

WWT/JNCC/NatureScot Goose & Swan Monitoring Programme survey results 2020/21

Bewick's Swan *Cygnus columbianus bewickii*

1. Abundance

WeBS/I-WeBS

The abundance of Bewick's Swans in the UK and the Republic of Ireland in 2020/21 was monitored through the Wetland Bird Survey (WeBS) and the Irish Wetland Bird Survey (I-WeBS), respectively. Results from these schemes are presented in survey reports which are available to download from the schemes' websites.

International Swan Census

The international census of the Northwest European Bewick's Swan population is carried out every five years. The census is organised overall by the IUCN SSC Swan Specialist Group and coordinated in Britain and Ireland by WWT in partnership with Birdwatch Ireland.

The 9th census was undertaken in January 2020. The census yielded a total of 1,290 Bewick's Swans in Britain and Ireland, which represents a decline of 70.5% compared with the total recorded in January 2015 (4,392 birds), and is by far the lowest census total to date (Figure 1).

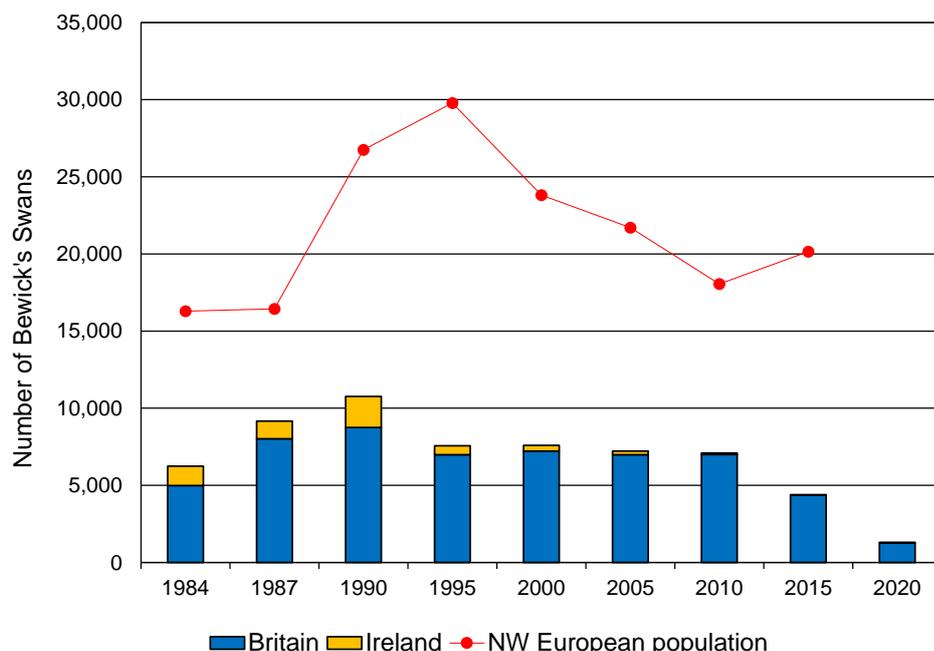


Figure 1. Number of Bewick's Swans recorded in Britain and Ireland during the International Swan Census (columns) and the Northwest European population estimate (line; Beekman et al. 2019), 1984–2020.

A total of 1,278 Bewick's Swans was recorded in Britain. Swans were recorded at 22 sites in England, from Lancashire to Hampshire (Figure 2). No birds were recorded in Wales or Scotland. The majority of birds (79.8% of the British total) were recorded at two sites: The Ouse Washes, Norfolk/Cambridgeshire (873 birds), and the Nene Washes, Cambridgeshire (147). WWT Slimbridge (Severn Estuary) recorded 89 birds and all other sites held fewer than 50 birds.

A total of 12 Bewick's Swans were recorded in Ireland. Swans were recorded at two sites there (Figure 2), with one site, Wexford Harbour & Slobs (Wexford) holding 11 birds, whilst the other site, Brideswell (Roscommon) held just one bird. No Bewick's Swans were recorded in Northern Ireland during the census.

