



## Waterbirds in the UK 2018/19

The annual report of the Wetland Bird Survey



# WATERBIRDS IN THE UK 2018/19

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. *Waterbirds in the UK 2018/19* is the 38th WeBS annual report and comprises this summary report and data at: [www.bto.org/webs-reporting](http://www.bto.org/webs-reporting)

## British Trust for Ornithology



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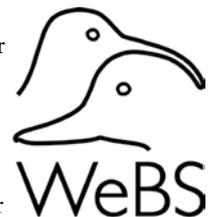
## THE WeBS PARTNERSHIP

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

The permanent members of the WeBS Steering Committee in 2018/19 were Teresa Frost (BTO), Dawn Balmer (BTO), David Stroud (JNCC), Anna Robinson (JNCC), Simon Wotton (RSPB) and Richard Hearn (WWT).

## THE WeBS TEAM AT BTO

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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 report 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 39) 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, proof-reading and particularly invaluable help in 2018/19:

GSMP, Deborah Newman, Jane Herridge, Nick Lewis, 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.

Report content and production was by Teresa Frost, Niall Burton, Gillian Birtles and Neil Calbrade.

This report is dedicated to the memory of Mark Rehfish who headed up the BTO Wetland Unit between 1994 and 2009. During his tenure he oversaw great strides in the development of WeBS analyses, including the development of WeBS Alerts and Wintering Waterbird Indicators and worked hard to ensure NEWS and NEWS-II were successful.

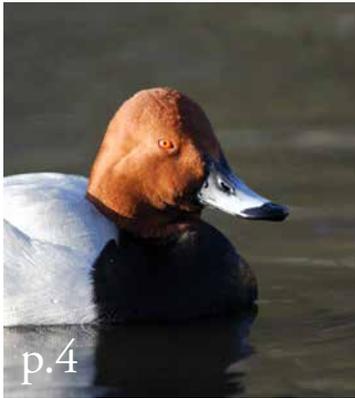
The painting of Mute Swan used on the cover of this report is by Andy Mackay. For more of Andy's work, see <https://ajm-wildlife-art.co.uk>. All other artists and photographers are acknowledged on the pages of this report.



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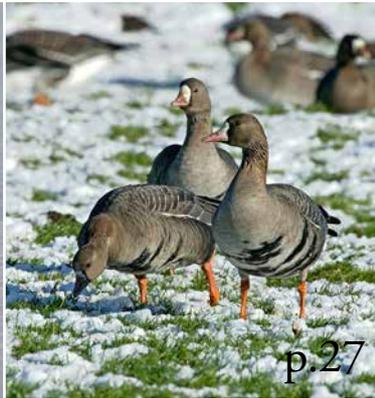
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## Online Resources

More information, including site tables and trends for all regular WeBS species, is available online at:  
**[www.bto.org/webs-reporting](http://www.bto.org/webs-reporting)**



This summary report can be downloaded from the WeBS website at:  
**[www.bto.org/webs-publications](http://www.bto.org/webs-publications)**

The online and summary outputs in conjunction constitute the report *Waterbirds in the UK 2018/19*.

# Waterbird headlines from the WeBS year

Just a small selection of notable stories from 2018/19.

See all the numbers and trends at [www.bto.org/webs-reporting](http://www.bto.org/webs-reporting)

**3,290**  
registered  
WeBS  
volunteers



In the 2013 UK wetlands health check, a third of the featured waterbirds on Special Protection Areas (SPAs) were flagged with long-term WeBS Alerts, highlighting issues that were in need of investigation. Fast-forward six years and now almost half of the featured waterbirds have been flagged with long-term Alerts in the latest WeBS Alerts assessment published in autumn 2019 (pages 16–21). Species such as Scaup, Goldeneye and Purple Sandpiper have all seen population declines and are becoming increasingly reliant on the SPAs that are designed to protect them. WeBS Alerts assessed change for 474 site-species populations on 84 SPAs. For the first time, a further 1,267 assessments were carried out for 206 Sites of Special Scientific Interest (SSSIs) in Great Britain and 18 Areas of Special Scientific Interest (ASSSIs) in Northern Ireland.

WeBS Alerts assessments were undertaken by country and for the protected site network as a whole, as well as for individual sites. For Pochard, whilst overall winter numbers in the UK are half what they used to be, numbers at protected sites have declined at a comparatively slower rate, so that protected sites now hold up to 40% of the British wintering Pochard population, compared to just 15% in the 1970s and 1980s. In Northern Ireland, almost no Pochard now occur outside the protected areas. When interpreting site-focused Alerts, the wider context of regional and national trends helps identify whether there might be site-specific factors at play. See pages 20–21 for a summary by country of how protected wetlands are doing.



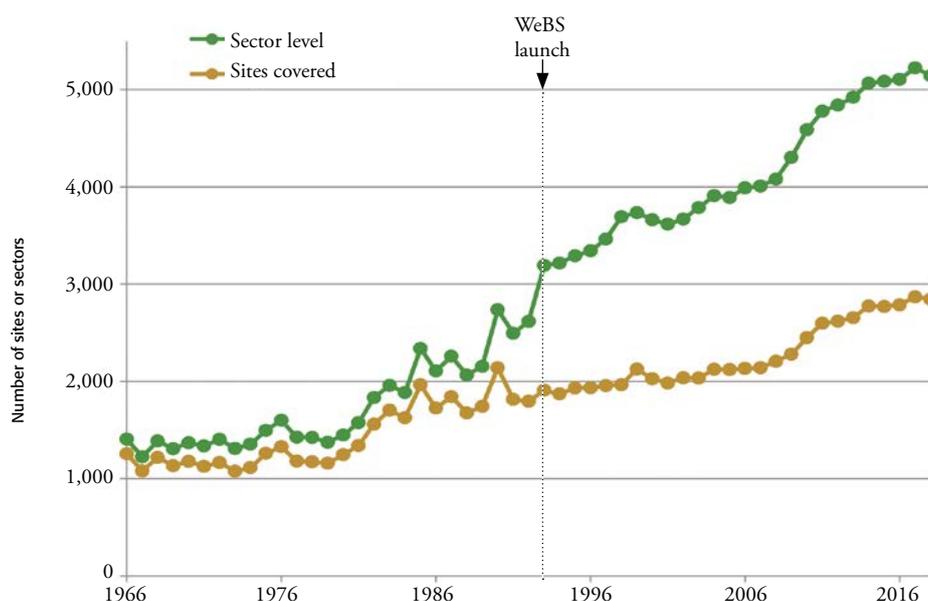
A potential site-specific pressure is coastal human disturbance; a recent study found that offshore refuges appear to benefit Turnstone (page 26). Another example of site-specific pressure is development at busy estuaries, such as Southampton Water (pages 34–35). At the other end of the scale, climate change is one of the biggest drivers of broad-scale changes in wintering waterbird populations and distributions. It is leading to short-stopping in the migration journeys of European White-fronted Goose (page 27) and Goldeneye (page 33) and may be influencing colonisation by egrets such as Cattle Egret (page 32). Understanding what is happening is vital to ensuring the protected area network is sufficient across the East Atlantic Flyway. A recent review of climate impacts on waterbirds summarised what we know so far and what we think may happen in the future (pages 24–25).

## WeBS Core Counts 2018/19 – in numbers

Core Counts were carried out at 5,145 WeBS sectors (count units) at 2,846 sites from July 2018 to June 2019.

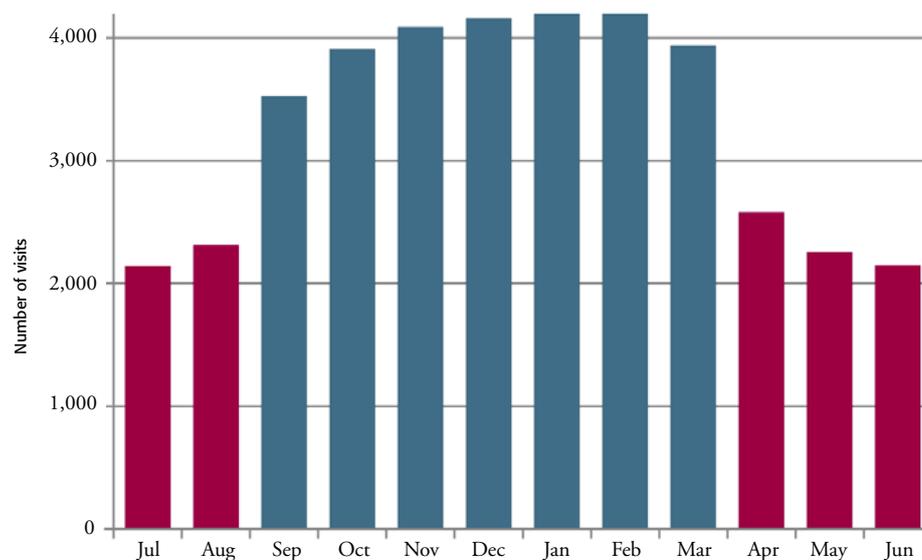
Not all Core Counts are linked to individual Counters in the WeBS Online database, but some are; 2,246 Counters named as the lead counter were associated with WeBS Core Count visits made in 2018/19. Including additional team members, the number of registered WeBS volunteers was 3,290.

There were 39,617 count visits, 71% in the core September–March period (blue bars on lower graph).



▲ Number of WeBS sites and sectors covered 1968/69–2018/19.

▼ Number of WeBS Core Count visits in 2018/19 by month.



### Core Count dates in 2018/19

2018	2019
15 July	20 January
12 August	17 February
9 September	24 March
14 October	21 April
11 November	19 May
9 December	16 June

## Goose Censuses

The status of some of the UK's native goose populations are reported through the WWT/JNCC/SNH Goose & Swan Monitoring Programme (GSMP).

Counts of Taiga Bean Goose are provided by the Bean Goose Action Group (Slamannan Plateau) and RSPB (Middle Yare Marshes). The Icelandic-breeding Goose Census, organised by WWT, covers Pink-

footed and Icelandic Greylag Goose. Counts of British Greylag are carried out at a few key sites in Scotland by Scottish Natural Heritage (SNH), 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 SNH, RSPB

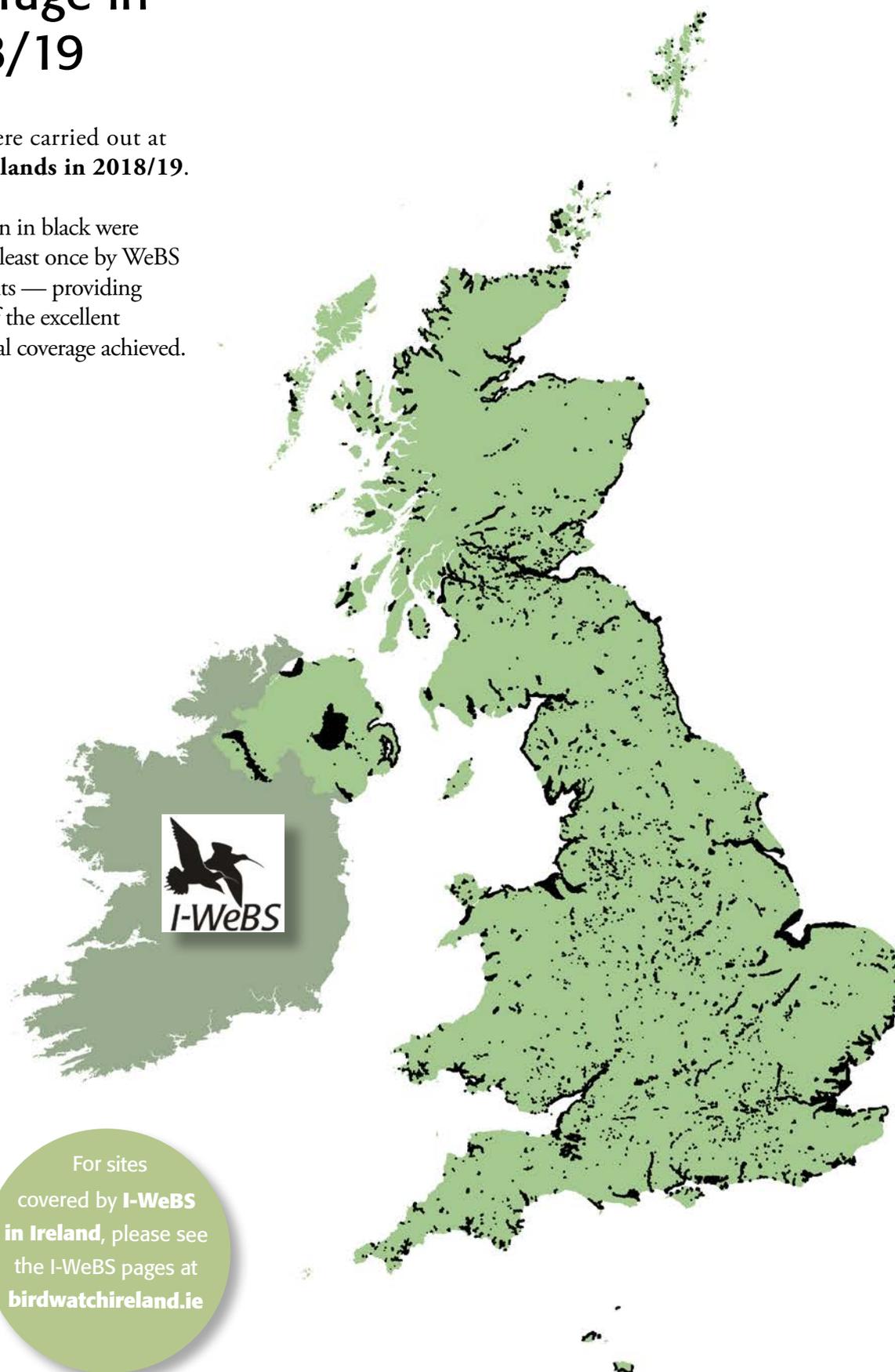
and volunteers, and a census of the Svalbard Barnacle Goose population is organised by WWT.

Results from goose surveys are described in more detail on the GSMP website at: <https://monitoring.wwt.org.uk/our-work/goose-swan-monitoring-programme/species-accounts>

# WeBS coverage in 2018/19

Counts were carried out at  
**2,846 wetlands in 2018/19.**

Areas shown in black were  
counted at least once by WeBS  
Core Counts — providing  
a picture of the excellent  
geographical coverage achieved.



For sites  
covered by **I-WeBS**  
**in Ireland**, please see  
the I-WeBS pages at  
**[birdwatchireland.ie](http://birdwatchireland.ie)**

# UK Low Tide Counts 2018/19



Seventeen UK estuaries were counted at low tide, generating important data about feeding areas.

The WeBS Low Tide Count scheme facilitates the collection of information about use of the UK's estuaries by waterbirds at low tide. The scheme has flourished since its inception in the winter of 1992/93, with all the major estuaries in the UK having been counted at least once since then. The scheme aims to monitor, assess and regularly update information on the relative importance of intertidal feeding areas of UK estuaries for wintering waterbirds, and in doing so complements information gathered on populations through the WeBS Core Counts.

Information collected at low tide represents an important contribution to the conservation of waterbirds, by providing supporting information for the management of UK Ramsar Sites and Special Protection Areas, other site designations, and whole estuary conservation plans. Numbers of waterbirds present in predefined sectors are counted. Most individual estuaries are counted at low tide once every six years, although on some sites more frequent counts are undertaken.

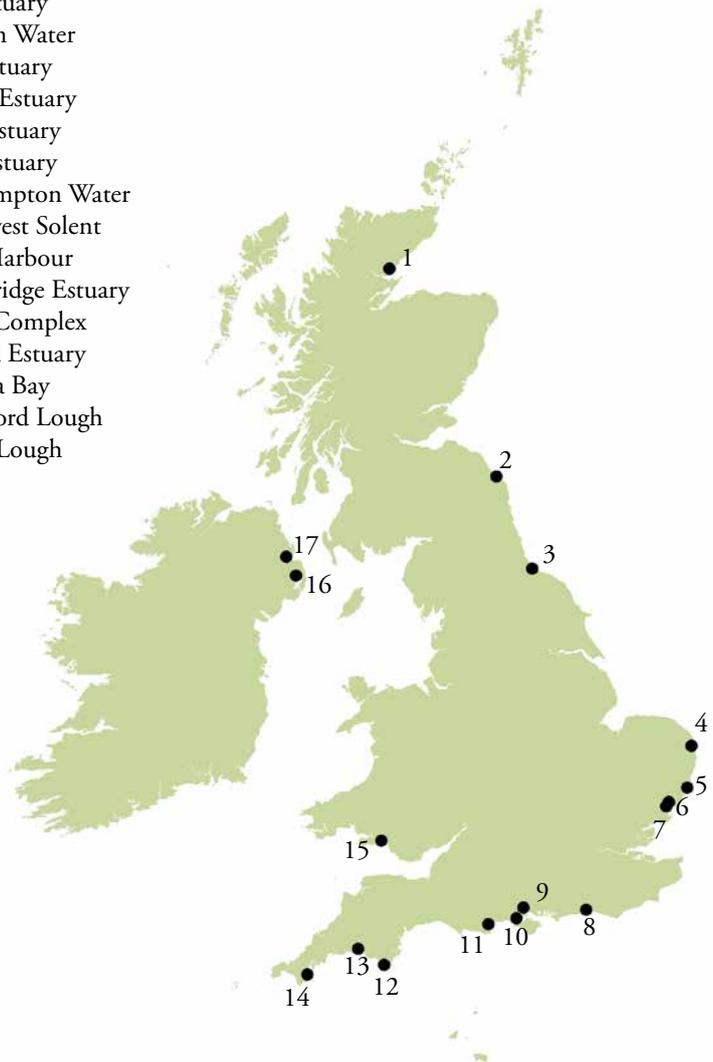
Further information about WeBS Low Tide Counts is available online via [www.bto.org/websreporting-lowtide](http://www.bto.org/websreporting-lowtide) including data summaries and dot density distribution maps for different estuaries and species. Dot density maps are now available for all species and years, including the facility to show any combination of site, species and year side by side for comparison. Presentation of WeBS low tide information typically takes two forms: (i) tabulated statistics of peak numbers and mean densities, and (ii) dot density maps to give a visual representation of species' foraging densities across a site. Dots do not represent the precise positions of

birds; they are assigned to habitat components proportionally and placed randomly within those areas. No information about distribution of birds at a finer scale than the count sector level should be inferred. For all maps on the online reporting interface, one dot is equivalent to one bird.

During 2018/19, WeBS Low Tide Counts were carried out at 17

estuaries. On several sites — Poole Harbour, Kingsbridge Estuary, Blyth Estuary (Suffolk), Tamar Complex and Helford Estuary, Core Counts are carried out annually at low tide and data feed into both schemes, allowing assessment of distributional changes. Results from the counts on Southampton Water are presented on pages 34–35 of this report.

- 1 – Loch Fleet
- 2 – Lindisfarne
- 3 – Tees Estuary
- 4 – Breydon Water
- 5 – Alde Estuary
- 6 – Orwell Estuary
- 7 – Stour Estuary
- 8 – Adur Estuary
- 9 – Southampton Water
- 10 – Northwest Solent
- 11 – Poole Harbour
- 12 – Kingsbridge Estuary
- 13 – Tamar Complex
- 14 – Helford Estuary
- 15 – Swansea Bay
- 16 – Strangford Lough
- 17 – Belfast Lough



▲ Estuaries counted as part of the WeBS Low Tide Count scheme in 2018/19.

