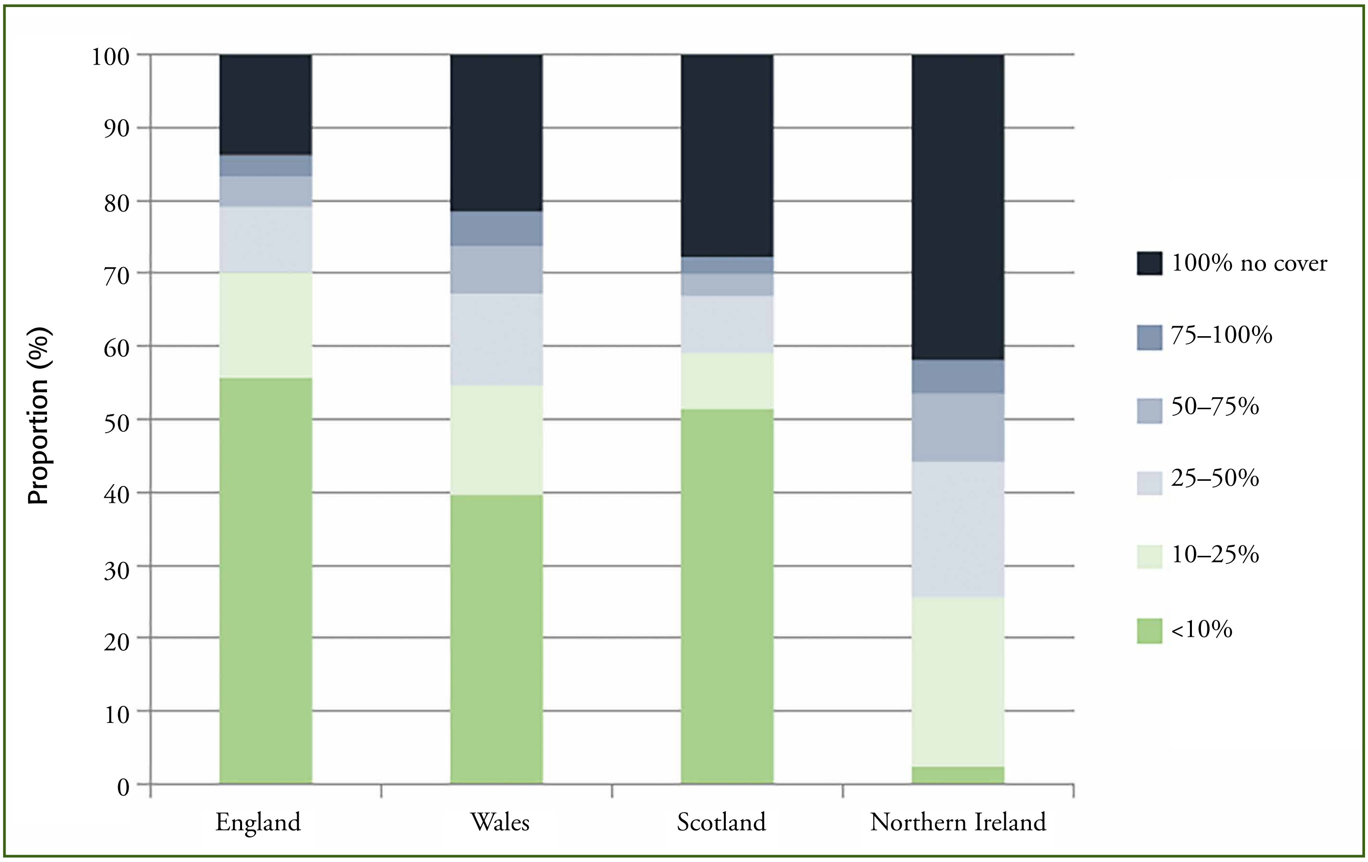
On a country level, Scotland was least affected, partly because of a clear exemption for fieldwork that enabled more Counters to carry out their usual visits. However, there was still an effect, and importantly this was overwhelmingly to bias the 1-year index change in a negative direction.

QUANTIFYING IMPACTS ON SPECIES NUMBERS

The WeBS Report Online publishes a wealth of site level data used for management, site condition assessments and many other uses. The key metric is the five-year average of the site-species peaks, *i.e.* the average peak number of birds for each species at each site over five years, but omitting low incomplete counts when calculating the average. However, the flag for incomplete counts is across each year and so does not deal adequately with the situation where the restrictions affected midwinter the most, with data for the peak months missing (e.g. January), since the peak over the remaining months (e.g. November) is used instead.

For each year the site-species peaks are summed across species at each site to give the site totals in the site totals tab of WeBS Report Online, and summed across sites to give the Great Britain and Northern Ireland species maxima on the species pages of the WeBS Report Online. The proportional deficit in the site totals for all the sites covered in 2019/20 compared to the simulation using 2020/21 coverage showed some variation by country. For example, in Scotland 51% of sites has a simulated site total within 10% of the true value, but 28% of Scottish sites had no cover and for these the site total was reduced by 100% to zero individuals. The species maxima, when summed across all species, reduced by 19% for Great Britain and by 42% for Northern Ireland.

The five-year mean of the species peaks are also used to identify sites on the WeBS Report Online that pass the thresholds of nationally and internationally important numbers over the most recent five years. There were 47 sites in the simulation where the status changed for one or more species.



▲ **Impact of COVID-19 induced data gaps on all-species site totals. Colours indicate the level of impact, grouping by how much lower the site totals were when only the restricted simulation data were used compared to the actual value. Bars show the proportion of the WeBS sites in each country that were in each impact group.**

LOW TIDE REPORTING

Low Tide Counts are not carried out every year in most cases, and often require a team approach, sometimes with travel together by boat; so understandably few sites were attempted in the winter of 2020/21. Some estuaries began surveys and then had to abandon them following the December count. A recent review of the Low Tide Counts scheme (see pages 16–17) analysed patterns in previous low tide surveys, and recommended that at least three of the core winter months should be covered. As all the sites are being surveyed again in 2021/22, or were surveyed in the previous winter or are surveyed every year, it was decided that there was insufficient benefit to publishing the limited surveys that were able to be undertaken.

Table 3 Number of Low Tide Count sectors counted in 2020/21.