During the census, only the Ouse Washes held numbers exceeding the 1% threshold for international importance (220 individuals, Wetland International 2021), whilst WWT Slimbridge (89 birds) and Ludham Airfield, Norfolk (45 birds), each supported numbers above the national 1% threshold for Britain (44 birds, Woodward *et al.* 2020). No sites in Ireland supported numbers above the All-Ireland 1% threshold for national importance (20 birds, Burke *et al.* 2018).



Figure 2. Number and distribution of Bewick's Swans recorded in Britain and Ireland during the International Swan Census, January 2020.

2. Breeding success

Bewick's Swans age assessments were conducted in three regions across England during mid-winter 2020/21 (19–22 January 2021). A relatively high proportion of early arrivals in Britain (*i.e.* those present in October and November) typically comprise mostly non/failed breeders (Rees *et al.* 1997), whereas age assessments made in mid-winter can be taken as being more representative of the population as a whole.

A total of 547 Bewick's Swans was aged: 462 in East Central England, six in Northwest England and 79 in Southwest England (Table 1). Brood sizes were recorded for 21 families. The number of birds aged in East Central England (the key region for the species in Britain) was lower than in previous years due to fewer birds wintering there during 2020/21: a peak of 657 Bewick's Swan was recorded at the Ouse/Nene Washes in January 2021 (WWT unpublished data) compared with 1,020 in January 2020.

Overall, Bewick's Swan flocks contained 8.8% cygnets, which is notably lower than the previous ten-year average recorded at wintering sites in England ($12.1\% \pm 1.14$ SE 2010/11–2019/20). The mean brood size of 1.95 young per successful pair was slightly higher than the previous ten-year mean (1.69 ± 0.05 SE, 2010/11–2019/20).

Table 1. The percentage of young (%) in flocks and mean brood size for Bewick's Swans at sites in England during the 2020/21 winter (regions defined below).

Region	Total aged (number of young)	Percentage of young (%)	Number of broods (number of young)	Mean brood size
Northwest England	6 (0)	Limited data	0	Limited data
East Central England	462 (45)	9.7	19 (38)	2.00
Southwest England	79 (3)	3.8	2 (3)	1.50
Total	547 (48)	8.8	21 (41)	1.95

Regions from which data were received in 2020/21:

- Northwest England: Lancashire (Thurnham Moss)
- East Central England: Cambridgeshire (WWT Welney, Ouse Washes, Nene Washes), Norfolk (Ouse Washes).
- Southwest England: Gloucestershire (WWT Slimbridge).

Age assessments of Bewick's Swans have been regularly undertaken at and around WWT Centres (WWT Welney/Ouse and Nene Washes, WWT Slimbridge and WWT Martin Mere/Ribble Estuary) since the early 1960s. In 2020/21, the mean percentage of young in flocks assessed for these sites combined was 8.9% (541 birds aged) (Figure 3), which was lower than the previous ten-year mean (11.9 young \pm 1.14 SE). The combined mean brood size of 1.95 cygnets per successful pair for the 21 broods assessed was slightly higher than the previous ten-year mean (1.78 \pm 0.07 SE). In recent years, few or no birds have been recorded at the Ribble Estuary and WWT Martin Mere, particularly at the latter site. For years when only a small sample size (<15 birds aged) was assessed at these sites, the data have been excluded from this analysis (*i.e.* for 2011/12, 2015/16 to 2020/21).

