

WWT/JNCC/SNH Goose & Swan Monitoring Programme
survey results 2016/17
Whooper Swan *Cygnus cygnus*

1. Abundance

WeBS/I-WeBS

The abundance of Whooper Swan 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 reports which are available via the schemes' websites.

International Swan Census

The seventh international census of the Icelandic Whooper Swan population took place in January 2015. The census was organised overall by the Wetlands International / IUCN SSC Swan Specialist Group, and coordinated in Britain, Ireland and Iceland by WWT in partnership with BirdWatch Ireland and colleagues in Iceland. The census is carried out every five years.

A total of 34,004 Whooper Swans was recorded, representing an increase of 16% since the previous census in 2010 (Figure 1). The results from this census have been presented in Hall *et al.* (2016).

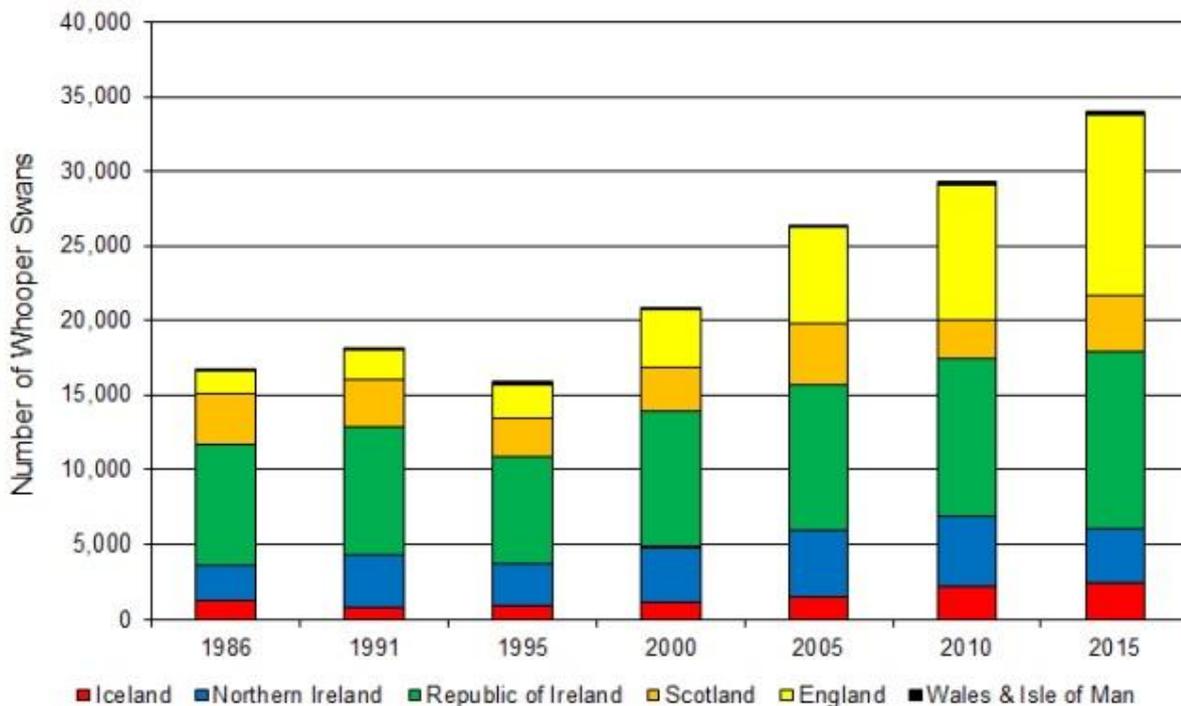


Figure 1: The number of Icelandic Whooper Swans recorded during the International Swan Census, 1986–2015. Note: Wales and the Isle of Man are combined as each holds less than 1% of the total population.

2. Breeding success

Whooper Swan age assessments were conducted in six regions across Britain and Ireland during winter 2016/17 (Table 1). Age assessments were made in all regions in mid-winter (between 16 and 20 January 2017 in Britain and between 12 and 22 January 2017 in Ireland), when the majority of families were likely to have arrived from Iceland to wintering sites. Regional variation in the percentage of young and mean brood size was assessed to determine any differences in the geographical distribution of family parties.