Site	November	December	January	February	Comment
Adur Estuary	5	5	5		Done every year
Belfast Lough	26	26			Done every year
Dee Estuary	58	62	32	30	Being repeated 2021/22
Firth of Tay	57	65		8	Being repeated 2021/22
Fowey Estuary	2	2	2	2	Complete (site only has two sectors)
Hayle Estuary	8				Done 2019/20
Portsmouth Harbour	24				Being repeated 2021/22
Strangford Lough	64	57			Done every year
Swale Estaury	74	68			Being repeated 2021/22
Swansea Bay	23	7			Done every year

OVERALL DECISION

In general, the impact of the missing data in the simulation for 2019/20 was to reduce the totals and index values for 2019/20 compared to what it should have been, but the magnitude of the effect varied between countries and species. The variation makes sense, because there were location factors involved, such as country level restrictions and exemptions, and some sites tend to have more local surveyors (e.g. town park lakes) compared to others that rely on teams coming from further afield (e.g. estuaries).

Despite the impacts being variable, given the significant and complex biases uncovered through this simulation analysis on what an equivalent impact would have had on 2019/20 reporting, it was decided that it was not prudent to publish a report for the 2020/21 WeBS year as usual. The WeBS Report Online could easily be misleading if used without understanding the context in which the data were collected and the impact that this could have on the many outputs of the scheme.

The counts that were undertaken will be included in the next published edition of the annual report, and are likely to be accompanied with some additional context on the pandemic effects. Although circumstances have forced the cancellation of one annual reporting cycle, WeBS is a near 75 year-old monitoring scheme: the data collected in 2020–21 are valuable, but equally missing visits due to the coronavirus pandemic in no way reduces the immense long-term value of the dataset.

TURNSTONE BY TERESA FROST

FIND OUT MORE

Frost, T.M. & Austin, G.E. 2022. *WeBS Report 2020–21: Impacts of pandemic restrictions*. Unpublished report to the WeBS Steering Committee. Electronic copies available by contacting: **teresa.frost@bto.org**

Gillings, S., Balmer, D.E., Harris, S.J., Massimino, D. & Pearce-Higgins J.W. 2021. Impacts of COVID-19 restrictions on capacity to monitor bird populations: a case study using the UK Breeding Bird Survey. *Bird Study* **68:** 220–232.

Examining the drivers of Curlew decline

A study using WeBS data has been carried out to look at the factors behind the decline in wintering Curlew.

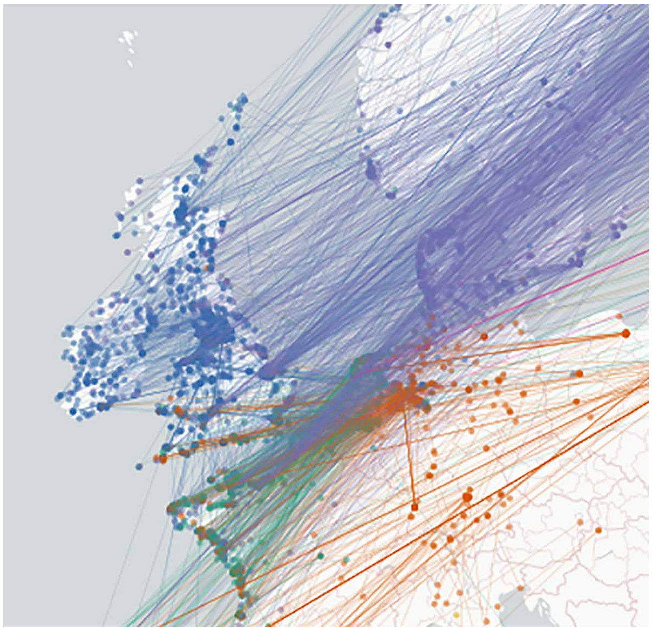
The Curlew present in the UK in winter are from a mixture of breeding populations, including birds that breed in Britain and Ireland, Fennoscandia and the Low Countries.

Whilst not matching the pace of decline seen in UK breeding populations, numbers of wintering Curlew counted through WeBS have also shown declines, with the England trend for 1993/94–2018/19 at -34% and the Wales trend -43% for the same 25-year period. Prior to these declines there had been a period of increases in the 1980s. The WeBS trends are largely directed by numbers on estuaries, rather than Curlew on the open coast which are monitored by the periodic Non-Estuarine Waterbird Survey (NEWS). So, why are winter numbers declining on estuaries in England and Wales?

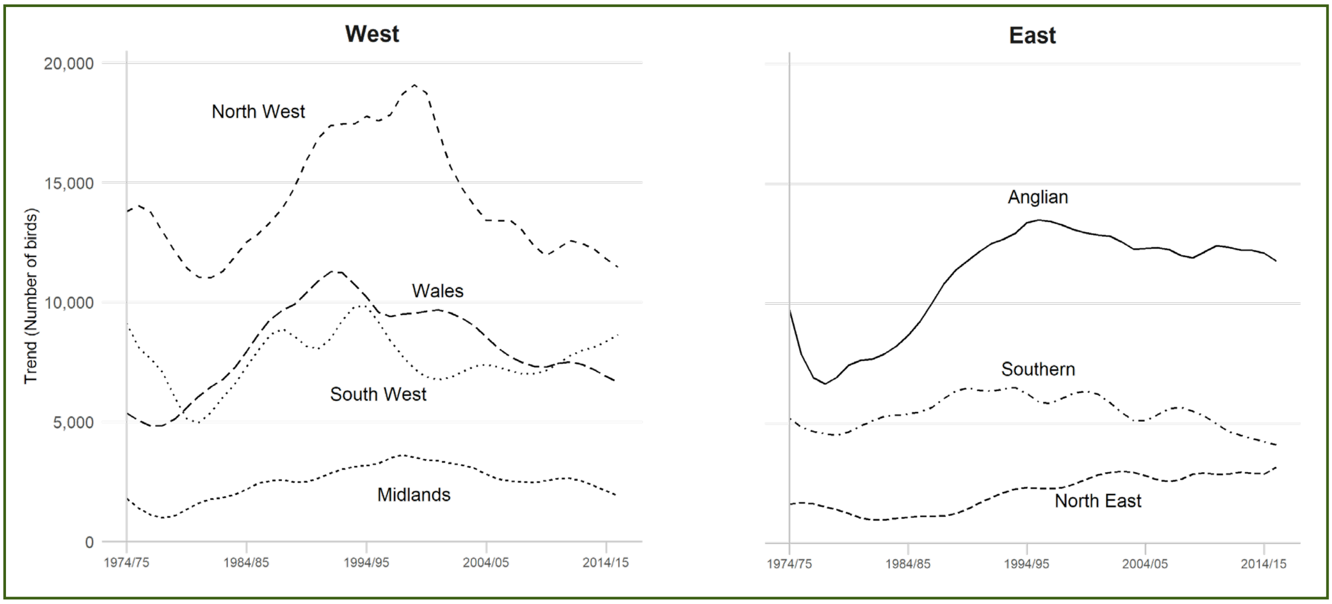
To find out, a study funded by the BTO Curlew Appeal analysed WeBS data from 46 estuaries over 42 winters to model annual changes against factors that might determine Curlew numbers on the estuaries, using data for broadscale factors such as UK quarry status that affected all sites, and factors that operate on a more local, site scale, such as habitat and water quality.

