

WWT/JNCC/SNH Goose & Swan Monitoring Programme
survey results 2016/17
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 2016/17 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 8th census of Bewick's Swan in Britain and Ireland was undertaken in January 2015 as part of the international census. The census was organised overall by the Wetlands International / IUCN SSC Swan Specialist Group, and coordinated in Britain and Ireland WWT in partnership with BirdWatch Ireland. This census is carried out every five years.

The census yielded a total of 4,371 Bewick's Swans in Britain and 21 in Ireland, which together represent a decline of 38% compared with the Britain and Ireland total in 2010 (Figure 1). This is by far the lowest census total to date. A brief summary of the results was presented in the 2015/16 results for Bewick's Swan: see the Previous results tab.

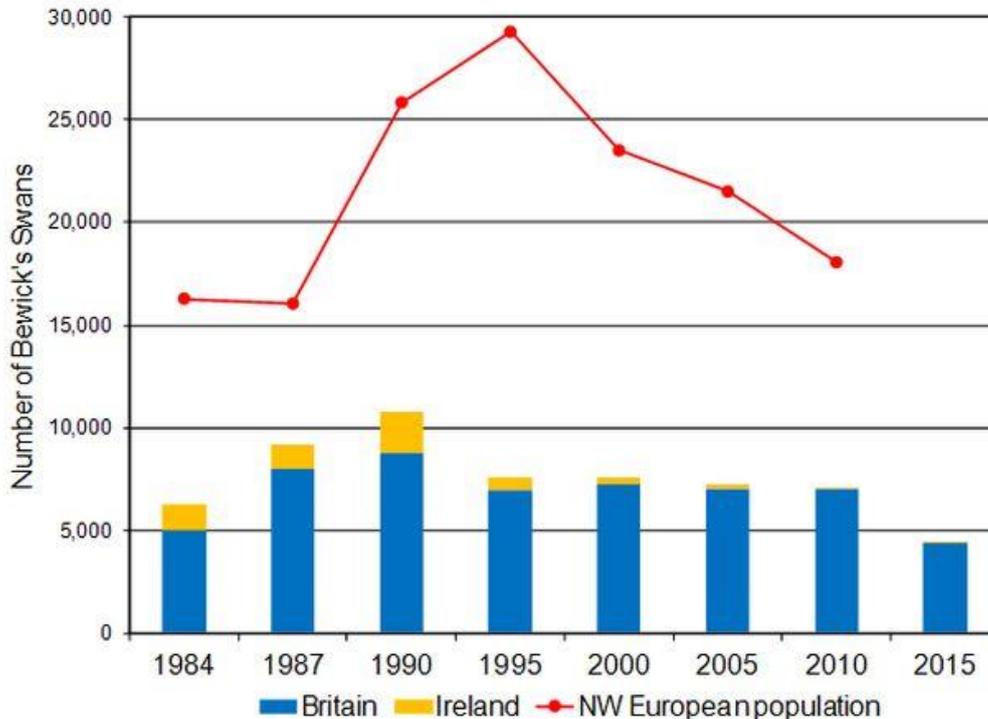


Figure 1. Number of Bewick's Swans recorded in Britain and Ireland during the International Swan Census, 1984–2015 (the overall 2015 NW European population estimate has yet to be calculated, with the analysis being undertaken by the Wetlands International / IUCN SSC Swan Specialist group).

2. Breeding success

During winter 2016/17, Bewick's Swan age assessments were conducted in three key regions across England known to host the bulk of the UK's wintering population (Worden *et al.* 2006) (Table 1). Age assessments were made in all regions in mid-winter (on 5 December 2016), because a relatively high proportion of early arrivals (*i.e.* those present in October and November) 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. The percentage of young and mean brood size was derived from age counts conducted on one day in an effort to avoid any bias that would arise from repeated observations of the same families at a particular site. Regional variation in the percentage of young was also assessed in order to determine any differences in the geographical distribution of family parties.

A total of 1,816 Bewick's Swans was aged: 1,720 in east central England and 96 in southwest England. In addition, brood size was recorded for 120 families. No Bewick's Swans were recorded in or around the Ribble Estuary (northwest England) on the survey date. Overall, Bewick's Swan flocks contained 16.5% cygnets, which was above the previous five-year and ten-year averages ($13.3\% \pm 1.2$ SE and $10.8\% \pm 1.2$ SE, respectively) for these sites (Table 1, Figures 2 & 3). The mean brood size of 2.0 cygnets was also above the previous ten-year mean (1.7 ± 0.1 SE) (Table 1, Figures 2 & 3).

Table 1: The proportion of young (%) and mean brood size for Bewick's Swans at sites in Britain during the 2016/17 winter.

Region	Total aged	Percentage of young (%)	Number of broods	Mean brood size
East Central England	1,720 (283)	16.5	112 (221)	2.0
Northwest England	0 (0)	0	0 (0)	0
Southwest England	96 (17)	17.7	8 (17)	2.1
Overall	1,816 (300)	16.5	120 (238)	2.0

Regions (counties from which data were received in 2016/17):

- East central England: Cambridgeshire and Norfolk (WWT Welney/Ouse Washes/Nene Washes)
- North England: Lancashire (Ribble Estuary)
- Southwest England: Gloucestershire (WWT Slimbridge)

There was no significant variation in the proportion of cygnets recorded in east central England (16.5%) and southwest England (17.7%) (Table 1; $X^2_1 = 0.1$, $P > 0.05$).