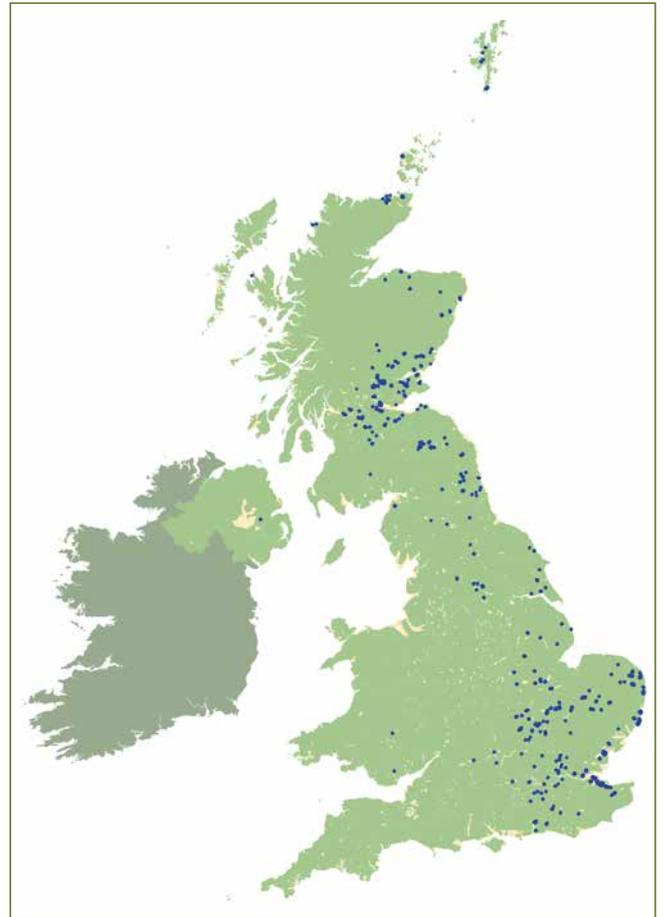
# 2018/19: A mild and dry winter

Weather and migration context for 2018/19.

July and August 2018 were warm with average or below average rainfall. The autumn weather was mixed, with several stormy periods but some settled periods also. Rainfall was slightly above average in many northern and western areas, but rainfall was below average in central and eastern areas.

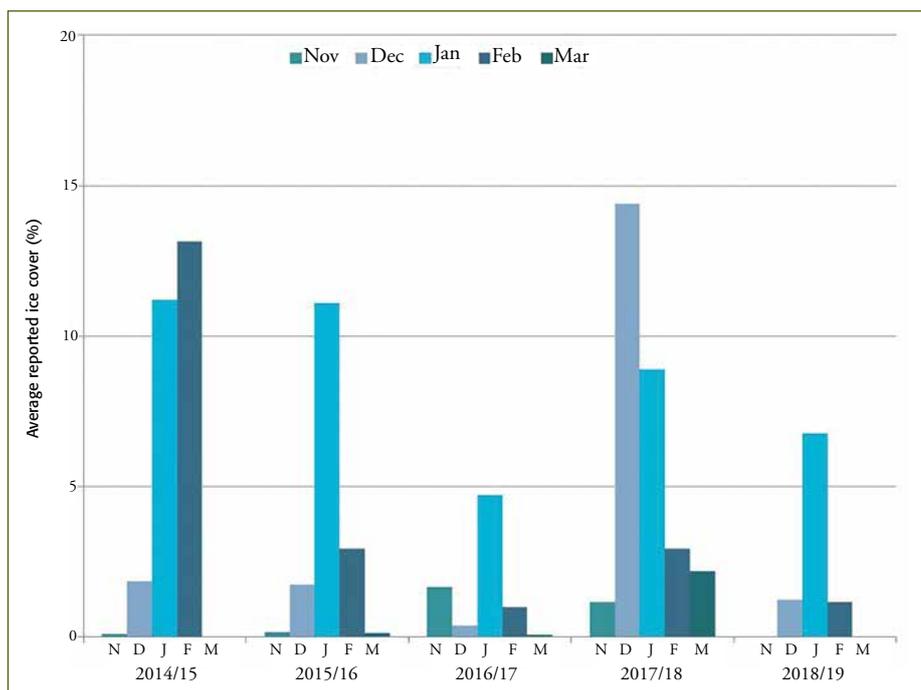
The winter was milder than average with a colder period at the end of January and beginning of February. This was reflected in ice cover reported by WeBS Counters, with the January Core Count on the 20<sup>th</sup> the only month to have significant ice reported, at a national average of 6.8%. This particularly affected sites in the east of Britain. Winter rainfall was below average overall, with January 2019 having only half the average rainfall. River flows were lower than normal across the whole country, apart from the far north of Scotland.

The 2019 spring was slightly warmer than average and rainfall was overall 105% of a typical spring, being slightly drier in the east and wetter in the west than usual. The autumn and winter weather was also milder than usual around the Baltic, likely shortening the time that many wildfowl species spent in the UK. For some species, such as Wigeon, this is likely to have driven reductions in the latest annual index value, which are determined by average numbers across September to March, despite the peak number present being similar to the previous year.



▲ WeBS sites counted between 17<sup>th</sup> and 23<sup>rd</sup> January. Dark blue indicates ice cover between 5–100%, with other WeBS sites counted in the period in yellow.

◀ Average WeBS sector ice cover for 2014/15–2018/19, as reported by Counters for the months November–March.



## SOURCES

Climate summaries from:  
[www.metoffice.gov.uk](http://www.metoffice.gov.uk) and  
[en.ilmatieteenlaitos.fi](http://en.ilmatieteenlaitos.fi)

Hydrological summaries from:  
[nrfa.ceh.ac.uk](http://nrfa.ceh.ac.uk)

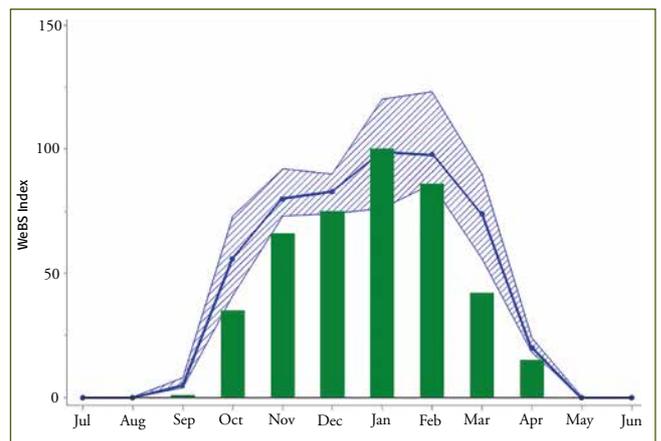
Arctic breeding from: [www.arcticbirds.net](http://www.arcticbirds.net)



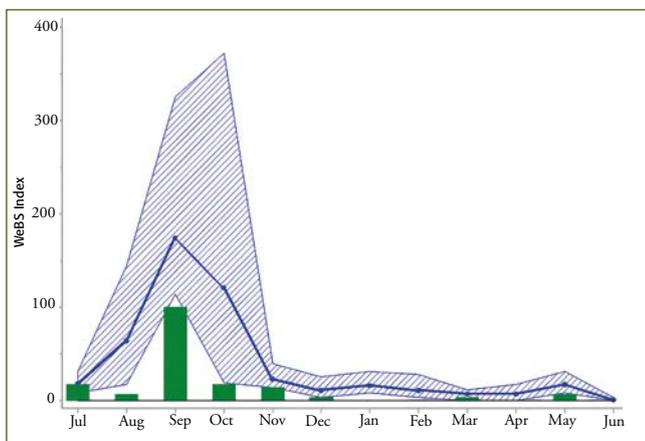
### THE 2018 ARCTIC BREEDING SEASON

The Arctic spring in 2018 was reported to be late in Greenland, but early to average at most Arctic stations further east. Summer temperatures were average or above average. Rodent numbers were reported as lower than average.

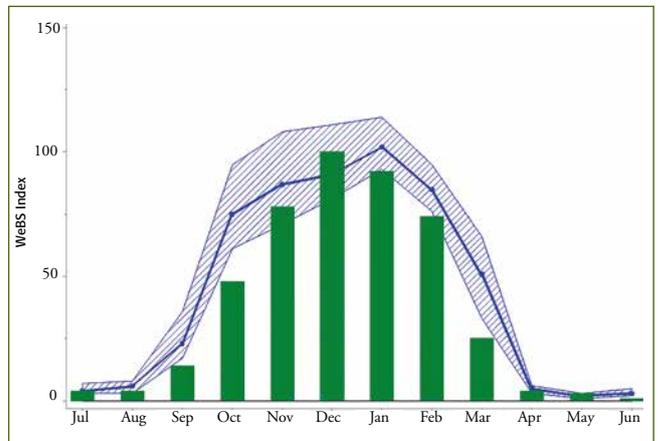
Most of the Russian research stations reported average numbers of breeding waders, although one station reported above average and another below average numbers. However, the Greenland research stations reported goose and wader numbers to be low with poor breeding success, due to the adverse spring weather there.



▲ The UK Dark-bellied Brent Goose monthly index plot, like that of Wigeon (below), suggests fewer birds present than usual outside the core winter period. Green bars = 2018/19; blue line/hatched area = previous five-year mean/range.



▲ The UK Little Stint month index plot shows the typical autumn peak of this species, with a smaller passage in the spring. Green bars = 2018/19; blue line/hatched area = previous five-year mean/range.



▲ The UK Wigeon month index plot shows that the number of birds present during the mid-winter was typical, but birds were late to arrive in autumn and fewer were present than typical in March. Green bars = 2018/19; blue line/hatched area = previous five-year mean/range.

# National trends

A concise summary of how the UK's most familiar waterbirds fared in 2018/19.

For all trend graphs see the online report:

[www.bto.org/webs-reporting](http://www.bto.org/webs-reporting)



Indices and smoothed indices are plotted in the WeBS Report Online for all waterbird species with sufficient data for the UK, Great Britain, Wales, Scotland, England and Northern Ireland. Annual species indices, smoothed indices, and 25- and 10-year trends are available under an Open Government Licence from [www.bto.org/webs-annual-report](http://www.bto.org/webs-annual-report) as a spreadsheet download. Table 1 contains 25- and 10-year trends for the most abundant waterbird species for the UK and Table 2 contains the equivalent trends for Scotland, Northern Ireland, England and Wales. For further detail, please refer to the WeBS Report Online and spreadsheet download.

## GEESE & SWANS

The Whooper Swan index again reached its highest ever value, while Bewick's Swan remains at historically low levels. Mute Swan numbers have increased gently over the past five years after a minor dip, with no overall change since the turn of the century.

Canada Goose numbers reached a record high, thanks to continued range expansion in Scotland, and the Egyptian Goose index was at its second highest level, slightly under 2017/18. Dark-bellied Brent Goose numbers dropped by 5% on the previous year.

## DUCKS

Despite negative 10- and 25-year trends, Shelduck is showing signs of recovery, with the index at its highest value since 2010/11. Conversely the Wigeon 25-year trend is +12% but the 2018/19 index value was notably low, at levels last recorded in 1992/93. This is likely to be weather related with the population staying for a shorter time (see pages 8–9).

Declining species Pochard, Goldeneye, Red-breasted Merganser and Mallard had slightly improved index values on the previous year but their 25-year trends remain at -35% or worse.

The Mandarin Duck index was again at record levels. The Gadwall index was at its second-highest after 2011/12, with a 25-year trend of +130%.

## WADERS

The Turnstone index was at its lowest ever value, just below that of 1974/75 at the start of the time series, with a 10-year trend of -25% and a 25-year trend of -43%. The monthly index for 2018/19 was below the five-year mean in every month. Knot numbers were also low, with the index at its lowest since 1982/83, although the decline is more gentle in this species with a 10-year trend of -10% and 25-year trend of -20%.

The Curlew index increased compared to the previous winter, but the 25 year-trend worsened to -33%. The Purple Sandpiper index showed a slight improvement, with its 10-year trend now -6% and its 25-year trend -50%, although the improvement in the latter trend masks an earlier decline from a peak in the 1980s.

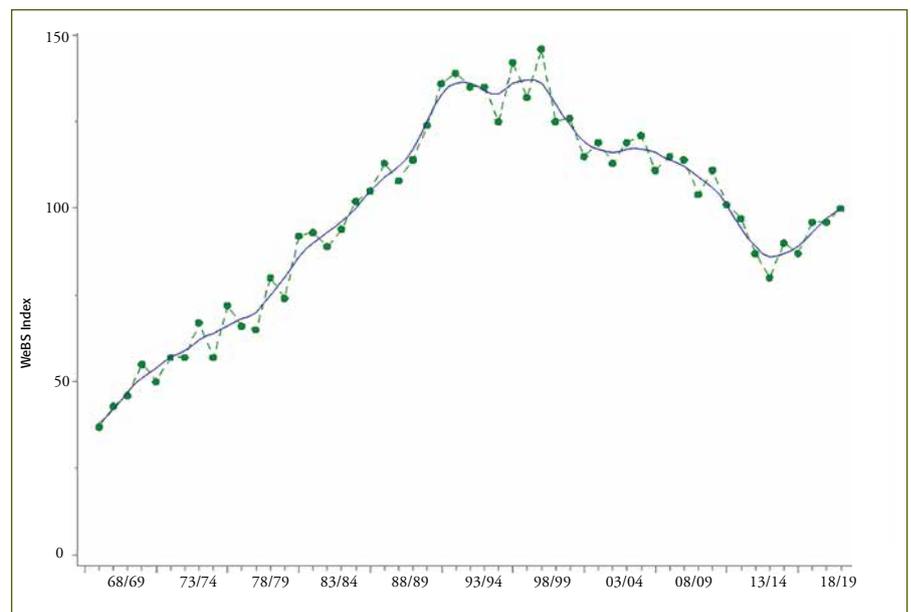
## GULLS

Black-headed Gull numbers were similar to the previous year, although the species' 10-year trend is -19%. Mediterranean Gull numbers continue to increase with a record index high and a 10-year trend of +294%.

Caution is advised when interpreting gull results as the WeBS Core Count methodology is not ideal for this group, so trends, whilst available online, are not included in Table 1.

## OTHER WATERBIRDS

Moorhen (10-year trend -26%) and Coot (10-year trend -20%) both had slightly improved index values for 2018/19 compared to the previous year. There were record index values for Crane, Spoonbill and Great White Egret. Cattle Egret numbers were sufficient to calculate an index for the first time (see page 32).



▲ WeBS trend for Shelduck in the UK.

Green dots = annual index; blue line = smoothed trend.

**Table 1** Population trends of non-breeding waterbirds in the UK.

Species/population	25-year trend (1992/93– 2017/18)	10-year trend (2007/08– 2017/18)	Species/population	25-year trend (1992/93– 2017/18)	10-year trend (2007/08– 2017/18)
— Dark-bellied Brent Goose	-23	5	▼ Scaup	-37	-59
— Svalbard Light-b. Brent Goose	61	-20	n/a Eider*	-26	-11
▼ Canadian Light b. Brent Goose	61	7	— Goldeneye	-62	-31
n/a Canada Goose	64	13	— Goosander	-4	20
n/a Naturalised Barnacle Goose	407	129	— Red-breasted Merganser	-42	-22
▲ Greenland Barnacle Goose	126	24	— Little Grebe	94	-1
▲ Svalbard Barnacle Goose	206	51	— Great Crested Grebe	-3	-15
n/a British/Irish Greylag Goose	163	27	▼ Little Egret	n/a	39
▼ Icelandic Greylag Goose	-6	1	▼ Cormorant	56	25
▲ Pink-footed Goose	124	67	— Moorhen	n/a	-26
▼ Greenland White-fronted Goose	-29	-11	— Coot	-7	-20
— European White-fronted Goose	-70	-14	— Oystercatcher	-23	-12
n/a Mute Swan	31	-2	▲ Avocet	326	24
▼ Bewick's Swan	-83	-71	▼ Lapwing	-34	-20
▲ Whooper Swan	210	43	— Golden Plover	2	-31
n/a Egyptian Goose	n/a	122	▼ Grey Plover	-36	-20
— Shelduck	-29	-13	▼ Ringed Plover	-52	-23
n/a Mandarin	n/a	54	▼ Curlew	-33	-21
▲ Shoveler	68	13	▲ Bar-tailed Godwit	-17	8
▲ Gadwall	130	16	▲ Black-tailed Godwit	228	31
▼ Wigeon	12	-3	▲ Turnstone	-43	-25
— Mallard	-35	-12	— Knot	-20	-10
— Pintail	-24	-29	— Sanderling	36	-7
▲ Teal	34	14	— Dunlin	-41	0
▼ Pochard	-69	-42	▼ Purple Sandpiper	-50	-6
▼ Tufted Duck	-4	0	▼ Redshank	-17	-9

Trends are % changes of smoothed population index values for the most abundant waterbirds in the UK. \*Eider trends exclude birds on Shetland (of *faeroensis* race).

The longer term smoothed trend refers to the 25-year period 1992/93 to 2017/18. The shorter term smoothed trend refers to the 10-year period 2007/08 to 2017/18. Note, it is customary to truncate the final year when reporting smoothed trends, so whilst data from 2018/19 have been used in creating the smoothed index values, the trend period assessed and reported is until 2017/18.

Preceding each species is an indication of flyway population trend, based on: Nagy, S. & Langendoen, T. 2018. *Seventh AEWA Report on the Conservation Status of Migratory Waterbirds in the Agreement Area*. Wetlands Int., NL. ▲ increasing, ▼ decreasing, — stable, n/a not applicable as population is non-native (Canada Goose, Egyptian Goose, Mandarin) or non-migratory (Mute Swan, British Greylag Goose, Naturalised Barnacle Goose and Eider\*).

Trends use WeBS data except for Pink-footed Goose, Greenland White-fronted Goose, Icelandic Greylag Goose, Greenland Barnacle Goose, Svalbard Barnacle Goose and Canadian Light-bellied Brent Goose, for which dedicated censuses are undertaken (see page 5).



Curlew down 33% since 1992/93.