Increases during the 1980s are likely to have been influenced by the removal of Curlew as a UK quarry species in 1982; earlier work had estimated the hunting ban increased survival by *c.* 4%. Redistribution to estuaries in England and Wales may also have occurred in the 1980s from countries which did not implement a ban until later. Combined, these may explain the importance of this factor.

Severe weather at a local scale was found to influence site abundance in the winter it occurred, but counts also increased in the year following a cold winter, perhaps suggesting birds had undertaken temporary cold weather movements rather than experienced excess mortality.



▲ Patterns of migratory connectivity for Curlew in north west Europe, coloured according to different European regions of origin denoting where an individual was originally ringed (from Franks *et al.* 2022).



▲ Regional WeBS trends in England and Wales.

More pronounced declines in the west may be climate change-influenced redistribution from the west coast of the UK to the east coast, despite individual adult Curlew known to be faithful to wintering sites. This may possibly be influenced via juvenile choices to winter closer to their natal location in Europe.

Curlew wintering in the UK originate from both British and Irish breeding populations and populations from the Continent and particularly Fennoscandia. Trends in wintering numbers thus reflect trends in these breeding populations. While it is known from ringing that Fennoscandian birds predominantly winter on the east coast, it was not possible to assess these relationships directly, however, as the relative proportions of birds from different breeding populations wintering in the UK are not accurately known.

Changes in numbers at estuaries were not found to be driven by differences in site habitat conditions, but this may reflect the study looking at static variation between sites rather than change for these factors.

These findings support previous research that low breeding success is the primary cause of Curlew declines, rather than adult survival, and re-emphasise conservation focus on the breeding season. A network of good quality wintering sites for Curlew will continue to be essential to protect this species in the future to maintain survival, especially whilst breeding productivity remains low.

FACTORS FOUND TO BE SIGNIFICANT:

Broad scale:

- Cessation of hunting in 1982
- East/West Coast estuary location (proxy for climate)

Local scale:

- Air frost days

FACTORS NOT FOUND TO BE SIGNIFICANT:

Broad scale:

- None

Local scale:

- Water Quality
- Estuary Morphology (Fetch)
- Grassland habitat
- Built-up habitat (proxy for disturbance)

FIND OUT MORE

Woodward, I.D., Austin, G.E., Boersch-Supan, P.H., Thaxter, C.B. & Burton, N.H.K. 2022. Assessing drivers of winter abundance change in Eurasian Curlews *Numenius arquata* in England and Wales. *Bird Study*. **www.bto.org/winter-curlew-drivers**

Cook, A.S.C.P., Burton, N.H.K., Dodd, S.G., Foster, S., Pell, R.J., Ward, R.M., Wright, L.J. & Robinson, R.A. 2021. Temperature and density influence survival in a rapidly declining migratory shorebird. *Biological Conservation* **260:** 109198.

Franks, S., Fiedler, W., Arizaga, J., Jiguet, F., Nikolov, B., van der Jeugd, Ambrosini, R, Aizpurua, O., Bairlein, F., Clark, J., Fattorini, N, Hammond, M., Higgins, D, Levering, H., Skellorn, W., Spina, F, Thorup, K. Walker, J., Woodward, I. and Baillie, S.R. 2022. *Online Atlas of the movements of European bird populations*. **https://migrationatlas.org** EURING/CMS.

Taylor, R.C. & Dodd, S.G. 2013. Negative impacts of hunting and suction-dredging on otherwise high and stable survival rates in Curlew *Numenius arquata*. *Bird Study* **60:** 221–228.

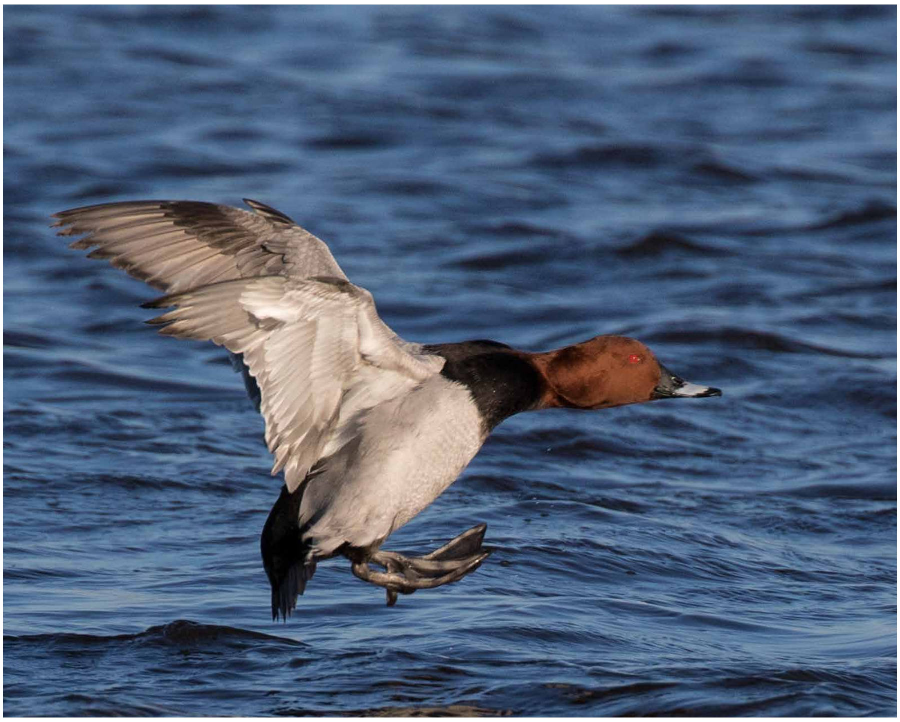
Global perspectives

International studies increase understanding of impacts of protected areas and climate change at scale.

Regular readers of *Waterbirds in the UK* and *WeBS News* will be familiar with recent international research programmes that have used WeBS data, typically via the January count dataset for the UK that contributes to the International Waterbird Census (IWC). Research continues to focus on migratory waterbird conservation through protected areas, climate change impacts on waterbirds, and the interplay between the two.