Figure 2: The percentage of young (blue circles), with the rolling five-year mean of % young (red line). Mean brood size (green triangles) is for Bewick's Swans recorded at WWT Slimbridge, the Ouse and Nene Washes and the Ribble Estuary combined, 1994/95–2016/17. Five-year mean values for the percentage of young were calculated for the five years preceding the year in question.

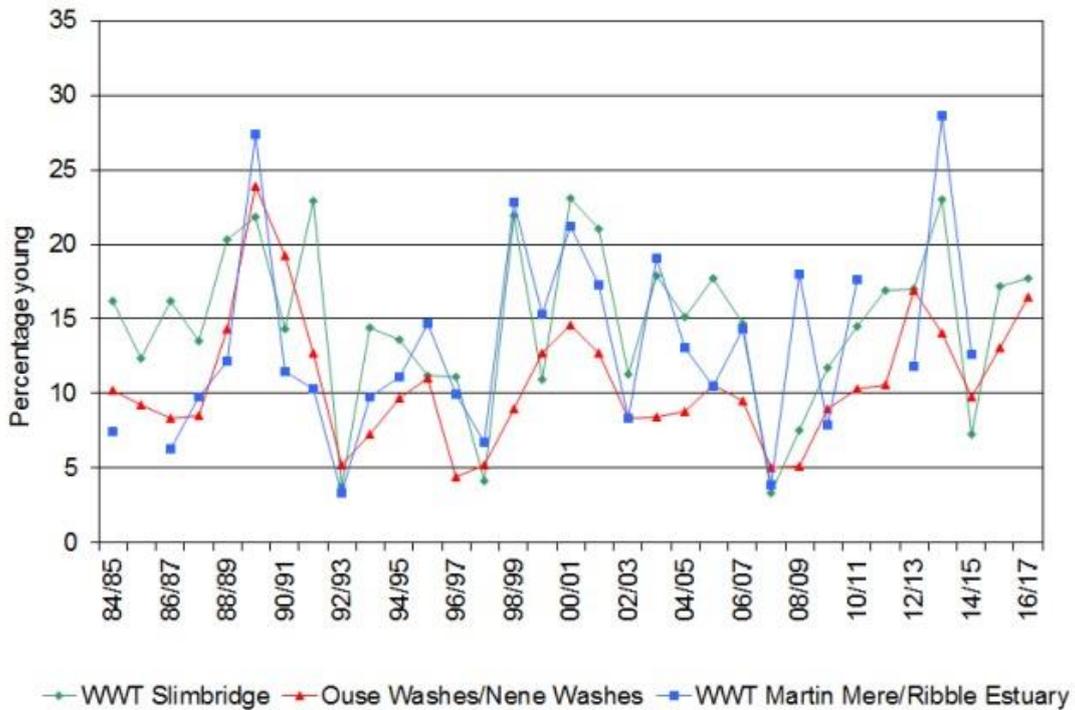


Figure 3. The percentage of young Bewick's Swans recorded at WWT Slimbridge, the Ouse and Nene Washes and the Ribble Estuary, 1988/89–2016/17.

3. Discussion

Overall, Bewick's Swans wintering in the UK had a good breeding season in 2016 with 16.5% young recorded in flocks wintering in Britain. This was above the previous five-year and ten-year means: 13.3% and 10.8%, respectively.

An international age count (coordinated by Dutch ornithologists Jan Beekman and Wim Tijsen) was also held in December 2016. Preliminary results indicate that 10,065 Bewick's Swans were aged across northern Europe (Estonia, Netherlands, Belgium, France, United Kingdom, Germany and Poland) and, overall, 8.2% young was found in the flocks surveyed. This fell below the proportion of young found in 2015 (9.3%) (W. Tijsen and J. Beekman pers. comm.). The mean brood size was 1.9 cygnets (in 352 families aged).

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). A recent study showed that reduced Bewick's swan breeding success is found in years with lower temperatures during the swan breeding period (Wood *et al.* 2016). This may be related to fewer breeding attempts and higher mortality of eggs and chicks, both directly due to cold, and indirectly as a result of reduced food availability. Temperatures in the Pechora Delta (in the vicinity of an important breeding area for the species) in May 2016 averaged 5.0°C which was higher than the previous five-year averages for the area (of 3.8°C) (TuTiempo 2017).

4. Acknowledgements

Special thanks to all observers who took part in the age counts.

5. References

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.

TuTiempo: <http://www.tutiempo.net/en/> [accessed June 2017]

Wood, K. A., Newth, J. L., Hilton, G. M., Nolet, B. A. & Rees, E. C. 2016. Inter-annual variability and long-term trends in breeding success in a declining population of migratory swans. *Journal of avian biology* 47: 597–609.

Worden, J., Cranswick, P. A., Crowe, O., McElwaine, G. & Rees, E. 2006. Numbers and distribution of Bewick's swan *Cygnus columbianus bewickii* wintering in Britain and Ireland: results of international censuses, January 1995, 2000 and 2005. *Wildfowl* 56: 3–22.

This report should be cited as:

WWT. 2017. *Goose & Swan Monitoring Programme: survey results 2016/17 Bewick's Swan *Cygnus columbianus bewickii**.
WWT/JNCC/SNH, 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 (WWT) and funded in partnership with the Joint Nature Conservation Committee (on behalf of Natural Resources Wales, Natural England and DAERA Northern Ireland) and Scottish Natural Heritage.



Goose & Swan Monitoring