**Table 2** Population trends of non-breeding waterbirds in the constituent countries.

Species/population	Scotland		Northern Ireland		England		Wales	
	25-year trend (1992/93–2017/18)	10-year trend (2007/08–2017/18)						
Dark-bellied Brent Goose					-23	5	-57	-43
Svalbard Light-bellied Brent Goose	1,233	6			56	-20		
Canadian Light bellied Brent Goose	1,629	210	47	2	10,500	266	2,925	105
Canada Goose	673	89	4	28	44	9	631	10
Naturalised Barnacle Goose			23	-53	389	145	14,200	853
Greenland Barnacle Goose	75	-4						
Svalbard Barnacle Goose	206	51						
British/Irish Greylag Goose	3,467	24			170	28	144	-9
Icelandic Greylag Goose	-6	1						
Pink-footed Goose	100	111			231	18		
Greenland White-fronted Goose	-29	-12						-51
European White-fronted Goose					-69	-14	233	-9
Mute Swan	17	8	-29	14	40	-5	127	-10
Bewick's Swan			-100	-100	-83	-71	-75	-79
Whooper Swan	44	16	82	22	425	56	67	-17
Egyptian Goose						122		
Shelduck	20	6	33	-20	-37	-17	-5	2
Mandarin						50		
Shoveler	-43	11	-20	20	75	15	75	-23
Gadwall	242	89	-19	67	130	14	368	147
Wigeon	-4	3	-40	4	17	-4	53	7
Mallard	-45	-14	-23	-8	-33	-11	-36	-14
Pintail	102	47	147	18	-40	-36	28	-52
Teal	66	36	45	35	31	11	15	14
Pochard	-76	-61	-79	-35	-60	-40	-85	-69
Tufted Duck	1	7	-72	-7	27	0	23	17
Scaup	-11	-23	-32	-74	-88	-56	-58	93
Eider *	-26	-25	190	-6	-45	40	-34	-28
Goldeneye	-42	-5	-91	-72	-40	-26	-46	-26
Goosander	-10	36			-6	7	152	57
Red-breasted Merganser	-43	-4	-36	-28	-43	-33	-38	-39
Little Grebe	226	16	15	24	94	-7	108	-4
Great Crested Grebe	-37	-17	-55	-65	8	-6	123	7
Little Egret		4,250		685		38		15
Cormorant	-24	-7	23	-25	82	37	88	26
Moorhen		-5		0		-28		-3
Coot	-35	11	-37	83	-2	-23	-25	-27
Oystercatcher	-29	-6	-14	-20	-28	-14	-1	-7
Avocet					326	24		
Lapwing	-61	-33	-64	-32	-32	-19	11	-11
Golden Plover	-26	-18	-50	-51	13	-30	-2	-36
Grey Plover	-55	-53	-27	-26	-35	-18	-53	-48
Ringed Plover	-23	10	-52	-11	-58	-33	-60	-13
Curlew	-28	-14	-28	-18	-34	-24	-42	-13
Bar-tailed Godwit	-53	-15	49	61	-13	9	-40	16
Black-tailed Godwit	518	183	662	130	197	26	171	17
Turnstone	-41	-27	-59	-49	-40	-21	-25	10
Knot	-25	6	-64	-60	-20	-10	47	-46
Sanderling	252	65	2,175	69	19	-8	-6	-43
Dunlin	-32	26	-46	0	-41	-1	-38	-6
Purple Sandpiper	22	-14	-64	-59	-64	17		
Redshank	-18	0	-33	-38	-20	-11	13	24

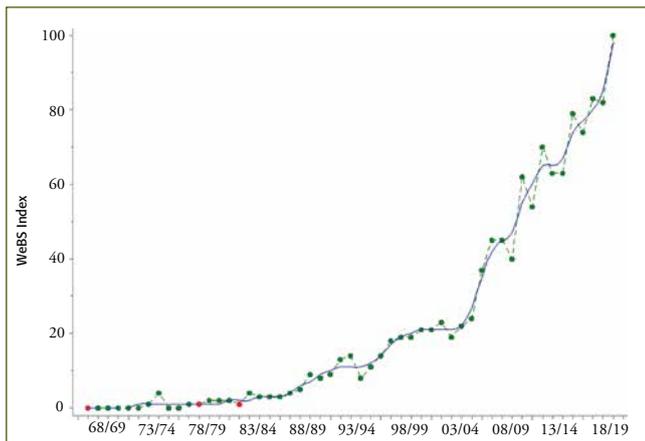
Trends are % changes of smoothed population index values for the most abundant waterbirds in the UK; note these may only be present in small numbers in some countries. \*Eider trends exclude birds on Shetland (of *faeroensis* race).

The longer term smoothed trend refers to the 25-year period 1992/93 to 2017/18. The shorter term smoothed trend refers to the 10-year period 2007/08 to 2017/18. Note, it is customary to truncate the final year when reporting smoothed trends, so whilst data from 2018/19 have been used in creating the smoothed index values, the trend period assessed and reported is until 2017/18.

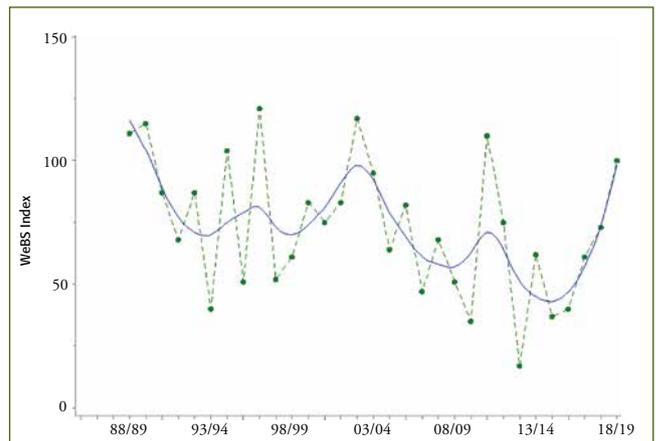
Trends use WeBS data except for Pink-footed Goose, Greenland White-fronted Goose, Icelandic Greylag Goose, Greenland Barnacle Goose, Svalbard Barnacle Goose and Canadian Light-bellied Brent Goose, for which dedicated censuses are undertaken (see page 5).



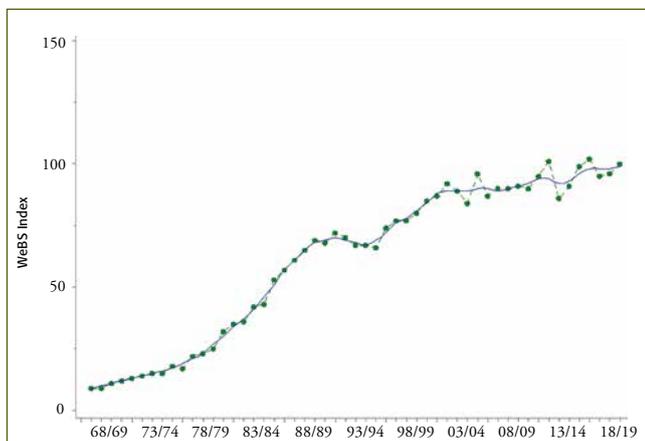
Canada Goose is currently increasing most rapidly in Scotland, up 89% since 2007/08.



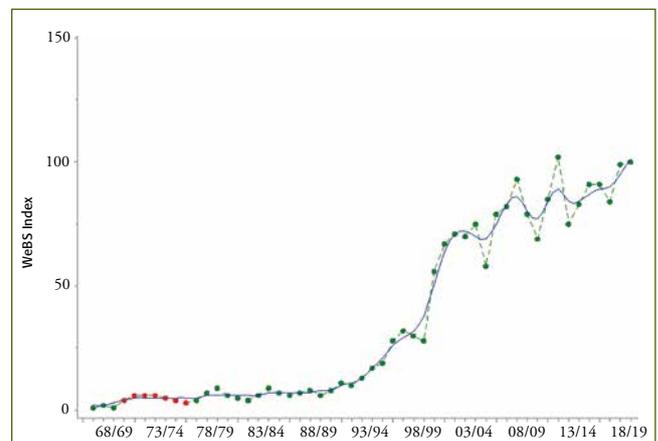
▲ **WeBS trend for Canada Goose in Scotland.**  
Green dots = annual index; red dots = sparse data; blue line = smoothed trend.



▲ **WeBS trend for Canada Goose in Northern Ireland.**  
Green dots = annual index; blue line = smoothed trend.



▲ **WeBS trend for Canada Goose in England.**  
Green dots = annual index; blue line = smoothed trend.



▲ **WeBS trend for Canada Goose in Wales.**  
Green dots = annual index; red dots = sparse data; blue line = smoothed trend.

# Largest waterbird aggregations



The UK's wetlands support millions of waterbirds each winter.

WeBS site totals indicate which sites support the largest aggregations of waterbirds each year. Understanding precisely how many individual birds use a site is clearly very difficult to ascertain from counts alone, as many sites are used by migrants on passage and consequently there can be high turnover rates.

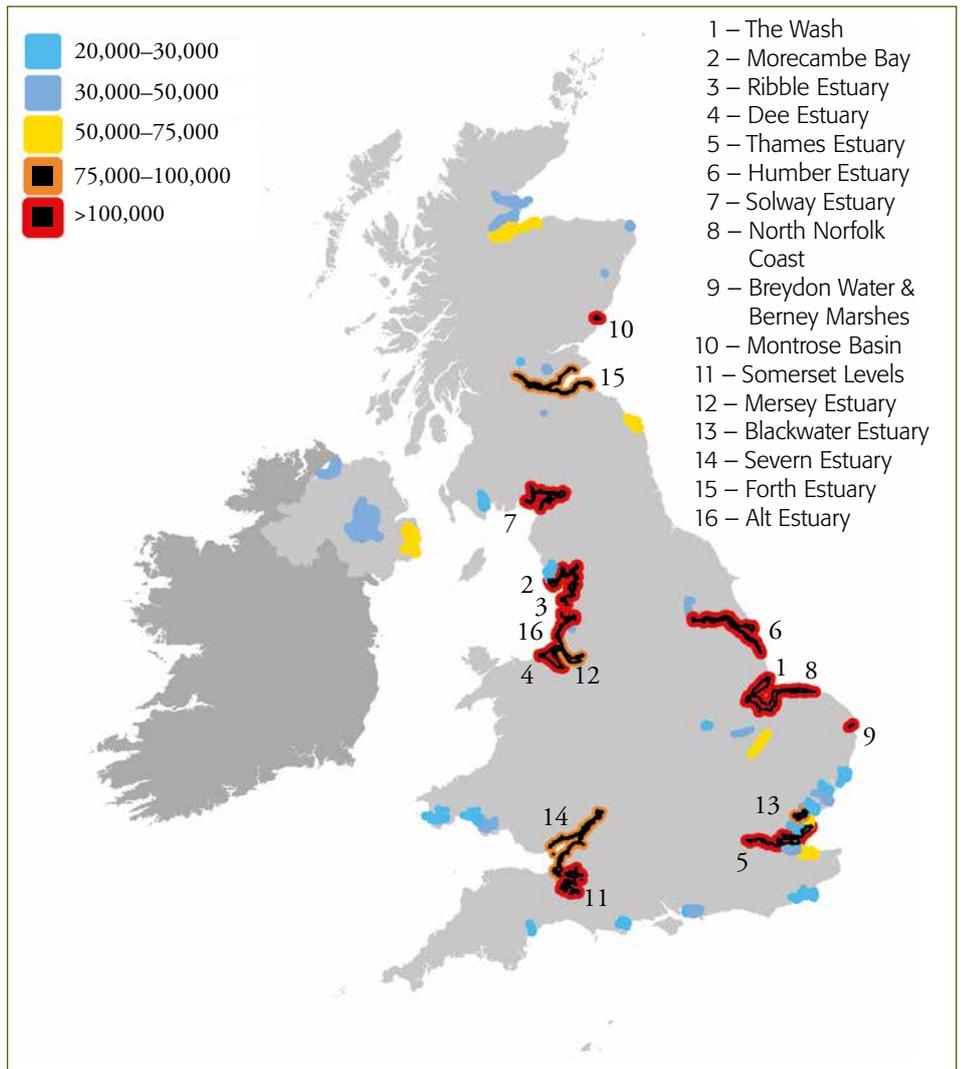
Table 3 lists the Principal Sites for non-breeding waterbirds. The totals are the summed counted maxima for each species during the course of the WeBS year (missing counts are not imputed; supplementary counts are included). Sites with a five-year average of 20,000+ waterbirds are listed. Non-native species (e.g. Canada Goose and Mandarin) have been excluded from the totals. Although an important component of a site's waterbird fauna, gulls and terns are also excluded, since the recording of them during WeBS Counts is optional.

In addition to Table 3, it is possible to view the totals for all WeBS sites via the WeBS Online Report 'Site Totals' tab. In the interactive table of sites, non-native species, gulls and terns and supplementary counts can be included or omitted as desired by the user. By default only the major sites with over 1,000 birds are listed, but the filter can be changed to all sites in a county or country. Selecting a site will show the species for which that site holds more than the national or international importance thresholds.

### SITE FOCUS

A record number of 11 sites have a five-year average in excess of 100,000 birds. 2018/19 saw a lot of changes in the order of the principal sites table, including in the top 10 sites, with the Dee Estuary reclaiming fourth place from the Thames and the Humber replacing the Solway in sixth place, while the Montrose Basin and Somerset Levels both climbed above the Mersey Estuary into tenth and eleventh place respectively.

Location	2014/15	2015/16	2016/17	2017/18	2018/19	Moving 5yr avg	54/15 10/19 5yr avg
The Wash	343932	345348	417457	382942	417811	381488	381488
Morecambe Bay	171868	184518	205594	188190	207827	191293	191293
Ribble Estuary	171680	161500	179126	179056	235700	155445	155445
Dee Estuary (England and Wales)	136597	148276	168409	177782	150498	155494	155494
Thames Estuary	173282	141643	133602	117930	150489	143257	143257
Humber Estuary	152272	137203	142702	140007	111113	141005	141005
Solway Estuary	153653	127250	150407	125597	132281	139451	139451
North Norfolk Coast	121292	108297	150438	106407	107972	118454	118454
Breydon Water and Berney Marshes	91413	114826	102553	99929	97272	101180	101180
Montrose Basin	90996	101536	112019	96609	94422	100551	100551
Somerset Levels	802480	117385	89765	73651	117165	100029	100029
Mersey Estuary	85422	107271	111891	95147	85817	97109	97109
Blackwater Estuary	91090	82988	102847	80436	80714	87815	87815
Severn Estuary	71524	92120	98844	80631	84681	88336	88336
Forth Estuary	77236	79917	80900	95562	68491	80077	80077
Alt Estuary	73792	87346	83838	71912	85200	78417	78417
Ouse Washes	75962	87704	66172	42281	95067	73225	73225
Inner Mersey and Beaulieu Fids	43282	59748	75213	65682	67816	62390	62390
Suvalle Estuary	29673	61956	68040	63828	73273	58514	58514
Strangford Lough	46294	60790	62667	63703	66313	67957	67957
Dunlop Flats	48440	62344	83093	64170	43932	53999	53999
Lindisfarne	44046	41831	58465	69758	49956	52518	52518
Shaw Estuary	52899	54293	42700	37933	53091	48157	48157
Chichester Harbour	50297	42242	48844	47601	39082	45191	45191



▲ Top – Screenshot of Sites Totals page on the Online Report.  
 Bottom – Sites with the largest waterbird aggregations in the UK.

**Table 3** Principal Sites for non-breeding waterbirds in the UK.

Site	2014/15	2015/16	2016/17	2017/18	2018/19	5-year mean
The Wash	343,932	345,348	417,457	382,842	417,911	381,498
Morecambe Bay	171,968	184,518	205,594	186,760	207,627	191,293
Ribble Estuary	171,680	161,580	179,128	179,058	235,780	185,445
Dee Estuary (England and Wales)	136,507	146,276	166,409	177,782	150,498	155,494
Thames Estuary	173,262	141,643	133,602	117,310	150,469	143,257
Humber Estuary	113,202	130,628	165,763	149,648	141,703	140,188
Solway Estuary	153,623	127,250	158,407	125,597	132,381	139,451
North Norfolk Coast	121,202	106,257	150,436	106,407	107,972	118,454
Breydon Water and Berney Marshes	91,413	114,626	102,553	99,939	97,272	101,160
Montrose Basin	98,098	101,538	112,010	96,689	94,422	100,551
Somerset Levels	102,680	117,885	88,765	73,651	117,165	100,029
Mersey Estuary	85,422	107,271	111,891	95,147	85,817	97,109
Blackwater Estuary	91,090	82,988	102,847	80,438	80,714	87,615
Severn Estuary	71,524	92,120	98,844	86,831	84,861	86,836
Forth Estuary	77,236	79,917	80,680	95,562	68,491	80,377
Alt Estuary	73,792	87,346	83,838	71,912	65,200	76,417
Ouse Washes	75,902	87,704	65,172	42,281	95,067	73,225
Inner Moray and Beaully Firths	43,292	59,748	75,213	65,882	67,818	62,390
Swale Estuary	29,573	61,058	66,040	62,628	73,273	58,514
Strangford Lough	46,204	60,700	62,867	53,703	66,313	57,957
Dengie Flats	46,460	62,344	63,093	54,170	43,932	53,999
Lindisfarne	44,048	41,831	59,468	69,758	48,986	52,818
Stour Estuary	52,699	54,283	42,780	37,933	53,091	48,157
Chichester Harbour	50,207	42,242	46,844	47,601	39,062	45,191
Hamford Water	52,570	46,142	49,617	35,125	42,119	45,114
Cromarty Firth	36,981	43,413	56,092	44,333	39,037	43,971
Loughs Neagh and Beg	49,043	38,345	41,980	35,781	52,197	43,469
Burry Inlet	47,103	44,265	33,695	48,066	38,050	42,235
Loch of Skene	50,649	33,349	35,969	29,724	57,377	41,413
Loch of Strathbeg	73,013	43,837	41,352	19,445	23,170	40,163
West Water Reservoir	29,600	83,148	15,300	48,414	24,204	40,133
Loch Leven	35,861	34,530	39,973	44,812	44,622	39,959
WWT Martin Mere	31,340	45,859	44,712	44,323	25,988	38,444
Nene Washes	26,037	34,682	42,795	50,823	31,918	37,251
Medway Estuary	22,481	32,618	42,499	36,274	43,544	35,483
Lower Derwent Ings	34,686	35,647	41,267	36,748	29,023	35,474
Abberton Reservoir	37,613	32,911	29,780	27,400	45,478	34,636
Lough Foyle	30,187	32,046	35,317	32,005	36,477	33,206
Dornoch Firth	30,383	24,851	36,479	37,470	29,920	31,820
Alde Estuary	36,646	25,774	29,810	25,071	22,393	27,938
Langstone Harbour	27,957	29,091	31,534	25,775	24,324	27,736
Crouch-Roach Estuary	29,958	24,311	30,337	25,620	26,988	27,442
Carsebreck and Rhynd Lochs	25,265	26,841	22,806	31,218	26,576	26,541
Dungeness and Rye Bay	25,432	25,444	26,669	24,958	24,969	25,494
Duddon Estuary	25,395	19,473	27,634	26,461	23,218	24,436
Poole Harbour	24,692	21,329	26,184	24,215	25,688	24,421
Colne Estuary	41,136	23,525	16,507	20,022	15,379	23,313
Cleddau Estuary	16,414	20,959	30,765	22,936	24,833	23,181
Exe Estuary	22,368	24,806	23,930	22,823	21,626	23,110
Wigtown Bay	20,406	21,843	22,228	19,451	26,828	22,151
Carmarthen Bay	30,646	20,408	19,739	19,443	19,976	22,042
Rutland Water	18,537	22,521	24,274	21,674	21,395	21,680
Orwell Estuary	26,121	21,581	20,329	15,727	19,333	20,618

- Totals are the sum of species maxima during the WeBS year at each site, using data from all months. This summary does not account for missed visits or reduced coverage.
- Some totals may differ slightly from those published in previous annual WeBS reports due to late or amended data.
- Non-native species (such as Canada Goose and Mandarin), are excluded, as are gulls and terns due to incomplete coverage.
- A more comprehensive table showing all sites is available online via: [www.bto.org/webs-reporting-site-totals](http://www.bto.org/webs-reporting-site-totals)

# WeBS Alerts



Waterbird trends on the UK's protected sites network.

WeBS Alerts use WeBS data to assess the performance of protected sites that have one or more non-breeding waterbird 'features', *i.e.* the site has been recognised for being important to particular waterbird species during winter or passage periods. WeBS Alerts are a separate Official Statistic to the annual WeBS results, and were published in 2019 with assessments up to 2016/17 calculated from the 2017/18 dataset.

The Alerts process assesses changes in numbers over short-, medium- and long-term periods (five, 10 and 25 years respectively). For SPAs, a fourth since-baseline assessment is made; the baseline time period varies between sites (this is the reference time period used by government to assess site performance).