Gaget *et al.* (2021) looked at the European Natura 2000 protected area network (including Special Protection Areas and Special Areas of Conservation in the UK) and what exactly is conducive to a strong network in the face of climate warming. Protection was important, and sites that were explicitly designated to protect waterbirds and those with management plans had quicker community composition changes. No evidence was found that the time since designation was associated with the speed of community change. The results suggest conservation policy aimed at waterbirds and their habitats will help waterbird communities respond to climate warming.

Nagy *et al.* (2021) took a broader scale look at the future climate change exposure of species in the flyways that are the focus of the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA). The project team, including BTO, used more than one million bird observations, including from WeBS and BirdTrack and modelled the importance of hydrology and climate in driving the distribution of breeding, migrating and non-breeding populations of waterbirds across the flyway. The most vulnerable species to climate-driven declines were found to be dispersive species in the tropics. However, closer to home, some of our Arctic breeding wader species such as Sanderling and Curlew Sandpiper appeared particularly threatened, facing breeding habitat loss of up to 88%. Conserving the breeding habitat of waterbirds is equally important to continuing to protect internationally important sites for waterbirds in winter and on passage.



A global study in the prestigious journal *Nature* used IWC data for over 27,000 waterbird populations from around the world, with UK WeBS data forming an important part. The study showed a mixed impact of 1,506 protected areas, perhaps due to poor management or factors outside the protected area, noting these are a risk for aquatic habitats more so than terrestrial ones due to water connectivity. Management for waterbirds or their habitats were more likely to benefit populations. The authors conclude that a called-for commitment to protect 30% of the earth by 2030 as part of a post-2020 Global Biodiversity Framework by focusing on protection alone may not deliver optimal biodiversity outcomes – equally ambitious targets are needed on protected area effectiveness.

Studies such as these, on continental and greater scales, are only possible because they are underpinned by the thousands of hours of volunteer efforts locally in the field across many years. The efforts of WeBS counters underpin global conservation science and policy making, as well as the site management plans that these studies found essential to waterbird conservation.

FIND OUT MORE

Gaget E., Frost T. & 33 co-authors. 2021. Protected area characteristics that help waterbirds respond to climate warming. *Conservation Biology* doi: 10.1111/cobi.13877.

Nagy, S., Pearce-Higgins, J. & 11 co-authors. 2021. Climate change exposure of waterbird species in the African-Eurasian flyways. Bird *Conservation International*. **32:** 1–26. 10.1017/S0959270921000150.

Wauchope, H.S. & 11 co-authors. 2022. Protected areas have a mixed impact on waterbirds, but management helps. *Nature* **605:** 103–107.

POCHARD BY LIZ CUTTING/BTO

Adaptable Oystercatchers

WeBS data shows how Oystercatchers moved between neighbouring designated sites in response to a crash in cockle stocks.

Oystercatchers are one of our most adaptable wader species, having occurred on more WeBS and NEWS sites than any other wader except Lapwing. As well as being widespread, they can also be locally very numerous; where there is abundant food on productive estuaries they congregate in tens of thousands. Recent BTO-led analysis of WeBS and ringing data at the Burry Inlet in south Wales showed the value of their adaptability in mitigating disaster when a food source suddenly disappears – as long as there is somewhere else for them to go.

Burry Inlet is designated as a Special Protected Area (SPA) with Oystercatcher as one of the species of interest, where they are attracted to the site by the cockle beds. In the mid-2000s, for reasons not fully understood, the cockle population underwent a dramatic crash. With the help of a reduction in fishing, the stocks did start increasing again; but the larger, older cockles were particularly hard hit, and their recovery time slow.

A long-running ringing study at the site meant it had been possible to look at what this meant for the Oystercatcher population that had been using the cockle resource. An earlier analysis in 2010 had suggested that Oystercatcher survival and numbers at the site had been adversely affected. The repeat analysis in this study using additional years of data resulted in a reduced effect – so perhaps some of the apparent drop in survival was likely to have been because the birds had moved away for a few years and then returned, being a long-lived species?

Near to Burry Inlet is another estuarine site counted for WeBS, Carmarthen Bay. As a Special Area of Conservation (SAC) rather than an SPA, Oystercatcher is not a "designated feature" of the site. Nevertheless, analysis of WeBS data proved consistent with the hypothesis that much of the Oystercatcher population impacted by the reduction in food availability at Burry Inlet found refuge at this nearby site. When the cockle population began to rebound, so too did the numbers of Oystercatcher. The apparent survival effect at Burry Inlet in the late 2000s was thankfully due largely to birds temporarily abandoning the site, rather than a large mortality event.

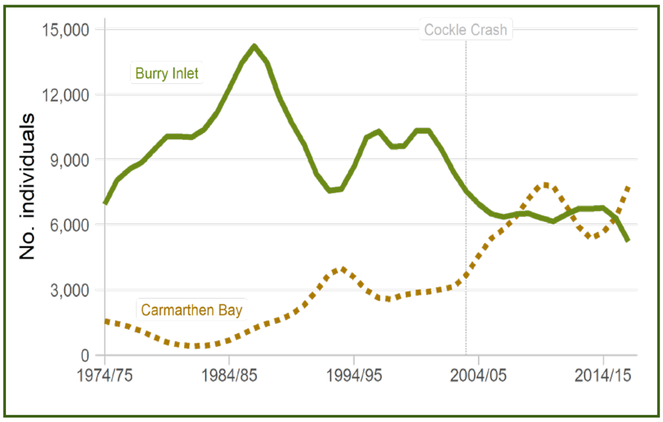
Pioden Fôr, literally 'sea magpie' in Welsh.

The study underlines not only the importance of a resilient network of protected areas, but also the importance of collecting long-term monitoring data by WeBS counters on all sites, not just SPAs, for understanding the short- and long-term impacts of events such as shellfish crashes. Such evidence is essential to facilitate management of protected areas and fisheries.

FIND OUT MORE

Bowgen, K.M., Wright, L.J., Calbrade, N.A., Coker, D., Dodd, S.G., Hainsworth, I., Howells, R.J., Hughes, D.S., Jenks, P., Murphy, M.D., Sanderson, W.G., Taylor, R.C. & Burton, N.H.K. 2022. Resilient protected area network enables species adaptation that mitigates the impact of a crash in food supply. *Marine Ecology Progress Series* **681:** 211–225.

www.bto.org/oystercatcher-research



▲ **Graphs showing the average winter populations of Oystercatcher in the Burry Inlet (green line) and Carmarthen Bay (gold line) (left) and Cockle stocks in autumn in Burry Inlet SPA in terms of biomass estimates (right).**

Low Tide Counts scheme review

After nearly 30 years of Low Tide Counts on UK estuaries, an in-depth review has been carried out to look at how the scheme could be improved in the future.