A total of 13,481 Whooper Swans was aged (39.6% of the 2015 total population; Hall *et al.* 2016): 6,924 birds in England, 442 in Scotland, 2,154 in Northern Ireland and 3,961 in the Republic of Ireland (Table 1). Overall, 16.2 % of birds were cygnets, which is slightly higher than that found in 2015/16 (13.2%) and also the previous ten-year mean (15.4% \pm 0.9 SE for 2006/07–2015/16). The mean brood size for pairs with young was 2.1 cygnets which equals the previous ten-year mean (\pm 0.09).

Table 1: *The proportion of young (%) and mean brood size of Whooper Swans during the 2016/17 winter (regions defined below).*

Region	Total aged (number of young)	Percentage of young (%)	Number of broods (number of young)	Mean brood size
Northwest England	966 (135)	14.0	58 (135)	2.3
East Central England	5,958 (643)	10.8	332 (643)	1.9
Southwest Scotland	306 (67)	21.9	26 (67)	2.6
West Scotland	136 (19.1)	19.1	12 (26)	2.2
Northern Ireland	2,154 (450)	20.9	190 (403)	2.1
Republic of Ireland	3,961 (865)	21.8	379 (865)	2.3
Overall	13,481 (2,186)	16.2	997 (2,139)	2.1

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

- Northwest England: Lancashire (WWT Martin Mere/Ribble Estuary)
- East central England: Cambridgeshire and Norfolk (WWT Welney/Ouse Washes/Nene Washes), Lincolnshire
- Southwest Scotland: Dumfries & Galloway
- West Scotland: Argyll and Bute
- Northern Ireland: Co. Antrim, Co. Armagh, Co. Down, Co. Fermanagh, Co. Londonderry, Co. Tyrone
- Republic of Ireland: Co. Cavan, Co. Clare, Co. Cork, Co. Donegal, Co. Galway, Co. Kerry, Co. Leitrim, Co. Limerick, Co. Mayo, Co. Meath, Co. Monaghan, Co. Roscommon, Co. Sligo, Co. Tipperary, Co. Waterford, Co. Wexford

There was evidence of variation in the distribution of families between regions ($X^2_3 = 267.5$, $P < 0.05$). Highest breeding success was found for birds which subsequently wintered in southwest Scotland (21.9%) and the Republic of Ireland (21.8%) (Table 1). Lowest breeding success was found for birds wintering in east central England (10.8%).

Overall, higher breeding success was found in northern and western regions (southwest and western Scotland, northwest England and Ireland) compared to those wintering in the southeast (east central England) (20.5%, $n = 7,523$ and 10.8 %, $n = 5,958$ respectively; $X^2_1 = 231.1$, $P < 0.05$). Regional variation in brood size was also evident, ranging from 1.9 cygnets per family in east central England to 2.6 cygnets per family in southwest Scotland.

The mean percentage of young in flocks at and around WWT centres (*i.e.* WWT Martin Mere/Ribble Estuary, WWT Welney/Ouse Washes/Nene Washes and WWT Caerlaverock), where data are collected annually, was 11.7% ($n = 7,230$), which was lower than the previous five and ten-year means (2006/07–2015/16; $12.9\% \pm 0.9$ SE and $14.1\% \pm 0.8$ SE, respectively) (Figures 2 & 3). The mean brood size for these three regions was 2.0 cygnets per family, which equalled the five-year mean but fell below the ten-year mean (2006/07–2015/16; 2.0 ± 0.04 SE and 2.1 ± 0.1 , respectively).