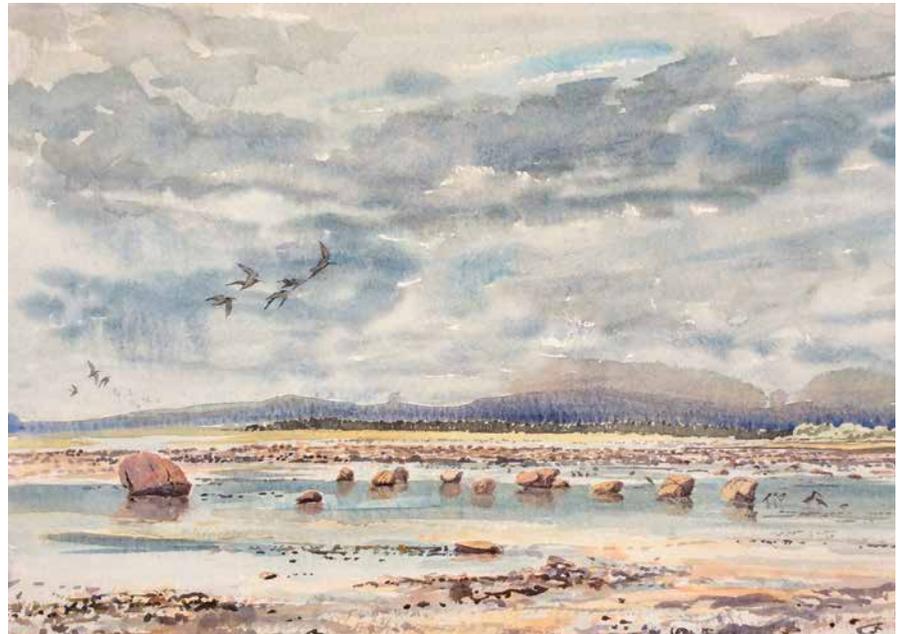
The change is calculated by smoothed trends fitted through site species indices to iron out temporary fluctuations, for example caused by the severity of a single winter. Declines of between 25% and 50% over the period trigger Medium Alerts, which are flagged in amber, and declines of greater than 50% trigger High Alerts, which are flagged in red.

## WEALTH OF DATA

The 2019 report contains results for 84 SPAs, 206 SSSIs and 18 ASSIs. There are also assessments for Northern Ireland, Great Britain, England, Wales, Scotland, the relevant Great Britain SPA suite and the relevant Northern Ireland SPA suite for 49 species or species populations. In total 19,539 species site, suite and country trends for the three (four for SPAs) time periods were calculated, triggering 2,530 Alerts for site features or regions.

## INTERPRETATION

For SPA features, the WeBS Report Online contains site-species accounts which describe the site results in



the context of the wider region and country. Although it is not the aim of the report to suggest drivers of change underpinning any given Alerts, where possible, comparison with regional and national trends are used to suggest whether such changes are likely to be responses to local pressures (which may be addressed by site management) or broader-scale changes (for example redistribution at regional or national levels in response to climate change).

Trends of non-feature species on each site were also assessed and are tabulated below the species feature table for information, but any declines in these non-feature species do not trigger formal Alerts.

## SPA SUITE

Long-term (up to 25 years) Alerts were triggered for the whole suite of SPAs in Great Britain for 14 of 44 species and for the Northern Ireland suite for nine of 43 species. Of these, High Alerts were triggered for the Great Britain suite of SPAs for Bewick's Swan, Pintail, Long-tailed Duck, Goosander and Red-breasted

Merganser and for the Northern Ireland suite of SPAs for Bewick's Swan, Pochard, Tufted Duck, Goldeneye, Golden Plover, Turnstone and Knot. Over the short-term, High Alerts were triggered for the Great Britain suite of SPAs for Bewick's Swan and European White-fronted Goose, and for the Northern Ireland suite of SPAs for Bewick's Swan and Goldeneye. Climate related short-stopping on the Continent is known to be an important factor for some of these species.

## FIND OUT MORE

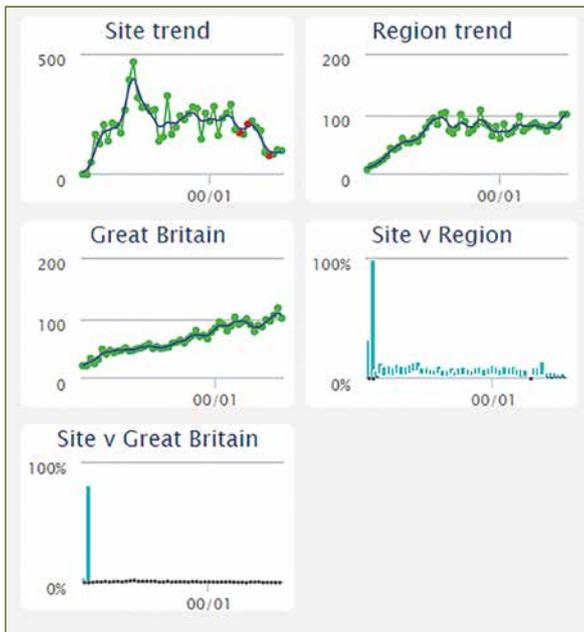
**Woodward, I.D., Frost, T.M., Hammond, M.J., & Austin, G.E.** 2019. *Wetland Bird Survey Alerts 2016/2017: Changes in numbers of wintering waterbirds in the Constituent Countries of the United Kingdom, Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs) and Areas of Special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

Alerts status for designated features								
Species	Info	First Winter	Ref Winter	Short-term % Δ	Med-term % Δ	Long-term % Δ	Baseline Winter	% Δ since baseline
Shoveler	-	91/92	16/17	-51	-57	-57	95/96	-64
Gadwall	-	91/92	16/17	-27	-40	94	95/96	224
Bittern	1	-	-	-	-	-	94/95	-

Percentage change for non-features							
Species	Info	First Winter	Ref Winter	Short-term % Δ	Med-term % Δ	Long-term % Δ	
Mute Swan	-	91/92	16/17	-37	-52	63	
Mallard	-	91/92	16/17	-14	-14	-62	
Teal	-	91/92	16/17	-61	-64	-54	
Pochard	-	91/92	16/17	-39	-44	-69	
Tufted Duck	-	91/92	16/17	1	10	-16	
Great Crested Grebe	-	91/92	16/17	-11	-50	-47	
Grey Heron	-	94/95	16/17	-26	-68	-81	
Cormorant	-	91/92	16/17	-41	-59	136	
Coot	-	91/92	16/17	1	-15	-5	
Waterbird assemblage	-	91/92	16/17	-11	-21	-18	

▲ Example site Alerts table, for Lee Valley SPA. Alerts are only issued for designated features, indicated with red and amber, but percentage change is also given for other species where possible. Here two dabbling ducks, Shoveler and Gadwall, have Alerts issued for various time periods. Non-feature Teal shows similar declines at this site.

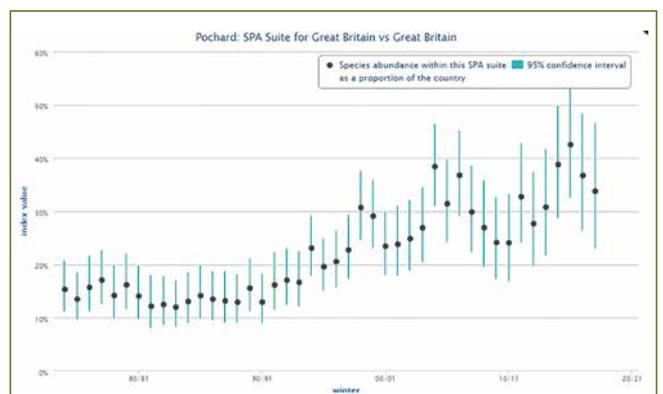


### Species accounts for this site

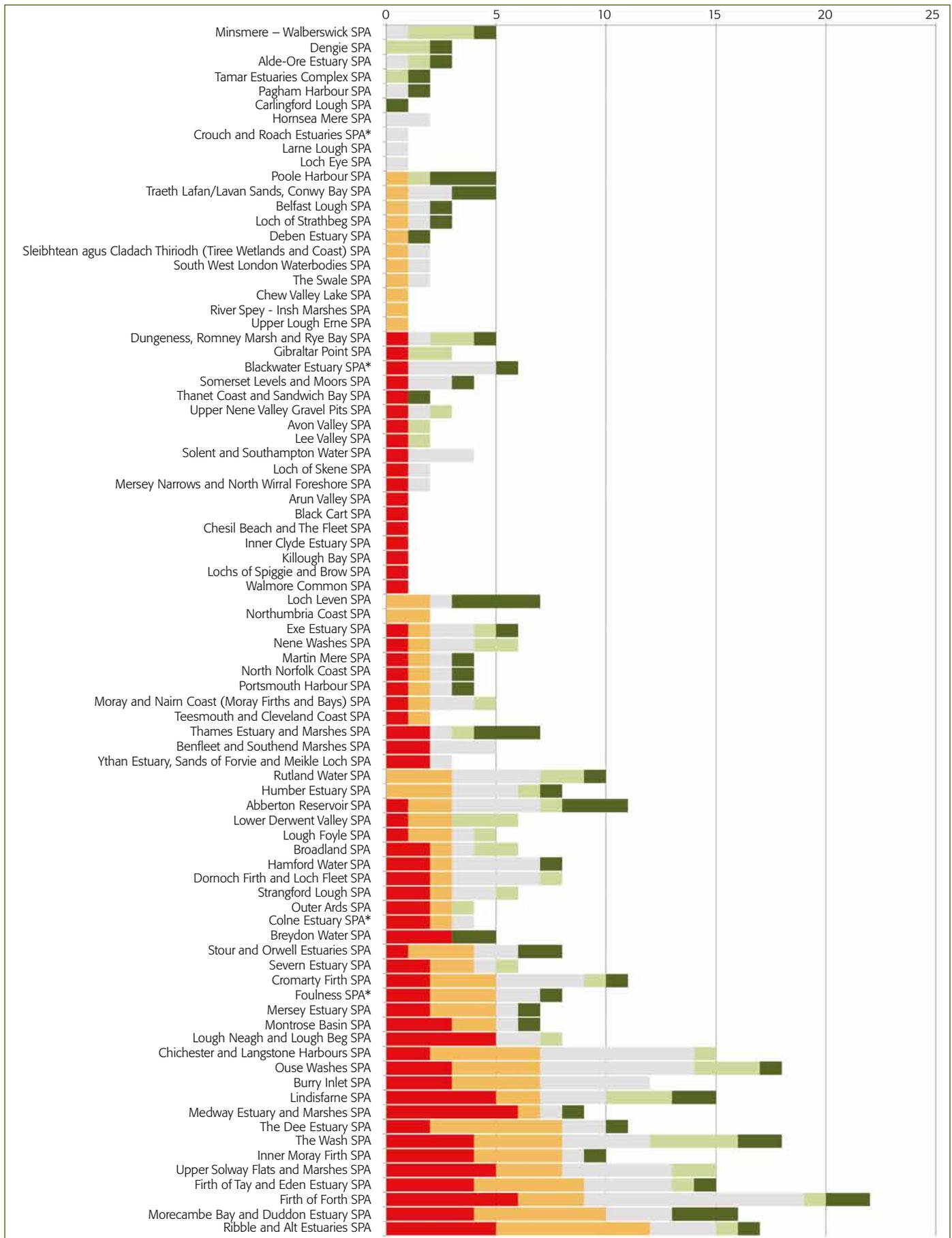
Shoveler ▼

Numbers of Shoveler over-wintering on Lee Valley SPA have been decreasing in the short-term having previously been relatively stable. This decline has been of sufficient magnitude to trigger Alerts for the long-, medium and short-term, and the period since baseline. Numbers of this species over-wintering within Thames Region have been stable in the long-term having previously increased. Numbers of this species over-wintering in Great Britain have been increasing long term. The trend on the site does not appear to be tracking that of the either the region or the British trend. The declining proportion of the regional numbers supported by this site suggest that site-specific pressures may be affecting this species. In conclusion, the contrast between the declining site trend and both the regional and British trends suggests that declining numbers underpinning these Alerts are most likely due to site-specific pressures.

▲ Example site species interpretation, for Shoveler at Lee Valley SPA. The plots (left) show the declining site trend that has triggered Alerts at the site does not match the region or country trend, suggesting there might be site-specific pressures. Text on the page interprets the plots (right).



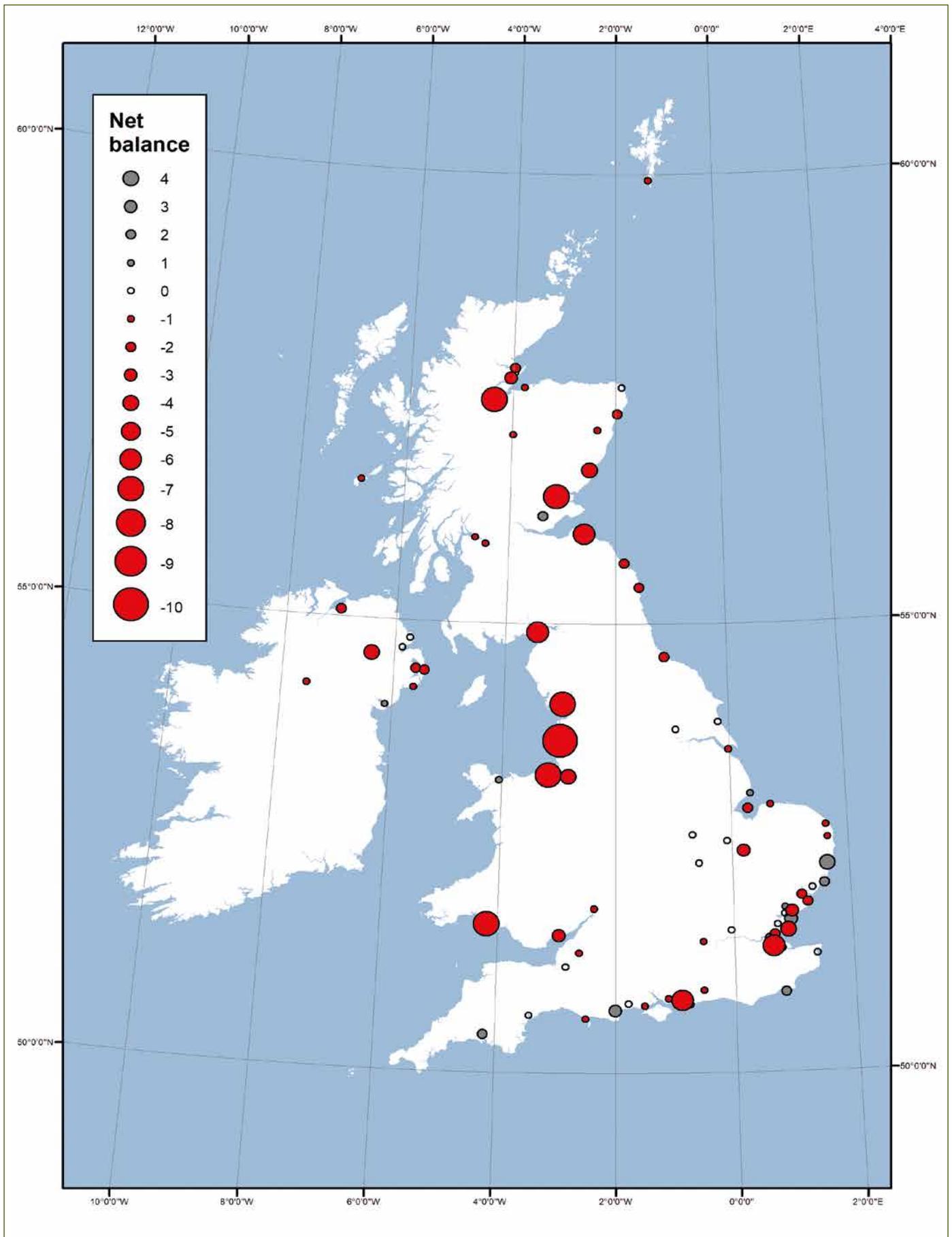
▲ Tables and plots of the totals across the SPA suite are available for each species, together with the proportion of these within all WeBS sites. Here, although Pochard has declined on the SPAs for which it is designated since the late 1990s (left), the proportion of Pochard on this suite has increased compared to other WeBS sites (right).



▲ Long-term Alerts status at UK wetlands in SPA network.

Sites are listed in ascending order by number of species for which negative Alerts were reported by Woodward *et al.* (2019).

Red = High Alert (large decrease), orange = Medium Alert (moderate decrease), grey = stable, pale green = moderate increase, dark green = large increase. \* Part of Mid-Essex Phase 2 SPA.



▲ **Summary of long-term Alerts status at UK wetlands in SPA network.**

Map of SPAs showing, for each site, the net balance of the number of designated feature species with a moderate or large long-term increase, minus the number with a moderate or large long-term decrease (i.e. with Alerts).

## WEBS ALERTS – COUNTRY SNAPSHOTS

# England

Site-specific pressures may be involved in a quarter of cases of English SPA feature Alerts.



Long-term Alerts were triggered for England as a whole for seven of 17 wader species, 11 of 22 wildfowl and zero of seven other waterbirds. Of these, High Alerts were triggered for European White-fronted Goose, Bewick's Swan, Pochard, Scaup, Long-tailed Duck, Ringed Plover and Purple Sandpiper.

Alerts assessments were carried out for 55 SPAs in England that are designated at least in part due to their wintering waterbird populations. Only for the Alde-Ore Estuary SPA and Crouch and Roach Estuaries SPA were no Alerts

triggered for designated features in at least one time period. Across all the England and English border SPAs there were 97 short-term Alerts, 119 medium-term Alerts, 152 long-term Alerts and 144 since-Baseline Alerts. On English SSSIs there were 283 short-term Alerts, 343 medium-term Alerts and 404 long-term Alerts.

Ouse Washes SPA and Lindisfarne SPA have multiple species where comparison of the site trend with broad-scale trends suggests that the declines underpinning Alerts may have been driven or exacerbated by site-specific pressures.

Overall on English SPAs, around 88 Alerts (over one or more time periods) have been identified as possibly due to site-specific pressures (c. 25% of SPA feature Alerts). The remaining Alerts are thought to be mostly driven by broad-scale factors.

For Redshank, Dark-bellied Brent Goose, Grey Plover and Dunlin comparison of site trends with broad-scale trends suggests that the declines underpinning Alerts status may be driven or exacerbated by site-specific pressures on 17 or more English SPAs.

# Wales

Grey Plover amongst species of concern in Wales.



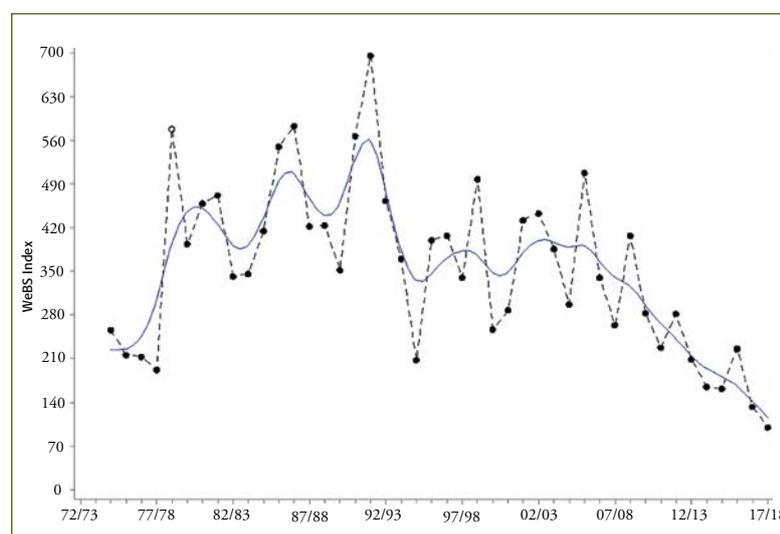
Long-term Alerts were triggered for Wales as a whole for six of 16 wader species, eight of 19 wildfowl and zero of six other waterbirds. Of these, High Alerts were triggered for Bewick's Swan, Pochard, Scaup, Eider, Grey Plover, Ringed Plover and Bar-tailed Godwit.

Across the four Wales/Welsh border SPAs there were eight short-term Alerts, 12 medium-term Alerts, 20 long-term Alerts and 17 since-Baseline Alerts. On Welsh SSSIs, there were 24 short-term Alerts, 25 medium-term Alerts and 25 long-term Alerts.

Overall on Welsh SPAs, around 10 Alerts (over one or more time periods) have been identified as possibly due to site-specific

pressures (c. 38% of all SPA feature Alerts). At Burry Inlet SPA, Alerts highlighted possible

site-specific issues for Curlew, Turnstone, Grey Plover, Pintail, Teal, Wigeon and Shoveler.