The WeBS Low Tide Counts scheme was initiated in the winter of 1992/93, with the aim to monitor, assess and regularly update information on the relative importance of intertidal feeding areas of UK estuaries for wintering waterbirds, with counts carried out between November and February. Since its inception, 87 estuaries have been counted at low tide, with the current recommendation that sites should be counted on a cyclical basis, every six years.

A review of the first seven years of the WeBS Low Tide Counts scheme was carried out by Musgrove *et al.*(2003), and provided detailed site accounts for the 62 sites covered in the initial years of the scheme.

Now, after being in operation for nearly 30 years, a new review of Low Tide Counts has been carried out. The purpose of this review was to better understand existing coverage over this period, as well as the outputs and user requirements so that recommendations can be made to help improve the value of the data being collected.

The specific aims of the review were to:

1. summarise the existing methods, site coverage and the frequency of coverage of WeBS Low Tide Counts between 1992/93 and 2019/20.

2. improve our understanding of temporal (annual and within-winter) variability of within-site species distributions.

3. develop a clearer understanding of the use of Low Tide Counts scheme data by stakeholders and investigate the potential for capturing data being collected outwith the scheme.

In order to achieve these aims, we carried out descriptive analyses of the entire Low Tide Counts dataset and reviewed the current guidance materials available to observers. A literature review and an analysis of data from a selected sample of sites and species were used along with a targeted questionnaire and in February 2021, an online workshop was held with a variety of stakeholders, to capture user requirements and discuss options for improving the value of the data collected.

RECOMMENDATIONS

In undertaking this review, we appreciate the added commitment that carrying out Low Tide Counts entails, as many counters also do the monthly Core Counts. Although some of the recommendations below may potentially add extra burden, we hope the value to the scheme these could bring will be welcomed.

The key recommendations from this review are to:

- increase the number of sites which achieve annual coverage at least once every six years, particularly in Scotland, Wales and northern England.

- facilitate more flexibility in the months in which WeBS Low Tide Counts data are collected to include passage periods, in addition to but not replacing winter visits, and distribute a list of priority sites and species where this would be most relevant. For example, for species such as Ringed Plover and Sanderling at protected sites (SPAs, SSSIs) where they are listed as passage features due to peaks in abundance outside of November–February.

- ensure that for winter counts, preferably at least three monthly visits are carried out during the winter a site is covered and single visits are avoided where at all possible, to better capture within-winter variation.

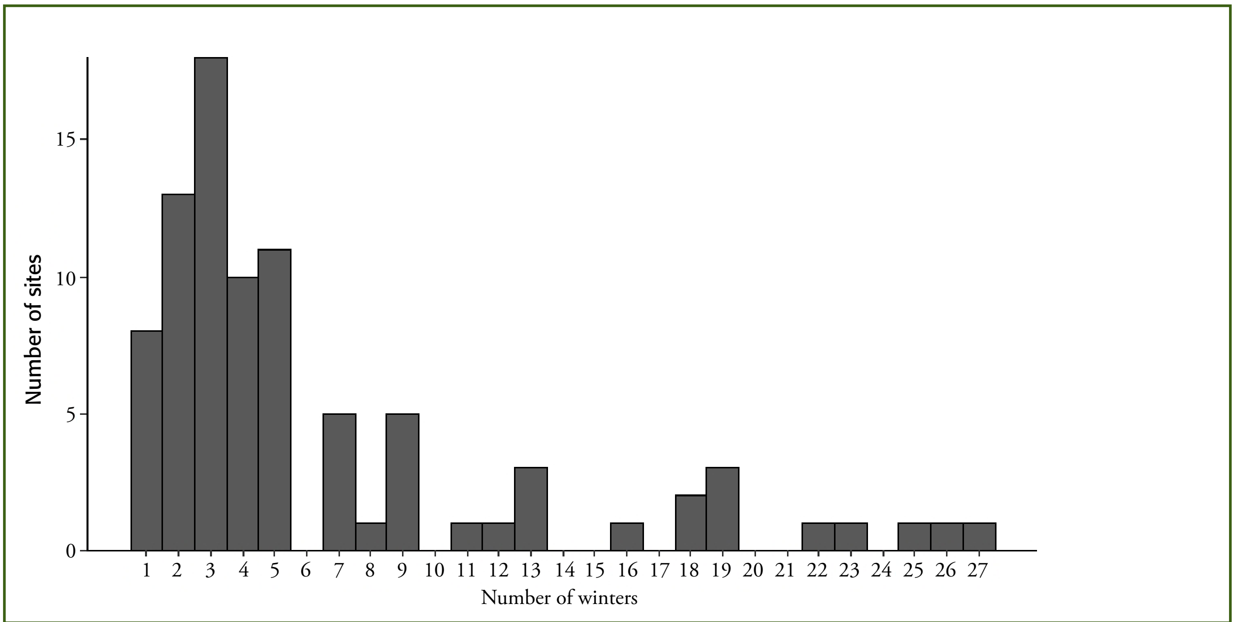
- engage with ecology staff, especially within consultancies, more proactively to see if data are available from professional surveys which could be submitted to and made available within the WeBS Low Tide Counts scheme to fill temporal and spatial data gaps.

FIND OUT MORE

Clewley, G.D., Calbrade, N.A., Austin, G.E., Frost, T.M. & Burton, N.H.K. 2022. *A review of the BTO/RSPB/JNCC Wetland Bird Survey (WeBS) Low Tide Counts Scheme with recommendations for its future operation*. BTO Research Report 744, BTO, Thetford. **www.bto.org/WeBS-Low-Tide-Review**

Musgrove, A.J., Langston, R.H.W., Baker, H. & Ward, R.M. (eds). 2003. *Estuarine Waterbirds at Low Tide: the WeBS Low Tide Counts 1992/93 to 1998/99*. WSG/BTO/WWT/RSPB/JNCC, Thetford.