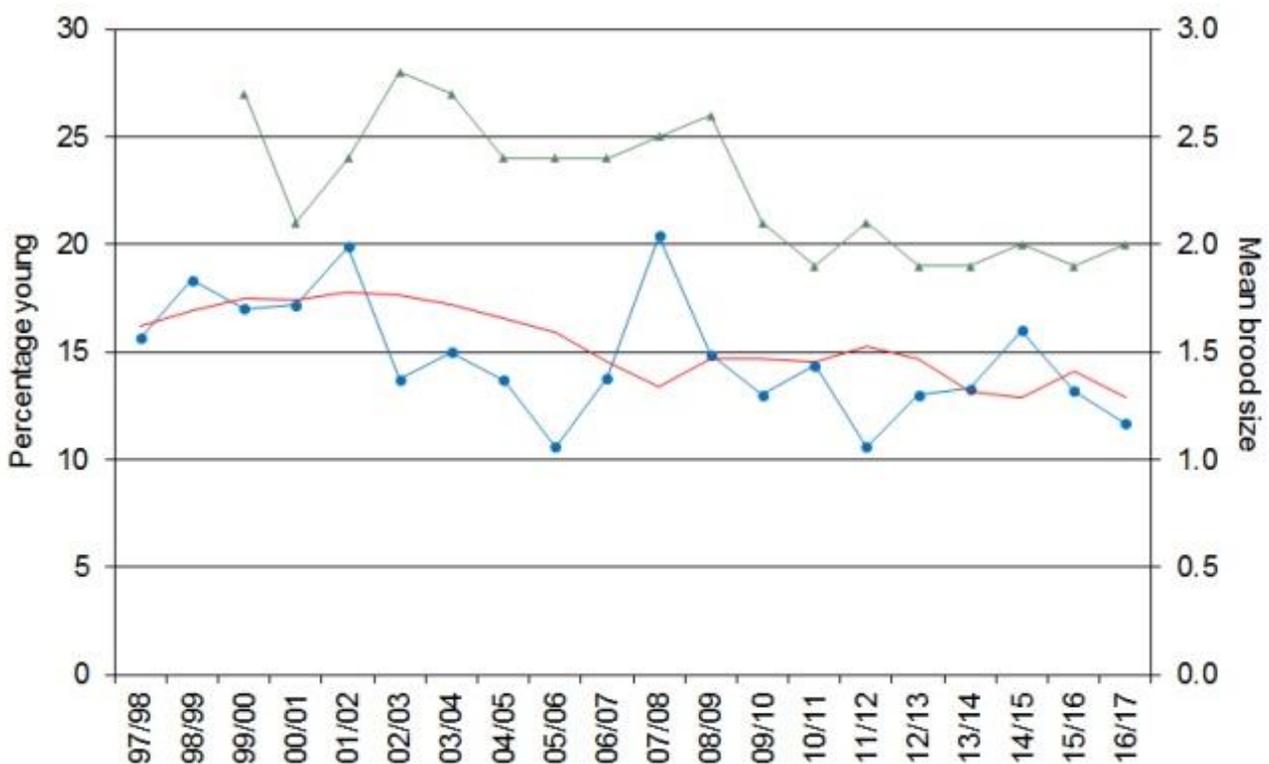


Figure 2: The percentage of young (blue circles), with the rolling five-year mean of % young (red line), and mean brood size (green triangles) of Whooper Swans recorded at WWT Welney/Ouse and Nene Washes, WWT Caerlaverock and WWT Martin Mere/Ribble Estuary, 1998/99–2016/2017. Five-year mean values for the percentage of young were calculated for the five years preceding the year in question.