▲ WeBS trend for Grey Plover on the Burry Inlet SPA.  
Green dots = annual index; blue line = smoothed trend.

## WEBS ALERTS – COUNTRY SNAPSHOTS

### Scotland

Site-specific pressures may be affecting populations of Redshank and Oystercatcher on some Scottish SPAs.



Long-term Alerts were triggered for Scotland as a whole for six of 16 wader species, eight of 20 wildfowl and two of five other waterbirds. Of these, High Alerts were triggered for Bewick's Swan, Pochard and Lapwing.

Alerts assessments were carried out for 18 SPAs in Scotland that are designated at least in part due to their wintering waterbird populations. Across all Scotland and Scottish border SPAs there were 26 short-term Alerts, 39 medium-term Alerts, 60 long-term Alerts and 60 since-Baseline

Alerts. On Scottish SSSIs there were 15 short-term Alerts, 21 medium-term Alerts and 35 long-term Alerts.

Firth of Forth SPA, Cromarty Firth SPA and Inner Moray Firth SPA have five or more feature species where it is possible site-specific pressures are causing site declines.

Overall on Scottish SPAs, around 32 Alerts (over one or more time periods) have been identified as possibly due to site-specific pressures (c. 29% of SPA feature Alerts).

For Redshank, Whooper Swan, Oystercatcher, Dunlin, Wigeon, Goldeneye and Bar-tailed Godwit comparison of site trends with broad-scale trends suggests that the declines underpinning Alerts status may be driven or exacerbated by site-specific pressures on six or more Scottish SPAs.



### Northern Ireland

Alerts triggered for many wader species for Northern Ireland.



Long-term Alerts were triggered for Northern Ireland as a whole for 10 of 16 wader species, nine of 19 wildfowl and two of five other waterbirds. Of these, High Alerts were triggered for Bewick's Swan, Pochard, Tufted Duck, Long-tailed Duck, Goldeneye, Great Crested Grebe, Lapwing, Golden Plover, Ringed Plover, Turnstone, Knot and Purple Sandpiper.

Alerts assessments were carried out for nine SPAs in Northern Ireland that are designated at least in part due to their wintering waterbird populations.

There were no Alerts for Carlingford Lough SPA or Larne Lough SPA, both of which have only Light-bellied Brent Goose as

the waterbird designated feature. There were declines at these sites for some non-features.

Across all the Northern Ireland SPAs there were eight short-term Alerts, 17 medium-term Alerts, 17 long-term Alerts and 17 since-Baseline Alerts. On ASSIs there were 73 short-term Alerts, 105 medium-term Alerts and 116 long-term Alerts.

Overall on Northern Ireland SPAs, eight species Alerts over one or more time periods have been identified as possibly due to site-specific pressures (c. 24% of SPA feature Alerts).

Comparison of the site trends with broad-scale trends suggests that the declines underpinning Alerts may have been driven

or exacerbated by site-specific pressures at five SPAs. These were Bar-Tailed Godwit at Belfast Lough SPA and Strangford Lough SPA; Golden Plover at Strangford Lough SPA and Outer Ards SPA; Turnstone at Outer Ards SPA; Brent Goose at Lough Foyle SPA; and Whooper Swan at Lough Foyle SPA and Upper Lough Erne SPA.

**Browse thousands of site and country trends at: [www.bto.org/webs-reporting-alerts](http://www.bto.org/webs-reporting-alerts)**

# Species threshold levels

1% population thresholds are used to identify important sites.

Criteria for assessing the international importance of wetlands have been agreed by the Contracting Parties to the Ramsar Convention on Wetlands of International Importance (Ramsar Convention Bureau 1988). Under criterion 6, a wetland is considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird, whilst any site regularly supporting 20,000 or more waterbirds qualifies under criterion 5. Similar criteria have been adopted for identification of SPAs under the EU Birds Directive in the UK legislation.

A wetland in Britain is considered nationally important if it regularly holds 1% or more of the estimated British numbers of one species or subspecies of waterbird, and in Northern Ireland, important in an all-Ireland context if it holds 1% or more of the all-Ireland estimate. However,

it should be noted that, where 1% of the national population is less than 50 birds, 50 is usually used as a minimum qualifying threshold for the designation of sites of national or international importance. More detailed information about SPAs and Ramsar sites in the UK can be accessed via the JNCC website: [jncc.gov.uk](http://jncc.gov.uk).

Table 4 gives revised international and national thresholds following updates in African-Eurasian Migratory Waterbird Agreement (AEWA) (2018), Burke *et al.* (2018) and Frost *et al.* (2019) and how these have changed from the previous thresholds. These thresholds are reported on species pages in the WeBS Report Online, where they are also dynamically used to flag WeBS sites that hold internationally or nationally important numbers as sites potentially qualifying for designation. More details are available in the guide to WeBS methods (BTO 2017).

**Species:**  
**Golden Plover**  
*Pluvialis apricaria*

International threshold: 9,300  
Great Britain threshold: 4,000  
All-Ireland threshold: 920  
GB max: 119,795  
NI max: 10,892

Now displaying: Page 1 of 43  
 Include supplementary counts where available  
Country/Country: all (do not filter) Habitat: all (do not filter)

Further information: [BirdTrends](#) [BirdLife](#) [BirdFacts](#)



**Annual Peaks**

Site	14/15	15/16	16/17	17/18	18/19	Mon	Moving 5yr avg	14/15-18/19 5yr avg	Legend
Humber Estuary	26,000	(34,324)	59,427	20,116	20,697	Nov	32,113	32,113	Exceeds International Importance threshold (British sites)
Breydon Water and Berney Marshes	16,230	22,400	29,400	16,100	31,300	Jan	23,086	23,086	Exceeds International Importance threshold (Irish sites)
Somerset Levels	10,536	17,958	(14,597)	10,917	26,061	Jan	16,368	16,368	Exceeds International Importance threshold (Irish sites)
The Wash	7,339	14,368	14,891	14,844	15,564	Jan	13,421	13,421	Exceeds British National Importance threshold
Dungie Flats	10,200	23,900	16,600	9,700	3,500	Feb	12,760	12,760	Exceeds British National Importance threshold
Blackwater Estuary	10,906	12,601	7,905	7,630	8,890	Feb	9,186	9,186	Exceeds British National Importance threshold
Hamford Water	8,730	7,394	10,781	3,826	3,369	Nov	6,820	6,820	Exceeds All-Ireland National Importance threshold
Lough Foyle	6,870	6,026	5,000	4,940	8,201	Oct	6,207	6,207	Exceeds All-Ireland National Importance threshold
Ouse Washes	8,315	10,438	1,084	1,270	7,270	Feb	5,675	5,675	"Promotion" since previous report
Nene Washes	1,800	3,720	8,500	8,177	4,340	Feb	5,307	5,307	"Demotion" since previous report
Solway Estuary	3,534	4,776	7,507	(4,378)	4,522	Nov	5,085	5,085	
Morecambe Bay	4,562	3,514	4,809	4,441	6,312	Jan	4,688	4,688	
Thames Estuary	4,207	3,138	1,287	4,344	10,104	Jan	4,612	4,612	

▲ Species pages on the WeBS Report Online flag sites that exceed population thresholds using coloured squares.

## FIND OUT MORE

**BTO.** 2017. *Wetland Bird Survey: Survey Methods, Analysis & Interpretation. Version 2.0 June 2017.* BTO, Thetford. Available at: [www.bto.org/webs-annual-report](http://www.bto.org/webs-annual-report)

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

**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.

**AEWA.** 2018. Conservation Status Review 7 (CSR7) Report on the conservation status of migratory waterbirds in the agreement area. Seventh edition. Agreement on the Conservation of African-Eurasian Migratory Waterbirds, May 2018. Available at: [wpe.wetlands.org](http://wpe.wetlands.org)

**Table 4** Species 1% Threshold Levels.

Species/population	GB Threshold	All-Ireland Threshold	International Threshold	Species/population	GB Threshold	All-Ireland Threshold	International Threshold
Dark-bellied Brent Goose	980 (+70)		2,100 (-300)	Great White Egret	1* (new)		780 (new)
Svalbard Light-b Brent Goose	34 (-)		100 (-)	Little Egret	110 (+65)	20 (-)	1,100 (-200)
Canadian Light-b Brent Goose	16 (+9)	350 (-10)	400 (-)	Shag	1,100 (-)		2,000 (-)
Greenland Barnacle Goose	560 (-20)	160 (+10)	810 (+100)	Cormorant	620 (+270)	110 (-10)	1,200 (-)
Svalbard Barnacle Goose	430 (+100)		380 (+80)	Water Rail			6,400 (-3,600)
British/Irish Greylag Goose	1,400 (-)		1,400 (-)	Moorhen	3,000 (-200)		20,000 (-)
Icelandic Greylag Goose	910 (+60)	35 (-15)	980 (-)	Coot	2,000 (+200)	190 (-30)	15,550 (-1,950)
Taiga Bean Goose	2 (-2)		520 (+100)	Crane	2 (new)		3,500 (new)
Tundra Bean Goose	3 (-)		5,500 (-)	Stone-curlew			4,500 (-)
Pink-footed Goose	5,100 (+1,500)		5,400 (+1,900)	Oystercatcher	2,900 (-300)	610 (-80)	8,200 (-)
Greenland W-f Goose	120 (-10)	100 (-10)	190 (-50)	Avocet	87 (+12)		940 (+210)
European W-f Goose	21 (-3)		12,000 (-)	Lapwing	6,200 (-)	850 (-250)	20,000 (-)
Mute Swan	500 (-240)	90 (-)	500 (180)	Golden Plover	4,000 (-)	920 (-280)	9,300 (-)
Bewick's Swan	44 (-26)	20(-)	220 (-)	Grey Plover	330 (-100)	30 (-)	2,000 (-500)
Whooper Swan	160 (+50)	150 (-)	340 (+70)	Ringed Plover	420 (+80)	120 (+20)	540 (-190)
Shelduck	470 (-140)	100 (-20)	2,500 (-500)	Little Ringed Plover			3,100 (+600)
Garganey			13,400 (-6,600)	Whimbrel	1* (-)		6,700 (-)
Shoveler	190 (+10)	20 (-10)	650 (+250)	Curlew	1,200 (-200)	350 (-)	7,600 (-800)
Gadwall	310 (+60)	20 (-)	1,200 (+600)	Bar-t Godwit	500 (+120)	170 (+20)	1,500 (+300)
Wigeon	4,500 (+100)	560 (-70)	14,000 (-1,000)	Black-t Godwit	390 (-40)	200 (+10)	1,110 (+490)
Mallard	6,700 (-100)	280 (-10)	20,000 (-25,000)	Turnstone	400 (-80)	95 (-)	1,400 (-)
Pintail	200 (-90)	20 (-)	600 (-)	Knot	2,600 (-600)	160 (-120)	5,300 (+800)
Teal	4,300 (+2,200)	360 (+20)	5,000 (-)	Ruff	9 (+1)		20,000 (+7,800)
Red-crested Pochard			550 (+50)	Curlew Sandpiper			4,000 (-)
Pochard	230 (-150)	110 (-50)	2,000 (-1,000)	Sanderling	200 (+40)	85 (+25)	2,000 (+800)
Tufted Duck	1,300 (+200)	270 (-40)	8,900 (-3,100)	Dunlin	3,400 (-100)	460 (-110)	13,300 (-)
Scaup	39 (-13)	25 (-40)	3,100 (-)	Purple Sandpiper	97 (-33)	20 (-)	110 (-600)
Eider (except Shetland)	770 (+220)	55 (+20)	9,800 (-500)	Little Stint	1* (-)		3,000 (+1,000)
Eider (Shetland)	46 (-9)		85 (-)	Woodcock	14,000 (-)		20,000 (-)
Velvet Scoter	34 (+9)		4,000 (-500)	Jack Snipe	1,000 (-)		20,000 (-)
Common Scoter	1,300 (+300)	110 (-30)	7,500 (+2,000)	Snipe	10,000 (-)		20,000 (-)
Long-tailed Duck	130 (+20)		16,000 (-)	Common Sandpiper	1* (-)		12,000 (-5,300)
Goldeneye	190 (-10)	40 (-20)	11,400 (-)	Green Sandpiper	3 (-6)		20,000 (+4,500)
Smew	1* (-1)		300 (-100)	Redshank	940 (-260)	240 (-60)	2,400 (-)
Goosander	150 (+30)		2,100 (-600)	Wood Sandpiper			18,000 (+7,600)
Red-breasted Merganser	100 (+16)	25 (+5)	860 (-840)	Spotted Redshank	1* (-)		1,000 (+150)
Red-throated Diver	210 (+40)	20 (-)	3,000 (+400)	Greenshank	8 (+2)	20 (-)	3,300 (+1,000)
Black-throated Diver	6 (-)		3,500 (-)	Kittiwake			20,000 (-)
Great Northern Diver	43 (+18)	20 (-)	50 (-)	Black-headed Gull	22,000 (-)		20,000 (-)
Little Grebe	150 (-10)	20 (-)	4,700 (+800)	Little Gull			1,000 (-100)
Red-necked Grebe	1* (-)		500 (-)	Mediterranean Gull	40 (+22)		2,400 (+1,630)
Great Crested Grebe	170 (-20)	30 (-10)	6,300 (+2,800)	Common Gull	7,000 (-)		16,400 (-)
Slavonian Grebe	9 (-2)		50 (-5)	Great B-backed Gull	760 (-)		3,600 (-600)
Black-necked Grebe	1* (-)		1,800 (-300)	Glaucous Gull	2 (new)		3,100 (-6,900)
Glossy Ibis	1* (new)		800 (new)	Iceland Gull	3 (new)		2,100 (+100)
Spoonbill	1* (-)		160 (+50)	Herring Gull	7,300 (-)		10,200 (-)
Bittern	8 (+2)		80 (+15)	Caspian Gull	1* (new)		3,200 (-3,800)
Cattle Egret	1* (new)		2,300 (new)	Yellow-legged Gull	8 (-3)		13,900 (+6,900)
Grey Heron	450 (-160)	25 (-)	5,000 (+2,300)	Lesser B-backed Gull	1,200 (-)		5,500 (-4,700)

Numbers in brackets () are the change from the Threshold used in *Waterbirds in the UK 2017/18*.

\* denotes not flagged in WeBS Report Online.

# Climate impacts on waterbirds

A recent review of climate change impacts on marine and coastal waterbirds summarised what we know so far.

Waterbirds live in a dynamic world, and connect diverse geographies with their annual migrations. In general they are long-lived and adapted to the annual fluctuations of weather that can impact on their breeding success. In winter, less constrained, they move in response to climate and weather.

The annual indices produced by WeBS, and the wintering waterbird indicator (see graph below) which gives an at-a-glance account of how waterbirds are doing as a group, can be better understood by stepping back. Studies that have analysed data from WeBS and the International Waterbird Census, and from monitoring of breeding populations, in relation to weather data and climate models are improving our understanding of how the waterbirds on your patch are impacted by climate change.

Many of the stories of climate change impacts on page 25 will be

familiar – they have been featured in previous *Waterbirds in the UK* reports. Each individual story is often complicated. But the growing message is that climate change may affect birds both on their breeding grounds and in the non-breeding season, and in combination these may alter their distributions, abundance and timing of occurrence in the UK.

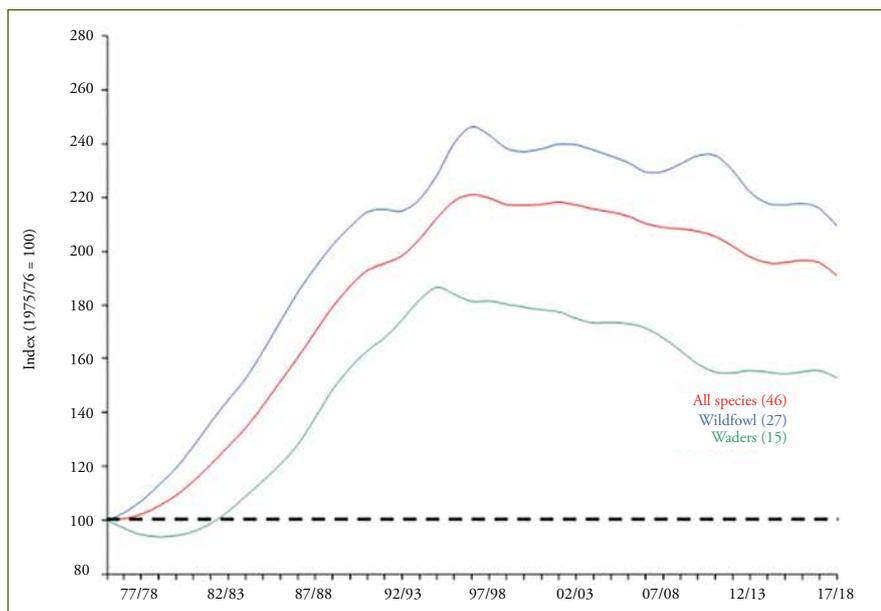
As well as summarising known impacts, the review *Impacts of climate change on the UK's coastal and marine waterbirds* also considered what could happen in the future.

A key project considered the potential impact of climate change on the UK's SPA network. This study suggested that while some species were expected to increase significantly in number to increasingly dominate waterbird communities, others were projected to decline. Importantly, this

study showed that, as coastal sites within the SPA network are often designated for their importance for many non-breeding waterbird species, most are likely to continue to meet designation criteria as species numbers change in response to climate change.

Based on this and other studies, an assessment of the climate change vulnerability of bird species in the UK suggested that under a medium emissions scenario, six non-breeding waterbird species were regarded as high risk from climate change; 14 species at medium risk and 21 species were projected to benefit. There is generally high uncertainty at the species level, but Little Egret, Sanderling and Avocet are likely beneficiaries. However, projected changes in sea level that could impact coastal habitat quality and extent has not yet been incorporated into vulnerability assessments.

At the population level, it is also feared that potentially positive impacts of milder winters may be negated by projected negative climate change impacts on breeding success.



▲ Declines in the wintering waterbird indicators are consistent with evidence of weather related impacts including shifts in winter distributions and overall declines in abundance.

## FIND OUT MORE

**Burton, N.H.K., Austin, G.E., Frost, T.M. & Pearce-Higgins, J.W.** 2020.

Impacts of climate change on the UK's coastal and marine waterbirds. *MCCIP Science Review 2020*: 400–420.



Warm dry conditions drying out blanket bogs adversely affect Golden Plover breeding success due to impacts on crane-fly populations.



Cold weather is associated with high winter mortality of Lapwing.



UK declines and distribution changes of wintering Purple Sandpiper are consistent with shifts towards breeding grounds in northern Scandinavia.



Increased functional diversity of wintering wader communities on east coast estuaries reflects decreased advantages of wintering in the milder west



Warmer winters in Scandinavia and the Baltic Sea cause re-distribution of wintering Scaup and other diving ducks northeastwards.



Pintail depart wintering grounds earlier in warmer springs.



Increased growing season length with warmer springs has contributed to larger tundra goose populations.



Hyperabundant tundra nesting geese may reduce nest site availability for some breeding waders.

▲ What is already happening? Research is helping us understand how climate change is impacting waterbird populations across their annual cycles.

# Turnstone use of offshore refuges

A study found that population density is higher at offshore refuges in northeast England.

Turnstone, a characteristic bird of rocky coasts, is declining in the UK. Results from the Non-Estuarine Waterbird Survey (NEWS) and WeBS suggest that the winter population has declined by around a quarter or even a third over the past decade (WeBS 2007/08–2017/18 -25%; NEWS 2006/07–2015/16 -32%). A long-term Medium Alert (-32%) was triggered for the Northumbria Coast SPA, which is designated in part for its wintering Turnstone, in the latest WeBS Alert report (the 10-year trend was -11%).