▲ **Summary map of sites covered in the WeBS Low Tide Counts scheme between 1992/93 and 2019/20. Larger circles represent sites with more winters' coverage. Sites with data available at least once every six years are shown in blue, whereas sites with any coverage gaps of six years or greater are shown in red.**



▲ **The number of years of data of sites included in the WeBS Low Tide Counts scheme between 1992/93 and 2019/20.**

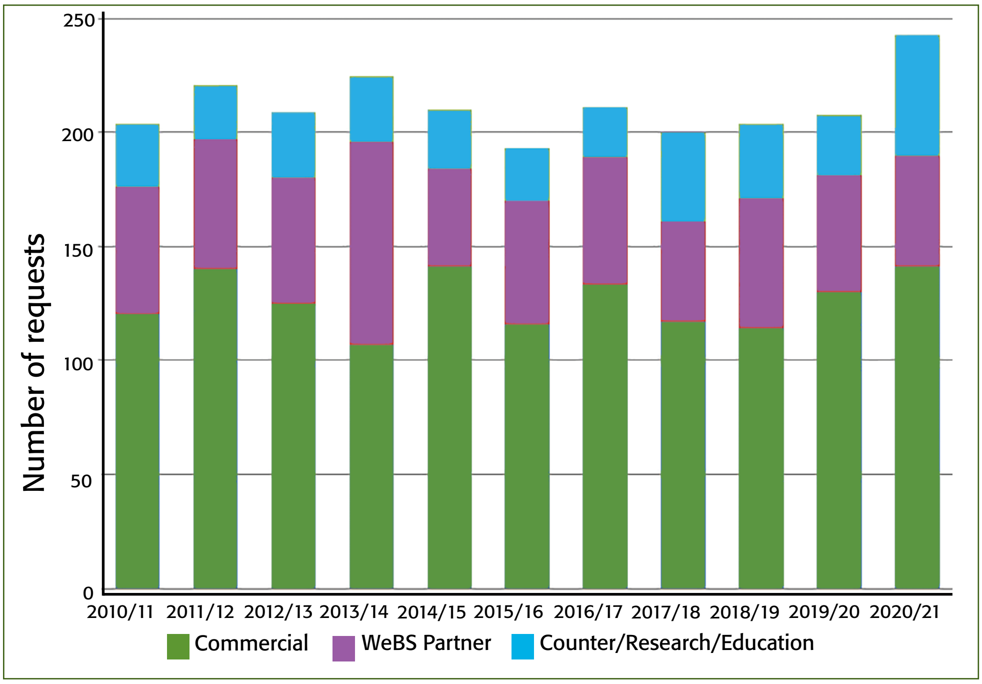
Uses of WeBS data 2020/21

243 WeBS Data Requests in 2020/21

With the UK host to internationally important numbers of wintering waterbirds, one of the principal aims of WeBS is to provide data to facilitate their conservation. Indeed, there have been many high-profile examples over the years in which WeBS data have proved to be fundamental in securing the protection of important wetland sites.

A summary of site-based WeBS information is presented on the WeBS Report Online and available for use with an Open Government Licence. Data at a finer level (both spatial and temporal) are available in a user-friendly format through a bespoke WeBS Data Request. We recommend that WeBS-based information that is to be incorporated into site evaluation work, such as Environmental Impact Assessments (EIAs), should be sourced through a WeBS Data Request.

The graph shows the number of Data Requests processed by the WeBS office each year since 2010/11. These are from a range of stakeholder groups, including country conservation agencies, environmental consultancies, academic researchers and bird clubs. Summarised WeBS data are also provided to several online environmental data portals e.g. NBN Atlas.



▲ **WeBS Data Requests 2010/11 to 2020/21.**

In addition to bespoke data requests, there were 2,065 downloads of raw data from WeBS Online by counters, organisers and county bird recorders and 554 downloads by WeBS partners. Data downloads of Open Government Licenced data from the WeBS Report Online are not currently tracked.

January WeBS data are supplied to Wetlands International for inclusion in the International Waterbird Census, and summaries are used in outputs such as waterbird population estimates and AEWA Conservation Status reports.

The WeBS Partnership is keen to encourage WeBS data use within environmental research. A number of scientific papers and reports that have used WeBS data in recent years are referenced within the pages of this Special Edition Newsletter, and there is of course an extensive suite of other research questions relating to waterbird ecology and wider wetland management issues to which WeBS data would lend themselves, at both national and international scales.

WeBS DATA REQUESTS

More information about the WeBS Data Request Service is available from **www.bto.org/webs-data** where you can see coverage by WeBS of different sites, check data request charges, and view examples of the data that can be provided.

WeBS Local Organisers in 2020/21

Continued from back page

WALES

Anglesey	Ian Sims
Breconshire	Andrew King
Burry Inlet	Lyndon Jeffery
Caernarfonshire	Rhion Pritchard
Caernarfonshire (Foryd Bay)	Simon Hugheston-Roberts
Carmarthenshire	Alan Seago
Ceredigion (incl Dyfi Estuary)	Russell Jones
Clwyd (coastal)	Henry Cook (now **VACANT**)
Clwyd (inland)	**VACANT**
East Glamorgan	Daniel Jenkins-Jones
Gwent (excl Severn Estuary)	Al Venables (now Richard Clarke)
Merioneth (estuaries)	Jim Dustow
Merioneth (other sites)	Jim Dustow
Montgomeryshire	Jane Kelsall (now **VACANT**)
Pembrokeshire	Annie Haycock
Radnorshire	Peter Jennings
Severn Estuary (Wales)	Al Venables (now Kevin Dupé)
West Glamorgan	Lyndon Jeffery

NORTHERN IRELAND

Antrim (Larne Lough)	Doreen Hilditch
Antrim (other sites)	Adam McClure
Armagh (excl Loughs Neagh and Beg)	Stephen Hewitt
Belfast Lough	Shane Wolsey
Down (Carlingford Lough)	Aiobheann Morrison
Down (Dundrum Bay)	Andrew Crory
Down (other sites)	Kez Armstrong
Down (Outer Ards)	NIEA
Down (South Down Coast)	Kez Armstrong
Down (Strangford Lough)	Kerry Mackie
Fermanagh	Michael Stinson
Londonderry (Bann Estuary)	John Clarke (now Dean Jones)
Londonderry (Lough Foyle)	Matthew Tickner
Londonderry (other sites)	Stephen Hewitt
Loughs Neagh and Beg	NIEA
Tyrone (excl Loughs Neagh and Beg)	Ciara Laverty
Upper Lough Erne	NIEA

CHANNEL ISLANDS

Alderney	Alderney Wildlife Trust Ecologist
Guernsey Coast	Mary Simmons
Jersey (inland)	**VACANT**
Jersey Coast	Roger Noel