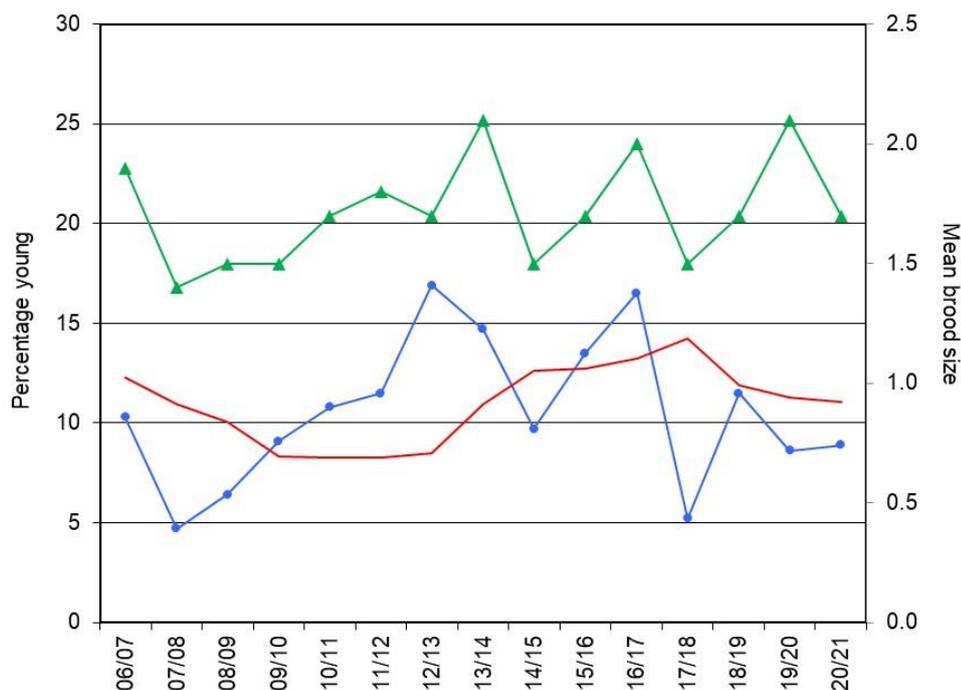


Figure 3. The percentage young (blue circles), with the rolling five-year mean (red line), and mean brood size (green triangles) for Bewick's Swans recorded at WWT centres combined (WWT Slimbridge, WWT Welney/Ouse and Nene Washes, and WWT Martin Mere/Ribble Estuary), 2006/07–2020/21. Five year mean values for the percentage of young was calculated for the five years preceding the year in question (e.g. mean presented for 2020/21 is for the 2015/16–2019/20).

3. Discussion

These data indicate that Bewick's Swans continued to experience relatively poor breeding success in 2020 with flocks containing 8.8% young which is notably lower than the previous ten-year average (11.9%) recorded at wintering sites in England.

Conditions on the breeding grounds are likely to be important in determining the population's breeding success, in particular, weather conditions during the short Arctic breeding season (Poorter 1991). However, temperatures in the Pechora Delta (in the vicinity of an important breeding area for the species) in May 2019 averaged 4.6°C which was higher than the previous five-year average for the area (2.5°C) (TuTiempo 2021). Therefore, other factors such as predator (e.g. Arctic fox) abundance may have been influential (Wood *et al.* 2016) and reports from monitoring stations in the breeding grounds in Arctic Russia (Soloviev & Tomkovich 2020) suggests that Arctic fox abundance at some sites were abundant, therefore potentially preying young Bewick's Swan cygnets. Inter-annual variability in breeding success is sensitive to the combined effects of both intrinsic factors (such as pair bond duration, with more experienced pairs raising more young) and extrinsic factors (such as low temperatures on the breeding grounds and predator pressure) having a negative impact on breeding success (Wood *et al.* 2016).

At the time of writing, no data were available on the breeding success of Bewick's Swans wintering elsewhere along the flyway, so it is uncertain how representative the estimates from Britain are of the population as a whole.

Results from the January 2020 Bewick's Swan census suggest that the number of birds wintering in Britain (1,278 birds) has fallen considerably since the previous census in 2015 (4,371). They also highlight a pronounced decline since a period when numbers recorded during the censuses (in 1995 to 2010) remained relatively constant. Furthermore, with just two sites in Ireland reporting 12 birds in total in 2020 (compared with 21 in 2015), it is clear that the Bewick's Swan is becoming an increasingly scarce bird in Ireland, with numbers having decreased rapidly since the peak of 2,004 birds recorded there during the census in 1990.