Whittingham *et al.* (2020) investigated potential impacts of human disturbance on Turnstone in northeast England. They analysed 1998/99–2015/16 WeBS Core Counts of Turnstone for 19 sites within, or ecologically linked to the Northumbria Coast SPA. Two of the sites were offshore 'refuges': the Farne Islands have no winter public access, and St Mary's Island is cut-off from the mainland at high-tide and its rocky shore is difficult to access.

The authors also interviewed 690 people about their recreational use of sites within the area, including



the amount of time they spent on the rocky shore rather than the sandy shore and whether they were walking a dog.

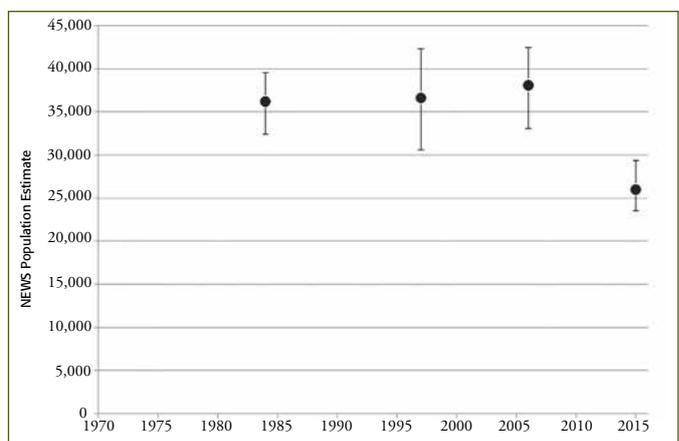
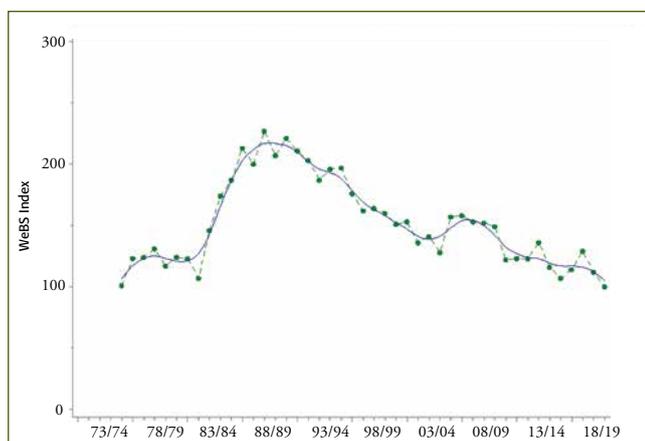
The authors' analyses, which also took into account habitat, found that Turnstone made greater use of less disturbed offshore refuges than mainland sites subject to greater disturbance by humans.

Turnstone density (birds per hectare of suitable habitat) was higher the closer each site was to the nearest offshore refuge. Counts were stable at the two refuge sites, whereas on average they declined on the mainland sites.

However, no relationship was found between the mainland counts and measures of human population density and use of rocky shores inferred from the questionnaire and urban extent data.

## FIND OUT MORE

**Whittingham, M.J. *et al.* (17 co-authors).** 2020. Offshore refuges support higher densities and show slower population declines of wintering Ruddy Turnstones *Arenaria interpres*. *Bird Study* DOI: 10.1080/00063657.2020.1713725



▲ WeBS population index (left) and NEWS mid-winter non-estuarine population estimate (right) for Turnstone in the UK.



## Focus on... European White-fronted Goose

European White-fronted Geese breed in European Arctic Russia and northwest Siberia and winter across Europe. One population winters in northwest Europe, predominantly in the Netherlands, Belgium and Luxembourg with smaller numbers in the UK, France, Germany and Denmark. Another population winters in southeast Europe from Hungary southwards through to Turkey and even the Middle East. Birds wintering in the UK move progressively west over a period of two months, starting in late September and early October, passing through the Baltic States, Germany, the Netherlands and Belgium, with a few also migrating through southern Sweden (Stroud *et al.* 2002).

Over the 25-year period from 1992/93, numbers of European White-fronted Geese have declined by 70% in the UK, as birds short-stop on the near Continent, rather than continue across to our shores, in response to milder winters. In recent winters where influxes have occurred, such as 2011/12, 2012/13 and 2016/17, these have coincided with extended periods of colder weather on the Continent forcing birds to move further west. The equivalent trend for the Netherlands shows a consistent increase over the same period (Hornman *et al.* 2020).

In the UK, European White-fronted Geese winter mainly in the south and east of England, usually at traditional sites, though during harsh winters, large flocks may appear far

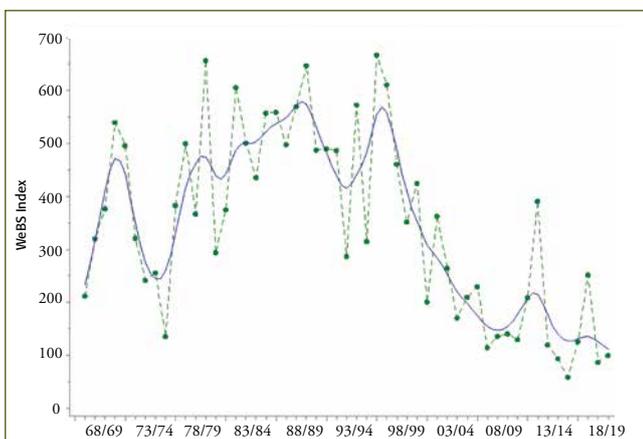
from traditional wintering areas, with records of this race coming from North Yorkshire, Northumberland and even as far north as Orkney and Shetland.

There are no sites in the UK that support internationally important numbers of European White-fronted Geese, but in 2018/19, 10 sites were nationally important for this species on Core Counts alone – Heigham Holmes, Swale Estuary, North Norfolk Coast, North Warren and Thorpeness Mere, Severn Estuary, Breydon Water and Berney Marshes, Middle Yare Marshes, Dungeness and Rye Bay, Humber Estuary and the Alde Estuary. In addition, supplementary counts for Hickling Broad and the River Tay, Kercock were above the national importance threshold.

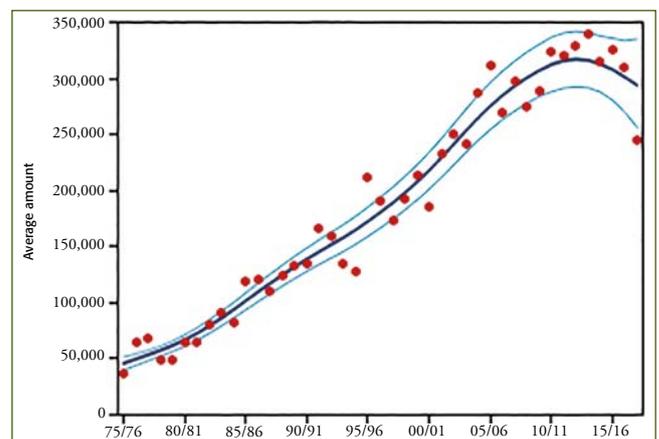
### FIND OUT MORE

**Stroud, D.A., Fox A.D & Walsh, A.** 2002. White-fronted Goose *Anser albifrons*. In: Wernham, C.V., M.P. Toms, J.H. Marchant, J.A. Clark, G.M. Siriwardena & S.R. Baillie (eds.). *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Pp. 161–165.

**Hornman, M., Hustings, F., Koffijberg, K., van Winden, E., van Els, P., Kleefstra, R., Sovon Ganzen- en Zwanenwerkgroep & Soldaat, L.** 2020. *Watervogels in Nederland in 2017/18*. Sovon rapport 2020/01.



▲ **WeBS trend for European White-fronted Goose in the UK.** Green dots = annual index; blue line = smoothed trend.



▲ **Trend for European White-fronted Goose in the Netherlands.** Red dots = annual index; black line = smoothed trend.  
© NEM (Sovon, RWS, Statistics NL, Provinces)

# Carbo offsetting

Cormorant numbers have expanded dramatically in the UK, and the species is now a familiar sight at inland waterbodies.

The British winter population estimate of Cormorant is 62,000, which included an estimate of 15,000 birds on the open coast from NEWS data. The Northern Ireland estimate was just under 3,000.

There has been a large increase in the number of Cormorants wintering in inland lowland areas since the early 1980s, with a range expansion of 53% in Britain and 18% in Ireland (Balmer *et al.* 2013), captured in the winter distribution change map for 1981–84 to 2007–11. Such inland waterbodies are well surveyed by WeBS, and the UK WeBS 25-year trend is +56%. However, there are considerable differences between countries, with the 25-year trend for England being +80% compared to the equivalent figure of -23% for Scotland.

Coastal breeding colonies are of the nominate race *Phalacrocorax carbo carbo*. Cormorants from Welsh breeding colonies have been shown by ringing studies to have the greatest tendency amongst coastal breeders to winter inland in Britain; however, those from other areas are now also doing so.

Following increased inland wintering of British coastal breeders in the 1960s and 1970s, continental populations of the *sinensis* race increased and some of these also began wintering in inland Britain. Genetic studies of inland breeding colonies established in the latter half of the 20<sup>th</sup> century confirmed these contained mixtures of *sinensis* and *carbo* races and likely hybrids between them (Rehfishch *et al.* 1999).

Due to differences in trends between habitats, alternative index definitions are sometimes used for different purposes. One example is the WeBS-Defra index which is weighted by habitat and measures population (Austin & Burton 2014 and Chamberlain *et al.* 2013).

As a piscivore, which can come into conflict with fishing interests, Cormorant is a bird where information from WeBS counts, ringing and other sources is essential to provide a sound evidence base for decision-making and assessing the effects of any human interventions.

Seven sites surpassed the international importance threshold with a five-year mean peak of over 1,200 birds. Alt Estuary (1,566), Dee Estuary (1,664), Stodmarsh (1,372) and Abberton Reservoir (1,283) sites did so on Core Count data alone. These were joined by Dungeness and Rye Bay (3,426), Ranworth and Cockshoot Broads (1,622) and Drigg Point to St Bees Head (1,389) once supplementary roost counts were added.

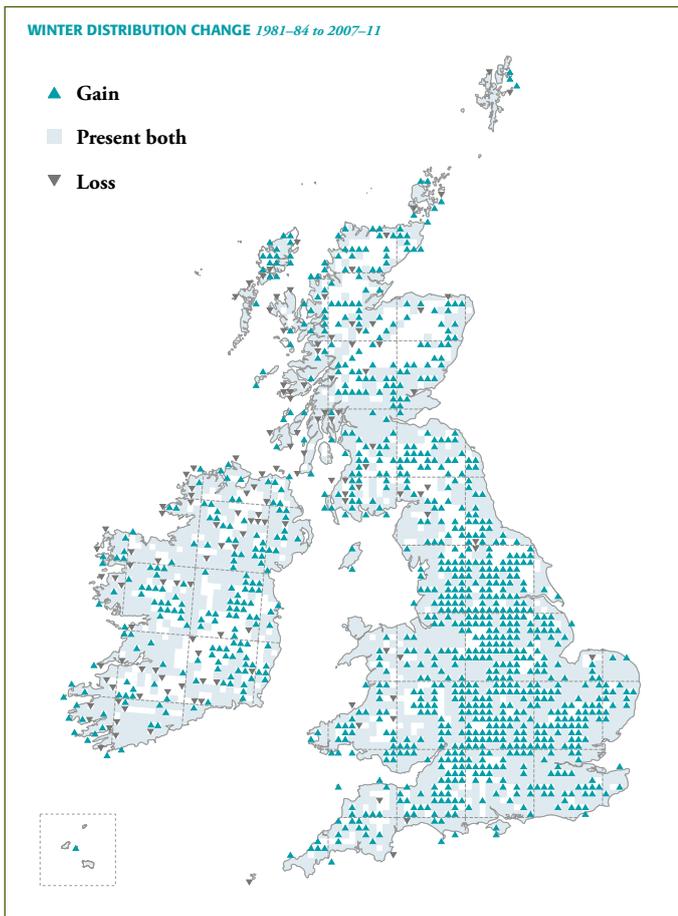


## FIND OUT MORE

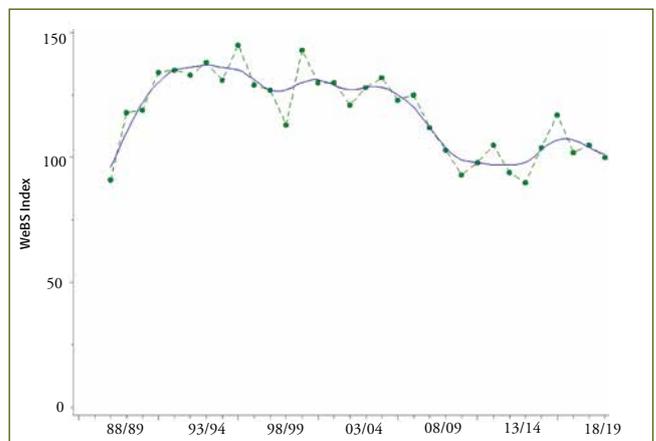
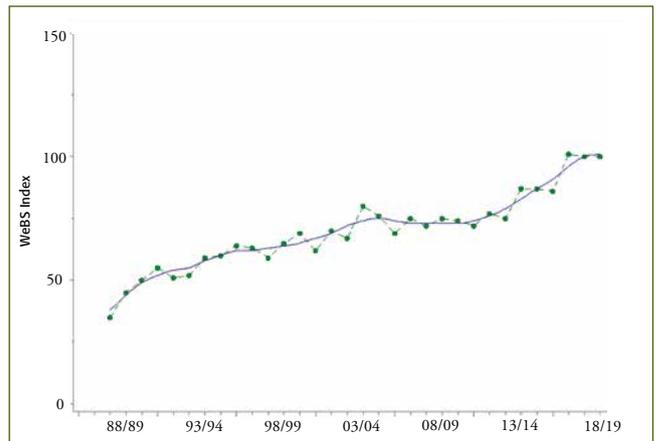
**Austin, G.E. & Burton, N.H.K.** 2014. *Notes on the WeBS-Defra Annual Cormorant Index*. BTO Research Report 653. BTO, Thetford

**Rehfishch, M.M., Wernham, C.V. & Marchant, J.H. (eds).** 1999. *Population, distribution, movements and survival of fish-eating birds in Great Britain*. Department of the Environment, Transport and the Regions, London.

**Chamberlain, D.E., Austin, G.E., Green, R.E., Hulme, M.F. & Burton, N.H.K.** 2013. Improved estimates of population trends of Great Cormorants *Phalacrocorax carbo* in England and Wales for effective management of a protected species at the centre of a human-wildlife conflict. *Bird Study* **60**: 335–344.



▲ Winter distribution change map from Bird Atlas 2007–11 showing the range expansion since the 1981–84 Atlas. Blue areas have been used for wintering in both atlases, blue upwards arrows show expansion of wintering areas and black downwards arrow show range contraction since 1981–84.



▲ WeBS trend for Cormorant in England (top) and Scotland (bottom). Green dots = annual index; blue line = smoothed trend.

# Escaping the cold

Widespread in the UK during the winter months, Lapwings respond rapidly to periods of hard weather.

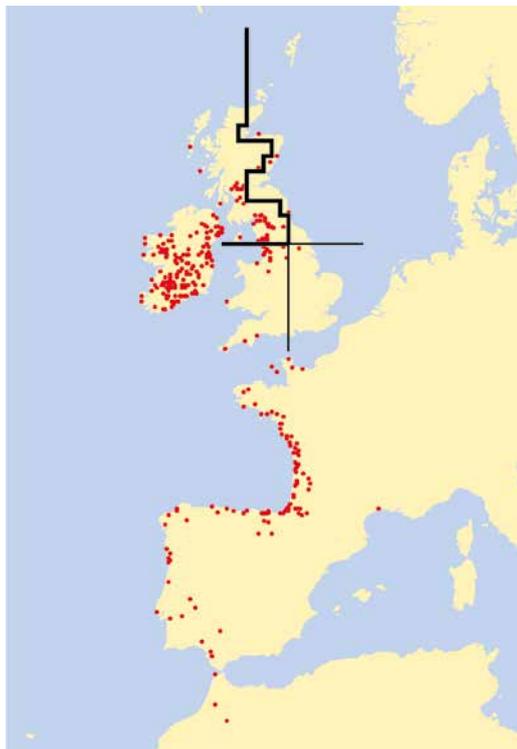
Lapwing movements are impossible to ignore. In the field, their broad wings make them stand out when they fly. Their distinctiveness means they are easy to spot from a distance, not only by eye but also by weather radar, as they move in response to hard weather from the continent to Britain and Ireland. Sometimes, large numbers retreat to Spain, where they are known as 'avefria' (birds of the cold) (Newton 2007). Lapwing also readily move locally, taking advantage of flooded fields and stubble for feeding, or moving briefly to the milder coast as needed.

Dry, cold weather will cause them to concentrate on major wetlands likely to be counted for WeBS, whereas mild, wet weather allows them to disperse away from wetlands to farmland. It is no surprise then, that the WeBS indices for Lapwing are noisy, with large variation between months and years.

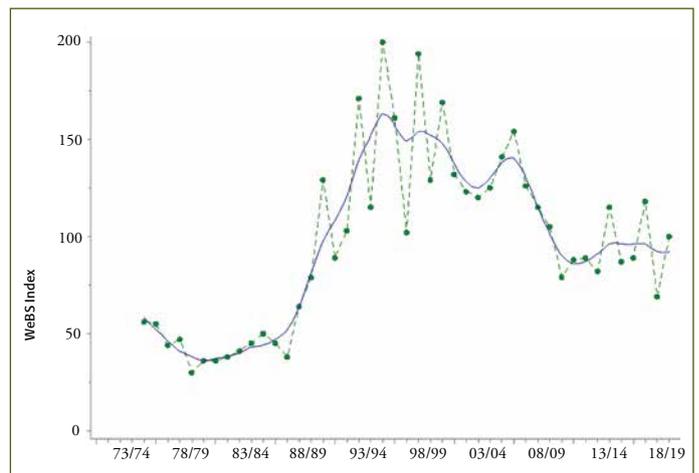
Lapwing is a Red-listed species. Both the BTO/JNCC/RSPB Breeding Bird Survey (BBS) trend and the WeBS trend broadly indicate that numbers have stabilised in the short-term after a decline in the late 2000s. The latest estimate of breeding numbers in the UK is 97,500 pairs, a decrease from an estimate of 140,000 in 2009 (Woodward et al. 2020). Many of these breeding birds are also present

in winter. The latest available winter estimate based on a full survey is 635,000 for 2006/07 (Gillings & Fuller 2009). The 10-year WeBS trend for 2007/08–2017/18 is -20%. Although caution is needed in interpreting this figure, as the WeBS trend is biased towards large coastal wetland habitats, it seems likely that the current UK winter population is less than the 2006/07 figure, as breeding numbers have been declining across Europe.

Table 5 shows the nationally important sites for Lapwing in the UK, holding more than 6,200 birds in Great Britain or 850 in Northern Ireland. The Somerset Levels holds the largest concentrations of Lapwing, and the peak count there of 65,300 in January 2019 was the highest since 2010/11, perhaps related to the dry winter of 2018/19.



▲ Ringling recovery locations in winter of Lapwings present in the northwest of Britain during the breeding season. From Wernham *et al.* (2002).



▲ WeBS trend for Lapwing in the UK. Green dots = annual index; blue line = smoothed trend.



▲ Ringling recovery locations in May of Lapwings present in Britain & Ireland during part of the year. From Wernham *et al.* (2002).