ISLE OF MAN

Isle of Man	David Kennett

We would be grateful for help organising WeBS in areas currently without a Local Organiser (marked **VACANT**). If you live in one of these areas and would be interested in taking on the role, please let us know. Email: **webs@bto.org**

In 2020/21, the WeBS Local Organiser Advisory Committee (WeBS LOAC) comprised Allan Brown, Eve Tigwell, Andrew King, Chris Gunn, Brian Moore, Colin Wells, Bob Swann and Kerry Mackie. Many thanks to them for representing the wider LO network. Further information about the WeBS LOAC can be found at: **www.bto.org/webs/loac**

WeBS REPORT ONLINE

Further information, including site tables and trends for all the regular WeBS species, is available in the online report at: **www.bto.org/webs-reporting**

Selected further reading

Recent studies that have used WeBS data

Frost, T.M., Calbrade, N.A., Birtles, G.A., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. & Austin, G.E. 2021. *Waterbirds in the UK 2019/20: The Wetland Bird Survey.* BTO/RSPB/JNCC. Thetford.

Bowgen, K.M., Wright, L.J., Calbrade, N.A., Coker, D., Dodd, S.G., Hainsworth, I., Howells, R.J., Hughes, D.S., Jenks, P., Murphy, M.D., Sanderson, W.G., Taylor, R.C. & Burton, N.H.K. 2022. Resilient protected area network enables species adaptation that mitigates the impact of a crash in food supply. *Marine Ecology Progress Series* **681:** 211–225.

Brides, K., Wood, K.A., Hall, C., Burke, B., McElwaine, E., Einarsson, Ó., Calbrade, N., Hill, O. & Rees, E.C. 2021. The Icelandic Whooper Swan *Cygnus cygnus* population: current status and long-term (1986–2020) trends in its numbers and distribution. *Wildfowl Journal* **71:** 29–57.

Burke, B., Lewis, L.J., Fitzgerald, N., Frost, T., Austin, G. & Tierney, T.D. 2018. Estimates of waterbird numbers wintering in Ireland, 2011/12–2015/16. *Irish Birds* **41**: 1–12.

Clewley, G.D., Calbrade, N.A., Austin, G.E., Frost, T.M. & Burton, N.H.K. 2022. *A review of the BTO/RSPB/JNCC Wetland Bird Survey (WeBS) Low Tide Counts Scheme with recommendations for its future operation*. BTO Research Report 744, BTO, Thetford.

Frost, T.M., Austin, G.E., Hearn, R.D., McAvoy, S.G., Robinson, A.E., Stroud, D.A., Woodward, I.D. & Wotton, S.R. 2019. Population estimates of wintering waterbirds in Great Britain. *British Birds* **112**: 130–145.

Gaget E., Frost T. & 33 co-authors. 2021. Protected area characteristics that help waterbirds respond to climate warming. *Conservation Biology* doi: 10.1111/cobi.13877.

Nagy, S., Pearce-Higgins, J. & 11 co-authors. 2021. Climate change exposure of waterbird species in the African-Eurasian flyways. *Bird Conservation International*. **32**: 1–26. 10.1017/S0959270921000150.

Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. and Win, I. 2021. The fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* **114(12):** 723–747.

van Roomen M., Citegetse G., Crowe O., Dodman T., Hagemeijer W., Meise K., & Schekkerman H. (eds). 2022. *East Atlantic Flyway Assessment 2020.The status of coastal waterbird populations and their sites*. Wadden Sea Flyway Initiative p/a CWSS, Wilhelmshaven, Germany, Wetlands International, Wageningen, The Netherlands, BirdLife International, Cambridge, United Kingdom.

Wauchope, H.S. & 11 co-authors. 2022. Protected areas have a mixed impact on waterbirds, but management helps. *Nature* **605:** 103–107.

Woodward, I.D., Austin, G.E., Boersch-Supan, P.H., Thaxter, C.B. & Burton, N.H.K. 2022. Assessing drivers of winter abundance change in Eurasian Curlews Numenius arquata in England and Wales. *Bird Study*.

Woodward, I., Aebischer, N., Burnell, D., Eaton, M., Frost, T., Hall, C., Stroud, D. & Noble, D. 2020. Population estimates of birds in Great Britain and the United Kingdom. *British Birds* **113**: 69–104.

Woodward, I.D., Frost, T.M., Hammond, M.J., & Austin, G.E. 2019. *Wetland Bird Survey Alerts 2016/2017: Changes in numbers of wintering waterbirds in the Constituent Countries of the United Kingdom, Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs) and Areas of Special Scientific Interest (ASSIs)*. BTO Research Report 721. BTO, Thetford.

WeBS

BTO Looking out for birds

rspb giving nature a home

JNCC

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SPECIAL THANKS

We wish to thank all surveyors and Local Organisers for making WeBS the success it is today. Unfortunately space does not permit all observers to be acknowledged individually, but we would especially like to credit the Local Organisers for their efforts.