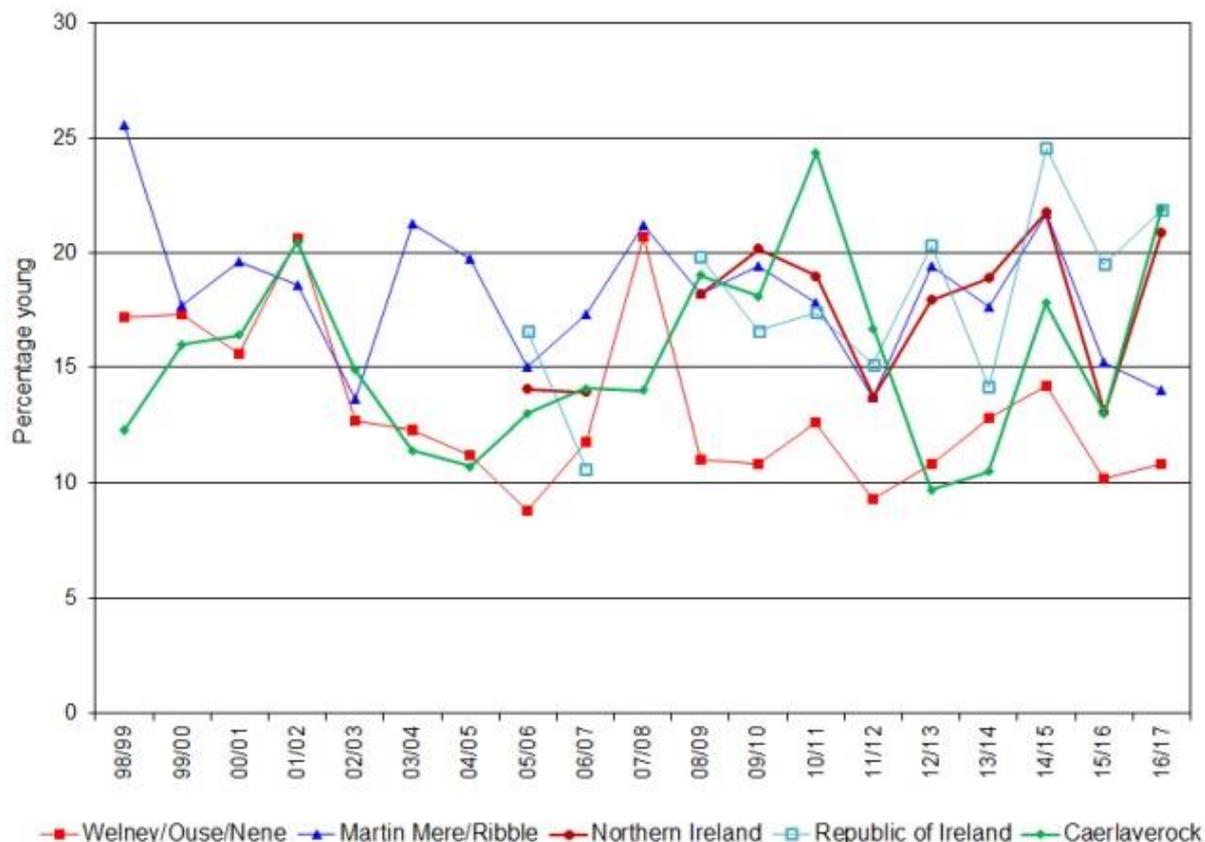


Figure 3: The percentage of young Whooper Swans recorded at WWT Welney/Ouse Washes/Nene Washes, WWT Caerlaverock, WWT Martin Mere/Ribble Estuary, Northern Ireland and the Republic of Ireland, 1998/99–2016/17.

3. Discussion

In 2016, breeding success for Icelandic Whooper Swans wintering in Britain and Ireland was above average. The proportion of young recorded (16.2%) in wintering flocks was higher than the average recorded over the previous ten years (15.4%). However, the proportion of young wintering at and around WWT centres was lower than the average recorded at these sites over the previous ten years. Flocks wintering in Ireland had among the highest proportions of cygnets and this improved overall breeding success relative to those wintering at WWT centres, in particular, those wintering on the Ouse/Nene Washes. Higher breeding success found in northern and western regions compared to the southeast may reflect a general preference for Whooper Swan families to select wintering sites closest to their Icelandic breeding grounds (Rees *et al.* 1997) and/or a preference for non-breeding birds to select southeast England's agricultural heartlands.

Daily peak temperatures in Iceland averaged 13.7°C across the country in June (Accuweather 2017) which was above the average daily maximum temperature recorded for this month between 1979 and 2012 (12°C; Weatherspark 2017). Such favourable conditions are likely to have impacted on swans breeding.

4. Acknowledgements

Special thanks to all observers who took part in the productivity surveys. We are especially grateful to Graham McElwaine and the Irish Whooper Swan Study Group for co-ordinating and conducting the annual productivity counts across Ireland.

5. References

Accuweather [Accessed June 2017]:

Hall, C., O. Crowe., G. McElwaine., O. Einarsson., N. Calbrade & E. Rees. 2016. Population size and breeding success of the Icelandic Whooper Swan *Cygnus cygnus*: results of the 2015 international census. *Wildfowl* 66: 75–97.

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.

Weatherspark [Accessed June 2017]:

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Goose & Swan Monitoring