**Table 5** Nationally important WeBS sites for Lapwing.

Site	2014/15	2015/16	2016/17	2017/18	2018/19	Month	5-year mean
Somerset Levels	33,393	31,658	35,495	33,249	65,300	Jan	40,019
Morecambe Bay	15,383	29,344	18,140	9,952	19,503	Dec	18,464
Humber Estuary	8,612	12,810	23,198	13,135	20,247	Jan	15,600
Breydon Water & Berney Marshes†	12,100	8,100	22,300	1,700	11,750	Feb	13,190
The Wash	6,600	6,204	26,323	8,884	9,402	Jan	11,483
Severn Estuary	6,731	(8,230)	(10,023)	11,641	15,776	Jan	11,383
Ribble Estuary	9,486	(9,339)	(11,585)	7,160	15,611	Dec	10,961
Mersey Estuary	11,553	6,419	10,801	9,034	(12,506)	Jan	10,063
Thames Estuary	9,879	15,601	6,123	7,493	10,212	Feb	9,862
Ouse Washes	5,770	14,161	8,420	6,063	12,717	Dec	9,426
Dee Estuary (England and Wales)	5,665	8,371	11,158	6,173	10,078	Dec	8,289
Nene Washes	1,170	5,275	12,375	12,719	9,122	Feb	8,132
Swale Estuary	1,825	(9,246)	8,644	8,190	9,028	Feb	7,387
Blackwater Estuary	7,693	(7,371)	8,510	5,851	4,964	Nov	6,878
North Norfolk Coast	3,149	4,627	9,369	10,221	4,462	Dec	6,366
Lower Derwent Ings	3,942	7,520	8,500	3,500	8,127	Jan	6,318
Loughs Neagh and Beg	4,580	2,430	3,674	2,292	4,283	Jan	3,452
Lough Foyle	3,697	2,886	4,427	2,515	2,400	Dec	3,185
Strangford Lough	2,462	2,628	3,141	3,098	3,242	Jan	2,914
Outer Ards Shoreline	1,167	1,722	732	804	1,007	Jan	1,086

• Annual peaks and month in 2018/19 when recorded are shown. Brackets indicate incomplete coverage. Five-year mean is for period 2014/15 to 2018/19.

† = Counts include supplementary data.

### FIND OUT MORE...

**Newton, I.** 2007. *The Migration Ecology of Birds*. Academic Press, Oxford.

**Gillings, S. & Fuller, R.J.** 2009. How many Eurasian Golden Plovers and Northern Lapwings winter in Great Britain? *Wader Study Group Bulletin* **166**: 21–28.

**Wernham, C.V., Toms, M.P. Marchant, J.H. Clark, J.A. Siriwardena, G.M. & Baillie, S.R. (eds.)**. 2002. *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Poyser, London.

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



In *Waterbirds in the UK 2011/12*, we reported on the rise of Great White Egrets in the UK, initially as a wintering population then becoming established breeders at several sites. Now the Cattle Egret is following in their footsteps.

The rate of increase in the numbers of Cattle Egrets has been unprecedented; in 2018/19 the GB maximum was 158, compared with just 36 in 2017/18, with enough birds now wintering in the UK that we can now calculate an index for the first time.

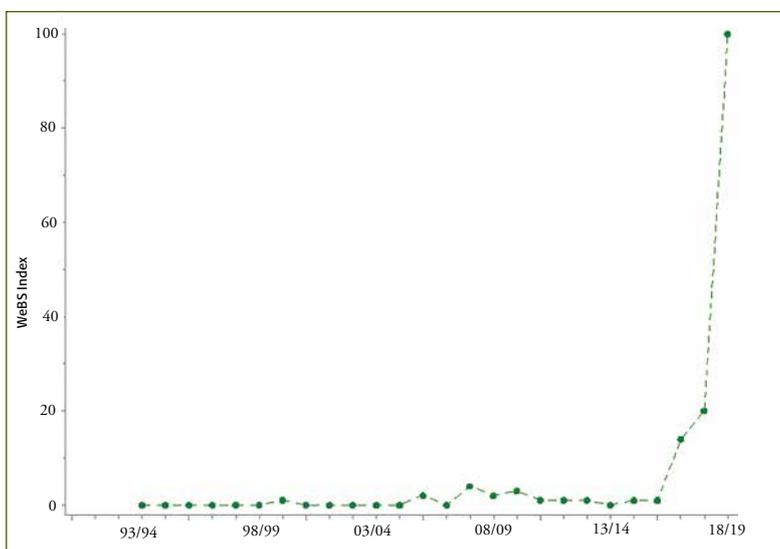
The Cattle Egret has undergone one of the most rapid natural expansions of any bird. Originally native to Europe, Africa and Asia, it has expanded its range around the world, reaching the Americas in the late 19<sup>th</sup> century, and Australia in the 1940s. It therefore

comes as no surprise that the UK has seen the start of colonisation, beginning in the winter of 2007/8, when a large influx of about 200 individuals resulted in at least two pairs breeding on the Somerset Levels the following summer. As a result of this influx, Cattle Egret was removed as an official rarity in 2009. Further large influxes occurred in winters of 2015/16 and 2016/17, and subsequent confirmed breeding has since taken place in Cheshire, Devon and Dorset, with possible breeding in both Gwent and Meirionnydd (Holling *et al.* 2019).

As a WeBS species, Cattle Egrets are much less tied to waterbodies than their cousins, Great White and Little Egrets, and are often found on agricultural land among livestock far from the nearest wetland, so it is likely that a proportion of birds

are missed. The first population estimate for Cattle Egrets in the UK was published in 2019 being 65 birds (Frost *et al.* 2019), though this was based on birds present in 2016/17. However, a recent report of 164 in an evening roost on 19<sup>th</sup> January 2020 at Ham Wall, Somerset (BirdGuides 2020) suggest numbers have increased since then. This shows the value of counting some species at roosts which may otherwise be under-recorded on standard WeBS Counts.

In 2018/19, Cattle Egrets were recorded on 55 WeBS sites, with double figure counts at eight of these – Somerset Levels, Camel Estuary, Fleet and Wey, Severn Estuary, Helford Estuary, Chew Valley Lake, Pagham Harbour and Dungeness and Rye Bay.



▲ WeBS trend for Cattle Egret in the UK.  
Green dots = annual index.

## FIND OUT MORE

**Holling, M. and the Rare Breeding Birds Panel.** 2019. Rare breeding birds in the UK in 2017. *British Birds* **112**: 706–758.

**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.

## Focus on... Goldeneye



As a breeding bird, Goldeneye is a bird of the Taiga, preferring wooded areas with fishless ponds. There is a small Scottish breeding population, with breeding first recorded in 1970; the current estimate is of 200 breeding females. Goldeneye arrive on their breeding grounds in May, so a large proportion of the UK wintering population (estimate 21,000) is still present on WeBS counts in March.

The two most important UK wintering sites for Goldeneye are the Forth Estuary (five-year mean peak 1,794) in Scotland and Loughs Neagh and Beg in Northern Ireland (1,371). Other sites with nationally important numbers are Loch Leven (547), Abberton Reservoir (351), Rutland Water (305), Loch of Skene (297), Humber Estuary (291), Hornsea Mere (261) and Loch Watten (191).

At Loughs Neagh and Beg, High Alerts have been triggered for Goldeneye, as numbers have dropped 91% in 25 years, 75% in 10 years and 60% in five years, although the site still holds over 80% of the Northern Ireland wintering population. A study in the late 1980s at the site, which then hosted around 12,000 Goldeneye, analysed stomach contents (Winfield & Winfield, 1994). Goldeneye diet at the site was found to be more diverse than Pochard or Scaup, but like those two species was primarily composed of chironomid larvae.

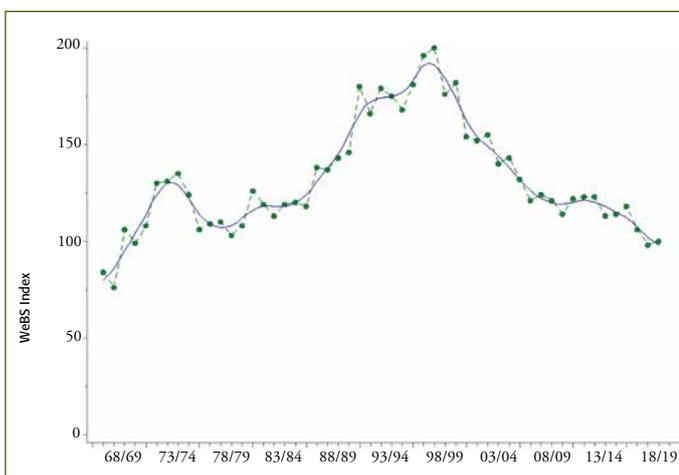
The Northern Ireland index peaked near the start of the available time series, in 1990/91. The indices for other countries start in 1966/67; in Wales numbers peaked in 1990/91, in Scotland in 1997/98, and in England in 1999/2000.

The Scottish index had previously declined in the late 1970s and early 1980s, thought to be in response to decreases in effluent discharges in the Firth of Forth.

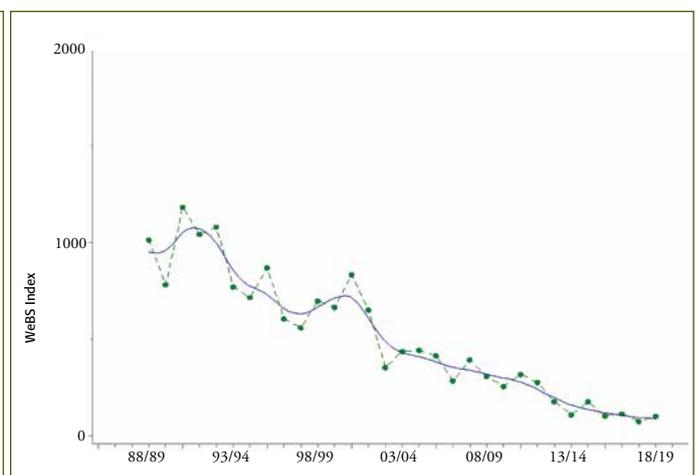
The long-term trend for 1992/93–2017/18 for the UK is -62%. It is thought the decline is likely linked to climate change related short-stopping, meaning Goldeneye may be wintering closer to their breeding grounds; whilst numbers have declined here, those in Sweden have increased (see pages 24–25 for more on climate impacts).

### FIND OUT MORE

**Winfield, I.J. & Winfield, D.K.** 1994. Feeding ecology of the diving ducks Pochard (*Aythya ferina*), Tufted Duck (*A. fuligula*), Scaup (*A. marila*) and Goldeneye (*Bucephala clangula*) overwintering on Lough Neagh, Northern Ireland. *Freshwater Biology* **32**: 467–477.



▲ WeBS trend for Goldeneye in GB.  
Green dots = annual index; blue line = smoothed trend.



▲ WeBS trend for Goldeneye in Northern Ireland.  
Green dots = annual index; blue line = smoothed trend.

# Southampton Water at low tide

Low Tide Counts have been carried out in the UK since 1992/93, with repeat visits to sites enabling a comparison of data between years.

Southampton Water is part of the Solent complex and lies between the city of Southampton and the New Forest. The three principal rivers entering Southampton Water are the Test, Itchen and Hamble. There are extensive areas of mud on both shores of the estuary, with a large area of *Spartina* saltmarsh along the western shore.

Southampton Water is one of the most heavily developed estuaries in Britain and, as well as being adjacent to a large city, also has important docks and an oil refinery on its shores. The area is also heavily used by sailing enthusiasts. One of the most significant development issues is at Dibden Bay, which is actually no longer a bay since dredgings were pumped onto the land there. This area now supports an extensive area of coastal wet grassland.

The distribution of two species are mapped on the opposite page: Dark-bellied Brent Goose and Grey Plover distributions based on WeBS Low Tide Counts undertaken in 2018/19 are displayed for comparison with the respective distributions from 1998/99.

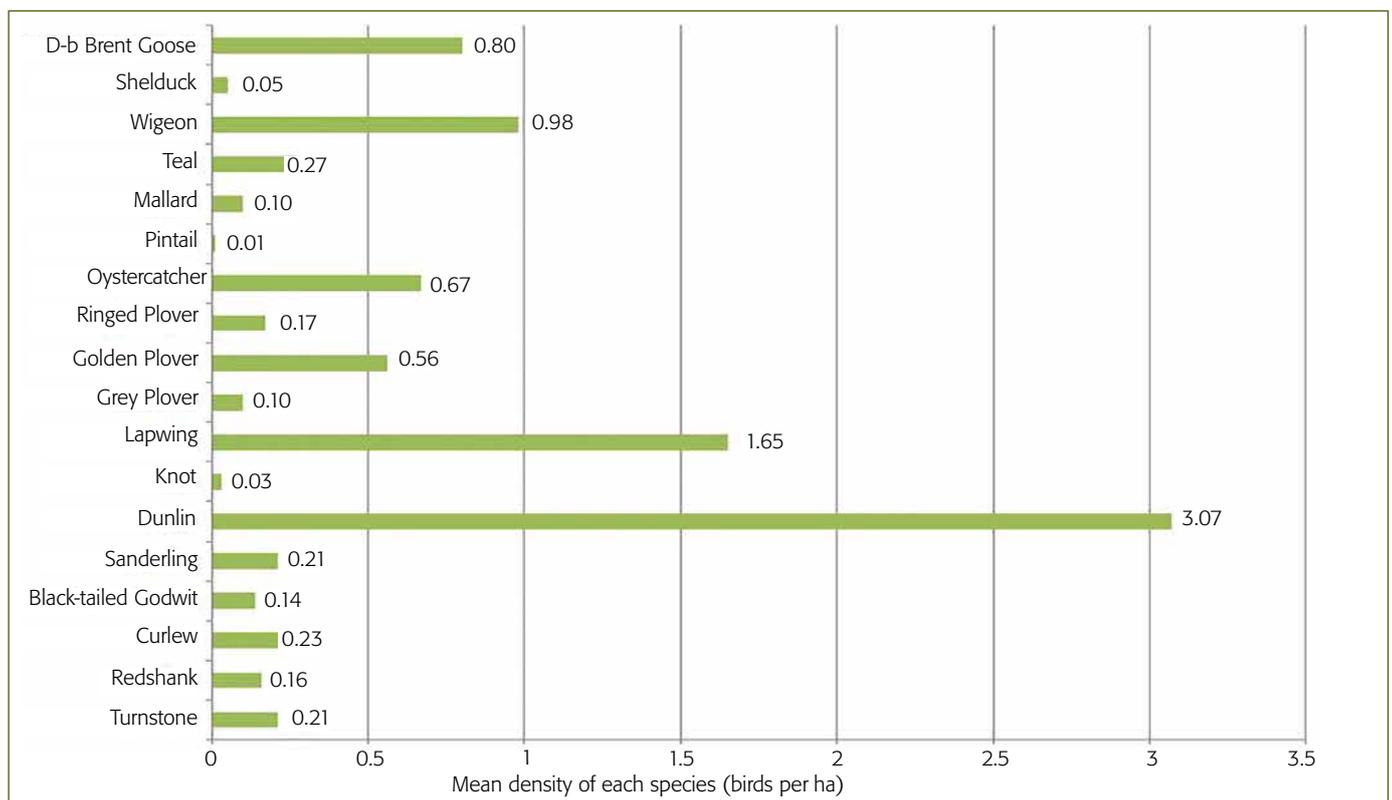
Dark-bellied Brent Geese are distributed widely around Southampton Water, with the areas around Titchfield Haven, Warash, River Hamble, Dibden Bay and at the head of the estuary at Totton particularly favoured in 2018/19, but in 1998/99 the Calshot area saw some of the largest concentrations of birds. Nationally important numbers of Brent Geese occur on Southampton Water, and peak numbers recorded during both Core and Low Tide Counts have increased since 1998/99:

the mean count increased from 1,228 birds (0.44 birds per ha) in 1998/99 to 1,882 (0.82 birds per ha) in 2018/19.

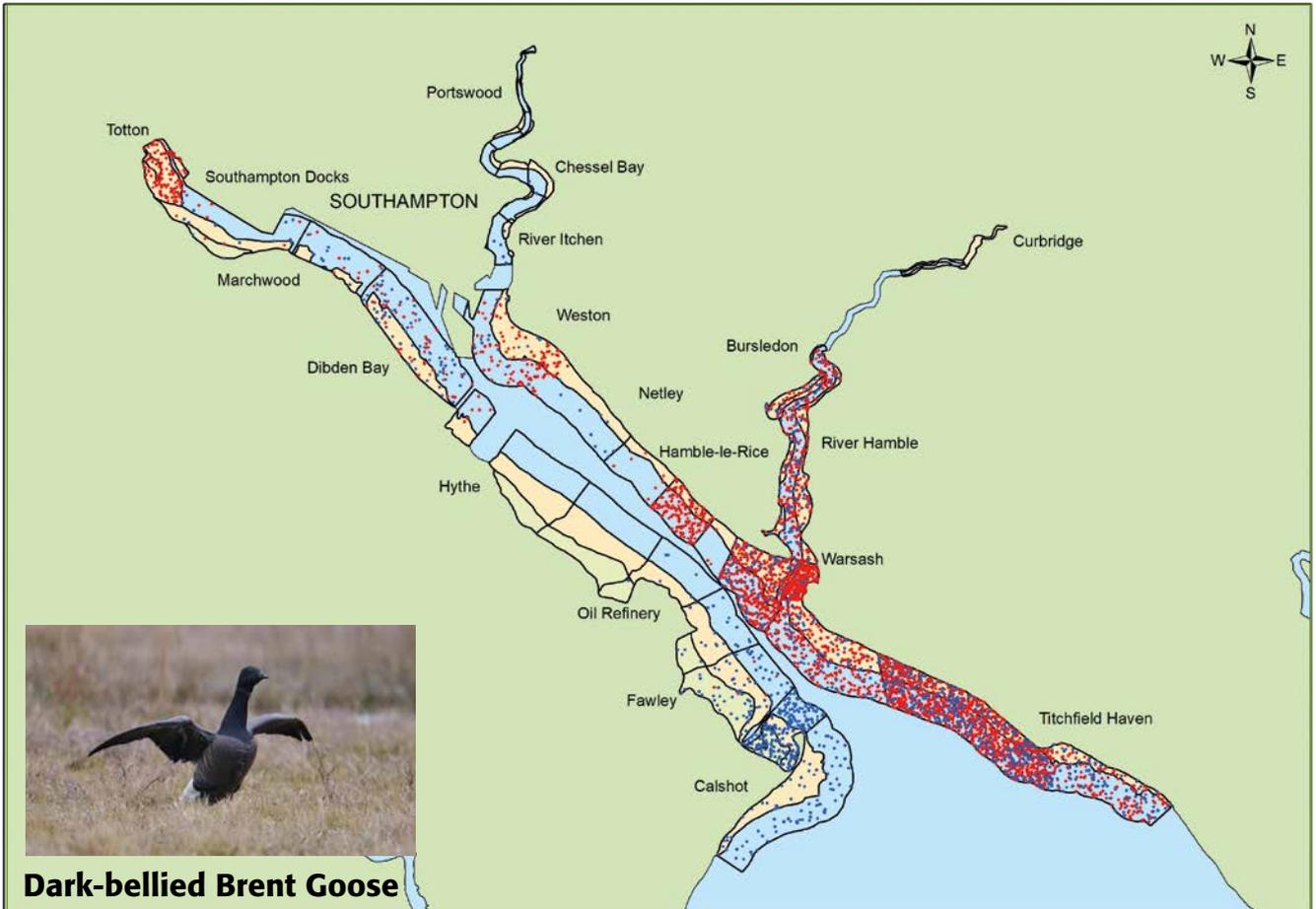
Conversely, Grey Plover numbers on Southampton Water and on the larger Solent and Southampton Water SPA have seen significant declines, with a decline of 61% on the SPA in the past 25 years (Woodward *et al.* 2019). The mean winter counts at low tide at Southampton Water reflect this with 69 birds (0.10 birds per ha) in 2018/19, compared with 192 birds (0.17 birds per ha) in 1998/99.