The low numbers of Bewick's Swans found in Britain and Ireland during the census is likely due to the combined influence of an overall population decline and the so-called short-stopping phenomenon that many wintering waterbirds are now exhibiting, whereby they winter further east within Europe than they once used to (Nuijten *et al.* 2020).

At the time of writing, results of the 2020 census from other countries across the flyway are still being collated; given the low numbers recorded in Britain and Ireland, it will be interesting to see how the results compare with those from elsewhere in Europe.

Overall results from the 2020 International Bewick's Swan Census will be reported by the SSC.

4. Acknowledgements

As always, our thanks go to the network of dedicated GSMP volunteers for their help with collecting age assessments. Our thanks also go to the many counters who took part in the International Swan Census in Britain and Ireland, including WeBS and I-WeBS counters, and to Birdwatch Ireland and Graham McElwaine Irish Whooper Swan Study Group for coordinating counts across Ireland.

5. References

- Beekman, J., K. Koffijberg, J. Wahl, C. Kowallik, C. Hall, K. Devos, P. Clausen, M. Hornman, B. Laubek, L. Luigujõe, M. Wieloch, H. Boland, S. Švažas, L. Nilsson, A. Stipniece, V. Keller, C. Gaudard, A. Degen, P. Shimmings, B-H. Larsen, D. Portolou, T. Langendoen, K.A. Wood & E.C. Rees. 2019. Long-term population trends and shifts in distribution of Bewick's Swan *Cygnus columbianus bewickii* wintering in northwest Europe. *Wildfowl Special Issue 5*: 73–102.
- Burke, B., L.J. Lewis, N. Fitzgerald, T. Frost, G.E. Austin & T.D. Tierney. 2018. Estimates of waterbird numbers wintering in Ireland, 2001/12–2015/16. *Irish Birds* 11: 1–12.
- Nuijten, R.J.M., Wood, K.A., Haitjema, T., Rees, E.C. & Nolet, B.A. Concurrent shifts in wintering distribution and phenology in migratory swans: Individual and generational effects. *Global Change Biology*. 2020; 26: 4263–4275. <https://doi.org/10.1111/gcb.15151>
- Poorter, E.P.R. 1991. *Bewick's Swans* *Cygnus columbianus bewickii*, an analysis of breeding success and changing resources. Ministerie van Verkeer en Waterstaat, Rijkswaterstaat, Directie Flevoland.
- Rees, E.C., J.S. Kirby & A. Gilburn. 1997. Site selection by swans wintering in Britain; the importance of habitat and geographic location. *Ibis* 139: 337–352.
- Soloviev, M. & P.S. Tomkovich. 2020. *Arctic Birds: an international breeding conditions survey*. Online database: <http://www.arcticbirds.net/>. Accessed 08/06/2021.
- TuTiempo. 2021. <http://www.tutiempo.net/en/>. Accessed June 2021.
- Wetlands International. 2021. *Waterbird population estimates*. <http://wpe.wetlands.org/>. Accessed July 2021.
- Wood, K. A., J.L. Newth, G.M. Hilton, B.A. Nolet & E.C. Rees. 2016. Inter-annual variability and long-term trends in breeding success in a declining population of migratory swans. *Journal of Avian Biology*. DOI: 10.1111/jav.00819.
- Woodward, I., N. Aebischer, D. Burnell, M. Eaton, T. Frost, C. Hall, D. Stroud & D. Noble. 2020. Population estimates of birds in Great Britain and the United Kingdom. *British Birds* 113: 60–104.

This report should be cited as:

WWT. 2021. *Goose & Swan Monitoring Programme: survey results 2020/21 Bewick's Swan* *Cygnus columbianus bewickii*. WWT/JNCC/NatureScot, Slimbridge.

© Wildfowl & Wetlands Trust

All rights reserved. No part of this document may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the copyright holder.

This report was produced under the Goose & Swan Monitoring Programme (GSMP). This programme monitors numbers and breeding success of geese and swans in the UK during the non-breeding season. GSMP is organised by the Wildfowl & Wetlands Trust in partnership with the Joint Nature Conservation Committee and NatureScot.



Goose & Swan Monitoring