WeBS Local Organisers in 2020/21

ENGLAND

Avon (excl Severn Estuary)	Rupert Higgins
Bedfordshire	Richard Bashford
Berkshire	Sean Murphy
Buckinghamshire (North)	Martin Routledge
Buckinghamshire (South)	**VACANT**
Cambridgeshire (incl Huntingdonshire)	Bruce Martin
Cambridgeshire (Nene Washes)	Charlie Kitchin
Cambridgeshire (Ouse Washes)	Paul Harrington
Cheshire (North)	Phil Hampson
Cheshire (South)	Paul Miller
Cleveland (excl Tees Estuary)	Chris Sharp
Cleveland (Tees Estuary)	Adam Jones
Cornwall (excl Tamar Complex)	Derek Julian
Cornwall (Tamar Complex)	Charles Nodder
Cotswold Water Park	**VACANT**
Cumbria (Duddon Estuary)	Colin Gay
Cumbria (excl estuaries)	Dave Shackleton
Cumbria (Irt/Mite/Esk Estuary)	Dave Shackleton
Dee Estuary	Colin Wells
Derbyshire	Phil Hampson
Devon (other sites)	Pete Reay
Devon (Exe Estuary)	Martin Overy
Devon (Taw/Torridge Estuary)	Chris Dee
Dorset (excl estuaries)	Malcolm Balmer (now **VACANT**)
Dorset (Poole Harbour)	Paul Morton
Dorset (Radipole and Lodmoor)	Stephen Hales
Dorset (The Fleet and Portland Harbour)	Steve Groves
Durham	Anne Donnelly
Essex (Crouch/Roach Estuaries and South Dengie)	Stephen Spicer (now Sean Murphy)
Essex (Hamford Water)	Leon Woodrow
Essex (North Blackwater)	John Fell
Essex (other sites)	Anthony Harbott
Essex (South Blackwater & North Dengie)	Anthony Harbott
Gloucestershire	Michael Smart
Greater London (excl Thames Estuary)	Rob Innes (now **VACANT**)
Greater Manchester	Tim Wilcox
Hampshire (Avon Valley)	John Clark
Hampshire (estuaries/coastal)	John Shillitoe
Hampshire (excl Avon Valley)	Keith Wills
Herefordshire	Chris Robinson
Hertfordshire	Jim Terry
Humber Estuary (inner South)	Keith Parker
Humber Estuary (mid South)	Barbara Moore
Humber Estuary (North)	Nick Cutts
Humber Estuary (outer South)	John Walker
Isle of Wight	Jim Baldwin
Kent (Dungeness area)	David Walker
Kent (East)	**VACANT** (now Maria Antonova)
Kent (Medway Estuary))	Bob Knight
Kent (Pegwell Bay)	Steffan Walton
Kent (Swale Estuary)	Brian Watmough
Kent (Thames Estuary – Hoo)	Murray Orchard
Kent (West)	**VACANT**
Lancashire (East Lancs and Fylde)	Stephen Dunstan (now David Jefferies)
Lancashire (North inland)	Peter Marsh
Lancashire (Ribble Estuary)	Ken Abram
Lancashire (River Lune)	Jean Roberts
Lancashire (West inland)	Phil Hampson
Lee Valley	Cath Patrick
Leicestershire and Rutland (excl Rutland Water)	Brian Moore
Leicestershire and Rutland (Rutland Water)	Tim Appleton
Lincolnshire (North inland)	Chris Gunn
Lincolnshire (South inland)	Bob Titman
Merseyside (Alt Estuary)	Steve White
Merseyide (inland)	Phil Hampson
Merseyside (Mersey Estuary)	Dermot Smith
Morecambe Bay (North)	Mike Douglas
Morecambe Bay (South)	Jean Roberts
Norfolk (Breydon Water)	Jim Rowe (now Anthony Bentley)
Norfolk (excl estuaries)	Mark Clay
Norfolk (North Nolfok Coast)	Neil Lawton
Northamptonshire (excl Nene Valley)	Barrie Galpin (now **VACANT**)
Northamptonshire (Nene Valley)	Steve Brayshaw
Northumberland (coastal)	Kathy Evans
Northumberland (inland)	Tim Daley
Northumberland (Lindisfarne)	Andrew Craggs
Nottinghamshire	David Parkin (now Jo Hubbard)
Oxfordshire (North)	Sandra Bletchly
Oxfordshire (South)	Ben Carpenter
Severn Estuary (England)	Harvey Rose
Shropshire	Michael Wallace (now Martin George)
Solway Estuary (inner South)	David Blackledge
Solway Estuary (outer South)	Dave Shackleton
Somerset (other sites)	Eve Tigwell
Somerset (Somerset Levels)	Eve Tigwell
Staffordshire	Scott Petrek
Suffolk (Alde Complex)	Ian Castle
Suffolk (Alton Water)	John Glazebrook
Suffolk (Blyth Estuary)	Will Russell
Suffolk (Deben Estuary)	Nick Mason
Suffolk (Orwell Estuary)	Mick Wright
Suffolk (other sites)	Alan Miller
Suffolk (Stour Estuary)	Rick Vonk
Surrey	Penny Williams
Sussex (Chichester Harbour)	Peter Hughes
Sussex (other sites)	Helen Crabtree & Dave Boddington
Thames Estuary (Foulness)	Chris Lewis
The Wash	Jim Scott
Warwickshire	Matthew Griffiths
West Midlands	Nick Lewis
Wiltshire	Jenny Stunnell
Worcestershire	Chris North
Yorkshire (East and Scarborough)	Jim Morgan
Yorkshire (Harrogate and Yorkshire Dales)	**VACANT**
Yorkshire (Huddersfield/Halifax area)	**VACANT**
Yorkshire (Leeds area)	Paul Morris
Yorkshire (South)	Grant Bigg
Yorkshire (Wakefield area)	Peter Smith

SCOTLAND

Aberdeenshire	Moray Souter
Angus (excl Montrose Basin)	Jonathan Pattullo
Angus (Montrose Basin)	Anna Cowie
Argyll Mainland	Nigel Scriven
Arran	Jim Cassels
Ayrshire	Dave Grant
Badenoch and Strathspey	**VACANT**
Borders	Andrew Bramhall
Bute	Ian Hopkins
Caithness	Sinclair Manson
Central (excl Forth Estuary)	Neil Bielby
Clyde Estuary	John Clark
Dumfries and Galloway (Auchencairn and Orchardtown Bays)	Euan MacAlpine
Dumfries and Galloway (Fleet Bay)	David Hawker
Dumfries and Galloway (Loch Ryan)	Paul Collin
Dumfries and Galloway (other sites)	Andy Riches
Dumfries and Galloway (Rough Firth)	Andy Riches
Dumfries and Galloway (Wigtown Bay)	Paul Collin
Fife (inland)	Allan Brown
Fife (Tay and Eden Estuaries)	Norman Elkins
Forth Estuary (inner)	Michael Bell
Forth Estuary (outer North)	**VACANT**
Forth (outer South)	Duncan Priddle
Glasgow/Renfrewshire/Lanarkshire	John Clark
Harris and Lewis	Yvonne Benting
Islay, Jura and Colonsay	David Wood
Isle of Cumbrae	**VACANT**
Lochaber	Kirstie & Callum Ross
Lothian (inland)	Allan Brown
Lothian (Tyninghame Estuary)	Tara Sykes
Moray and Nairn (inland)	David Law
Moray and Nairn (Lossie Estuary)	Bob Proctor
Moray Basin Coast	Bob Swann
Mull	Nigel Scriven
Orkney	Sarah Money
Perth and Kinross (excl Loch Leven)	Michael Bell
Perth and Kinross (Loch Leven)	Simon Ritchie
Shetland	Paul Harvey
Skye and Lochalsh	Jonathan Jones
Solway Estuary (North)	Andy Riches
Sutherland (excl Moray Basin)	**VACANT**
Tiree and Coll	John Bowler
Uists and Benbecula	Yvonne Benting
West Inverness/Wester Ross	Andy Douse