## GENERAL STATISTICS FOR SOUTHAMPTON WATER 2018/19

Area covered: 3,587 ha  
Mean total birds: 13,638  
Mean bird density: 3.80 birds per ha



▲ Mean densities of waterbirds at low tide on Southampton Water in 2018/19.



▲ Low tide distribution of Dark-bellied Brent Goose and Grey Plover on Southampton Water, for the winters of 2018/19 (red) and 1998/99 (blue).



## WeBS objectives, aims and methods

The Wetland Bird Survey (WeBS) monitors non-breeding waterbirds in the UK in order to provide the principal data on which the conservation of their populations is based. To this end, WeBS has three main objectives:

- to assess the size of non-breeding waterbird populations in the UK;
- to assess trends in their numbers and distribution; and
- to assess the importance of individual sites for waterbirds.

These results also form the basis for informed decision-making by conservation bodies, planners and developers, and contribute to the sustainable use and management of wetlands and their dependent waterbirds. The data and this annual WeBS report also fulfil some of the objectives of relevant international Conventions and Directives to which the UK is a signatory. WeBS also provides data to Wetlands International to assist their function of coordinating and reporting upon waterbird status at an international flyway scale.

WeBS continues the traditions of two long-running count schemes which formed the mainstay of UK waterbird monitoring since 1947.

WeBS Core Counts are carried out at a wide variety of wetlands. Coordinated, synchronous counts are advocated to prevent double-counting or birds being missed. Priority dates are recommended nationally, but due to differences in tidal regimes around the UK, counts take place at some estuaries on other

dates in order to match the most suitable local conditions. Weather and counter availability also sometimes result in counts being undertaken on alternative dates.

In addition, WeBS Low Tide Counts are undertaken on selected estuaries with the aim of identifying key areas used during the low tide period, principally by feeding birds. It also identifies areas not otherwise noted for their importance from data collected during Core Counts which are normally conducted at, or close to, high tide. The success and growth of these count schemes reflects the enthusiasm and dedication of the several thousands of participating volunteer ornithologists. It is largely due to their efforts that waterbird monitoring in the UK is held in such high regard internationally.

Full details of WeBS field and analytical methodologies are available via the WeBS website: [www.bto.org/webs](http://www.bto.org/webs)

*Waterbirds in the UK 2018/19* (comprising this summary report together with numbers and trends available from WeBS Report Online at [www.bto.org/webs-reporting](http://www.bto.org/webs-reporting)) presents the results of WeBS in 2018/19. Data from other national and local waterbird monitoring schemes, notably the WWT/JNCC/SNH Goose & Swan Monitoring Programme, are included where WeBS data alone are insufficient to fulfil specified aims. The annual WeBS report therefore provides a single, comprehensive source of information on waterbird status and distribution in the UK.

# WeBS Report Online

Explore species trends, peak counts and more at [www.bto.org/webs-reporting](http://www.bto.org/webs-reporting)

This annual report, *Waterbirds in the UK 2018/19*, combines an extensive online data resource, WeBS Report Online, with this summarised written report.

The WeBS Report Online interface provides access to the latest tables of WeBS Core Count data at site and species level via the 'Numbers and Trends' tab, together with low tide summaries and distribution density maps for estuaries via the 'Low Tide Counts' tab. Results from the Non-Estuarine Waterbird Survey (NEWS) are in the 'NEWS' tab.

Since *Waterbirds in the UK 2016/17*, a 'Site Totals' tab has been added, summarising waterbird aggregations at WeBS sites. The default view shows a table of sites with 1,000 or more birds and includes supplementary counts but excludes gulls and terns and non-native species, as is standard in the Principal Sites table (see page 14–15). Users can choose to view all sites, including those with fewer than 1,000 birds, for a county or country and optionally include gulls/terns, non-native species and supplementary counts. Selecting a site name brings up a list in the right-hand panel of species at the site where counts exceed national or international importance thresholds.

In the Low Tide section, maps have been upgraded so that up to four interactive distribution density maps can be viewed simultaneously (see page 7) and maps can be viewed for all waterbird species recorded during the survey. Estuaries can be chosen from the Location menu and the survey year from the Low Tide Count year menu. Selecting a species will display a map with count sectors separated into intertidal, subtidal and non-tidal habitats and random dots indicating the count of birds in the sector.

In the 'Numbers and Trends' section, searching for a site of interest from the menu allows users to explore which species have ever been recorded at the site. Users can see the peak numbers of each species recorded at the site throughout the year, the five-year mean peak count and the month in which the peak count was recorded. The table can be sorted alphabetically or taxonomically by species or by the peak counts. By scrolling back through the years, contemporary counts and associated five-year averages can be compared with historical counts at the site.

For those looking for information on a particular species (or biogeographic population) of waterbird, every species ever recorded by WeBS features on its own page, with every site where the species has been recorded listed. As well as offering the functionality to sort sites in tables either alphabetically, by annual peak, or by five-year average, the interface also allows the user to filter sites by country, county and/or habitat. Annual and monthly trend plots for the UK and constituent countries are shown (where applicable) and there are also links to other sources of web-based information. Supplementary counts can be included or excluded in the tables. For reference purposes, data from reports for previous years can be accessed by choosing the appropriate WeBS year from the 'Waterbirds in the UK' drop-down menu.

In the NEWS section, users can view maps of counts and coverage for a selected species occurring in a selected region. Tables of regional counts from NEWS and estimates for non-estuarine coastal habitats within the region are given for each species. Results are available for the Winter Shorebird Count and all three NEWS surveys.

## FIND OUT MUCH MORE

Access WeBS Report Online at [www.bto.org/webs-reporting](http://www.bto.org/webs-reporting)

The Numbers & Trends section features species trends (for the UK and constituent countries) and site tables for all species (with facility to filter by country, county and habitat), alongside sections on NEWS, Low Tide Counts, Site Totals and WeBS Alerts. There is also a Help section containing tutorials, to help you make the most of the resource.



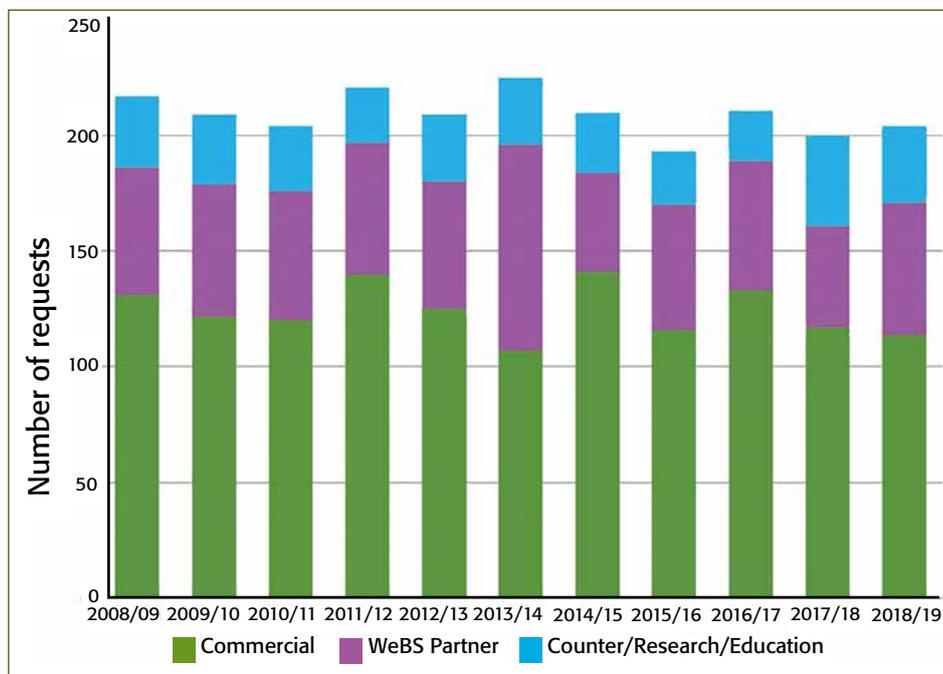
# Uses of WeBS data 2018/19

204  
WeBS Data  
Requests in  
2018/19

With the UK host to internationally important numbers of over-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 2008/09. 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.



▲ WeBS Data Requests 2008/09 to 2018/19.

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 AEWAs 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 annual report, 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.

Academic researchers, students and potential collaborators interested in using WeBS data can email the WeBS office at [websdata@bto.org](mailto:websdata@bto.org) for more information.

## WeBS DATA REQUESTS

More information about the WeBS Data Request Service is available from [www.bto.org/webs-data](http://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 2018/19

Continued from back page

### WALES

Anglesey  
Breconshire  
Burry Inlet  
Caernarfonshire  
Caernarfonshire (Foryd Bay)  
Carmarthenshire  
Ceredigion (incl Dyfi Estuary)  
Clwyd (coastal)  
Clwyd (inland)  
East Glamorgan  
Gwent (excl Severn Estuary)  
Merioneth (estuaries)  
Merioneth (other sites)  
Montgomeryshire  
Pembrokeshire  
Radnorshire  
Severn Estuary (Wales)  
West Glamorgan

Ian Sims  
Andrew King  
Lyndon Jeffery  
Rhion Pritchard  
Simon Hugheston-Roberts  
**VACANT**  
Russell Jones  
Henry Cook  
Duncan Halpin (now **VACANT**)  
Daniel Jenkins-Jones  
Al Venables  
Jim Dustow  
Jim Dustow  
Jane Kelsall  
Annie Haycock  
Peter Jennings  
Al Venables  
Lyndon Jeffery

### NORTHERN IRELAND

Antrim (Larne Lough)  
Antrim (other sites)  
Armagh (excl Loughs Neagh and Beg)  
Belfast Lough  
Down (Carlingford Lough)  
Down (Dundrum Bay)  
Down (other sites)  
Down (Outer Ards)  
Down (South Down Coast)  
Down (Strangford Lough)  
Fermanagh  
Londonderry (Bann Estuary)  
Londonderry (Lough Foyle)  
Londonderry (other sites)  
Loughs Neagh and Beg  
Tyrone (excl Loughs Neagh and Beg)

Doreen Hilditch  
Adam McClure  
Stephen Hewitt  
Shane Wolsey  
Jenny Lynch  
Patrick Lynch  
Shane Wolsey (now **VACANT**)  
NIEA (now **VACANT**)  
Shane Wolsey (now **VACANT**)  
Kerry Mackie  
Michael Stinson  
Hill Dick  
Matthew Tickner  
Shane Wolsey (now **VACANT**)  
NIEA (now **VACANT**)  
Michael Stinson (now **VACANT**)

### CHANNEL ISLANDS

Alderney  
Guernsey Coast  
Jersey (inland)  
Jersey Coast

Alderney Wildlife Trust Ecologist  
Mary Simmons  
**VACANT**  
Roger Noel

### ISLE OF MAN

Isle of Man

Pat Cullen (now 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](mailto:webs@bto.org)

In 2018/19, 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](http://www.bto.org/webs/loac)

## WeBS ONLINE REPORT

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](http://www.bto.org/webs-reporting)



## Selected further reading

### Recent studies that have used WeBS data

**Frost, T.M., Austin, G.E., Calbrade, N.A., Mellan, H.J., Hearn, R.D., Stroud, D.A., Wotton, S.R. & Balmer, D.E.** 2019. *Waterbirds in the UK 2017/18: The Wetland Bird Survey*. BTO/RSPB/JNCC. BTO, Thetford.

**Austin, G.E., Frost, T.M., Mellan, H.J. & Balmer, D.E.** 2017. *Results of the third Non-Estuarine Waterbird Survey, including population estimates for key waterbird species*. BTO Research Report 697. BTO, Thetford.

**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.

**Burton, N.H.K., Austin, G.E., Frost, T.M. & Pearce-Higgins, J.W.** 2020. Impacts of climate change on the UK's coastal and marine waterbirds. *MCCIP Science Review 2020*: 400–420.

**Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A. & Gregory, R.D.** 2015. Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. *British Birds* **108**: 708–746.

**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.

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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 2018/19

#### ENGLAND

Avon (excl Severn Estuary)  
Bedfordshire  
Berkshire

Buckinghamshire (North)

Buckinghamshire (South)  
Cambridgeshire (incl Huntingdonshire)  
Cambridgeshire (Nene Washes)  
Cambridgeshire (Ouse Washes)

Cheshire (North)  
Cheshire (South)

Cleveland (excl Tees Estuary)

Cleveland (Tees Estuary)

Cornwall (excl Tamar Complex)

Cornwall (Tamar Complex)

Cotswold Water Park

Cumbria (Duddon Estuary)

Cumbria (excl estuaries)

Cumbria (Irt/Mite/Esk Estuary)

Dee Estuary

Derbyshire

Devon (other sites)

Devon (Exe Estuary)

Devon (Taw/Torridge Estuary)

Dorset (excl estuaries)

Dorset (Poole Harbour)

Dorset (Radipole and Lodmoor)

Dorset (The Fleet and Portland Harbour)

Durham

Essex (Crouch/Roach Estuaries and South Dengie)

Essex (Hamford Water)

Essex (North Blackwater)

Essex (other sites)

Essex (South Blackwater & North Dengie)

Gloucestershire

Greater London (excl Thames Estuary)

Greater Manchester

Hampshire (Avon Valley)

Hampshire (estuaries/coastal)

Hampshire (excl Avon Valley)

Herefordshire

Hertfordshire

Humber Estuary (inner South)

Humber Estuary (mid South)

Humber Estuary (North)

Humber Estuary (outer South)

Isle of Wight

Kent (Dungeness area)

Kent (East)

Kent (Medway Estuary)

Kent (Pegwell Bay)

Kent (Swale Estuary)

Kent (Thames Estuary – Hoo)

Kent (West)

Lancashire (East Lancs and Fylde)

Lancashire (North inland)

Lancashire (Ribble Estuary)

Lancashire (River Lune)

Lancashire (West inland)

Lee Valley

Leicestershire and Rutland (excl Rutland Water)

Leicestershire and Rutland (Rutland Water)

Lincolnshire (North inland)

Lincolnshire (South inland)

Merseyside (Alt Estuary)

Merseyside (inland)

Merseyside (Mersey Estuary)

Morecambe Bay (North)

Morecambe Bay (South)

Norfolk (Breydon Water)

Norfolk (excl estuaries)

Norfolk (North Norfolk Coast)

Northamptonshire (excl Nene Valley)

Northamptonshire (Nene Valley)

Northumberland (coastal)

Northumberland (inland)

Northumberland (Lindisfarne)

Rupert Higgins

Richard Bashford

Sean Murphy

Chris Coppock (now Martin Routledge)

**VACANT**

Bruce Martin

Charlie Kitchin

Paul Harrington

**VACANT** (now Phil Hampson)

Paul Miller

Chris Sharp

Adam Jones

Pete Roseveare (now Derek Julian)

Gladys Grant (now Charles Nodder)

Ben Welbourn

Colin Gay

Dave Shackleton

Peter Jones (now **VACANT**)

Colin Wells

**VACANT**

Pete Reay

Penny Avant

Tim Davis

Malcolm Balmer

Paul Morton

Stephen Hales

Steve Groves

**VACANT**

Stephen Spicer

Leon Woodrow

John Thorogood

Anthony Harbott

Anthony Harbott

Michael Smart

Andrew Moon

Tim Wilcox

John Clark

John Shillitoe

Keith Wills

Chris Robinson

Jim Terry

Keith Parker

Richard Barnard (now Barbara Moore)

Nick Cutts

John Walker

Jim Baldwin

David Walker

**VACANT**

Bob Knight

Steffan Walton

Brian Watmough

Murray Orchard

**VACANT**

Stephen Dunstan

Peter Marsh

Ken Abram

Jean Roberts

**VACANT**

Cath Patrick

Brian Moore

Tim Appleton

Chris Gunn

Bob Titman

Steve White

Kevin Feeney (now **VACANT**)

Dermot Smith

Peter Hearn

Jean Roberts

Jim Rowe

Tim Strudwick

Neil Lawton

Barrie Galpin

Steve Brayshaw

Kathy Evans

Steve Holliday (now Tim Daley)

Andrew Craggs

Nottinghamshire

Oxfordshire (North)

Oxfordshire (South)

Severn Estuary (England)

Shropshire

Solway Estuary (inner South)

Solway Estuary (outer South)

Somerset (other sites)

Somerset (Somerset Levels)

Staffordshire

Suffolk (Alde Complex)

Suffolk (Alton Water)

Suffolk (Blyth Estuary)

Suffolk (Deben Estuary)

Suffolk (Orwell Estuary)

Suffolk (other sites)

Suffolk (Stour Estuary)

Surrey

Sussex (Chichester Harbour)

Sussex (other sites)

Thames Estuary (Foulness)

The Wash

Warwickshire

West Midlands

Wiltshire

Worcestershire

Yorkshire (East and Scarborough)

Yorkshire (Harrogate and Yorkshire Dales)

Yorkshire (Huddersfield/Halifax area)

Yorkshire (Leeds area)

Yorkshire (South)

Yorkshire (Wakefield area)

David Parkin

Sandra Bletchly

Ben Carpenter

Harvey Rose

Michael Wallace

David Blackledge

Dave Shackleton

Eve Tigwell

Trish Harper (now Eve Tigwell)

Scott Petrek

Ian Castle

John Glazebrook

Will Russell

Nick Mason

Mick Wright

Alan Miller

Rick Vonk

Penny Williams

Peter Hughes

Helen Crabtree & Dave

Boddington

Chris Lewis

Jim Scott

Matthew Griffiths

Nick Lewis

Claire Young

Andrew Warr

Jim Morgan

Bill Haines (now **VACANT**)

**VACANT**

Paul Morris

Grant Bigg

Peter Smith

#### SCOTLAND

Aberdeenshire

Angus (excl Montrose Basin)

Angus (Montrose Basin)

Argyll Mainland

Arran

Ayrshire

Badenoch and Strathspey

Borders

Bute

Caithness

Central (excl Forth Estuary)

Clyde Estuary

Dumfries and Galloway (Auchencairn and Orchardtown Bays)

Dumfries and Galloway (Fleet Bay)

Dumfries and Galloway (Loch Ryan)

Dumfries and Galloway (other sites)

Dumfries and Galloway (Rough Firth)

Dumfries and Galloway (Wigtown Bay)

Fife (excl estuaries)

Fife (Tay and Eden Estuaries)

Forth Estuary (inner)

Forth Estuary (outer North)

Forth (outer South)

Glasgow/Renfrewshire/Lanarkshire

Harris and Lewis

Islay, Jura and Colonsay

Isle of Cumbrae

Lochaber

Lothian (excl estuaries)

Lothian (Tynninghame Estuary)

Moray and Nairn (inland)

Moray and Nairn (Lossie Estuary)

Moray Basin Coast

Mull

Orkney

Perth and Kinross (excl Loch Leven)

Perth and Kinross (Loch Leven)

Shetland

Skye and Lochalsh

Solway Estuary (North)

Sutherland (excl Moray Basin)

Tiree and Coll

Uists and Benbecula

West Inverness/Wester Ross

Moray Souter

**VACANT**

Anna Cheshier

Nigel Scriven

Jim Cassels

Dave Grant

Keith Duncan

Andrew Bramhall

Ian Hopkins

Sinclair Manson

Neil Bielby

John Clark

Euan MacAlpine

David Hawker

Paul Collin

Andy Riches

Andy Riches

Paul Collin

Allan Brown

Norman Elkins

Michael Bell

Alastair Inglis

Duncan Priddle

John Clark

Yvonne Benting

David Wood

**VACANT**

Kirstie & Callum Ross

Allan Brown

Tara Sykes

David Law

Bob Proctor

Bob Swann

Nigel Scriven

Sarah Money

Michael Bell

Jeremy Squire

Paul Harvey

Jonathan Jones

Andy Riches

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