

WWT/JNCC/SNH Goose & Swan Monitoring Programme

survey results 2006/07

Whooper swan *Cygnus cygnus*

1. Abundance

The fifth internationally coordinated census of Whooper Swans was undertaken in January 2005. The results of this census have been previously reported here in greater detail (see 2005/06), and will soon be available in Worden *et al.* (in prep).

2. Breeding success

Whooper Swan age counts were conducted within six regions across Britain and Ireland during the 2006/07 winter. A total of 9,406 Whooper Swans was aged in England (4,235 birds), Scotland (2,912 birds), Northern Ireland (538 birds) and the Republic of Ireland (1,721 birds). Counts in England were conducted during midwinter, in December 2006 and January 2007, with observations made several times a week on the Ribble Estuary (Northwest England) and at least twice a month on the Ouse Washes (East central England). Whooper Swans in Scotland were aged over a longer period, between 20 October and 31 January. Counts were made on a near daily basis at Caerlaverock (Southwest Scotland) between 1 December and 31 January. Counts were made in North and Central Scotland between 20 October and 7 January. Counts were conducted between 28 November and 20 January in Northern Ireland and on 25 October in the Republic of Ireland.

The total number of swans aged exceeded the maximum number recorded in Northwest England and Southwest Scotland (1,530 and 270, respectively) because birds at major sites were counted at least twice during December and January. In estimating the overall percentage of young in Britain and Ireland, the percentage of young contributed by these two regions was therefore adjusted in line with the maximum counts for these areas.

Brood sizes were recorded for 362 families: 133 in England, 110 in Scotland, 41 in Northern Ireland and 78 in the Republic of Ireland. Relatively few families were recorded in Southwest Scotland, particularly in relation to the total number of birds aged. Here, the mean brood size was calculated from fifteen families identified by colour-rings that were present at Caerlaverock throughout December and January. Some sites were counted more than once in Northwest England. The mean brood size for that region was therefore calculated by incorporating each brood size only once if seen on more than one day at the same site.

Breeding success was below average for all regions surveyed. Overall, Whooper Swan flocks contained 15.4% cygnets, and the average brood size of pairs with young was 2.4 cygnets. The mean percentage young at Martin Mere/Ribble Estuary, the Ouse Washes (East central England) and Caerlaverock (13.8%) was below the five year mean of 15.5% (± 1.3 s.e.), recorded over the five winters up to 2006/07. However, the proportion of young was higher for all regions when compared with 2005/06.

The percentage of juveniles in the wintering flocks was particularly low in the Republic of Ireland (10.6%). This followed above average breeding success during 2005/06, and also the highest proportion of young for all six regions (16.6%). However, it should be noted that counts were conducted in the autumn (in October), and since non-breeding birds and/or failed breeders tend to migrate earlier than family parties, the low productivity recorded compared with elsewhere may be due to the age counts being made relatively early.

The highest breeding success was recorded in Northwest England where the proportion of young fell just under that of the five year mean for this region (2001-2005 mean: 17.6%, ± 1.4 s.e.). Comparatively high proportions of young were also recorded in flocks wintering in Southwest Scotland and Northern Ireland (14.1% and 14.0%, respectively). The Ouse Washes had higher numbers of cygnets this winter (11.8%) than in 2005/06 (8.8%). However, breeding success still remained among the lowest of that found in all six regions and still fell well below the region's mean of the preceding ten years (1996-2005 mean: 15% ± 1.3 s.e.).

Although regional variation was evident this winter, cygnets appear to have been more evenly distributed across the wintering range than in 2004/05 and 2005/06, when the percentage of young ranged from 10.7-21.4% and 8.8-16.6%, respectively. Regional variation in brood size was also evident, ranging from an average of 1.8 cygnets per family for flocks wintering in Northern Ireland and 2.9 cygnets per family in Northwest England and

Southwest Scotland.

The proportion of young and mean brood size of Whooper Swan flocks during the 2006/07 winter.

Region ¹	Total aged	% young	No. broods	Mean brood size
Northwest England ²	2,653	17.3	28	2.9
East central England	2,705	11.8	105	2.3
Southwest Scotland ²	15,214	14.1	15	2.9
North and central Scotland	2,642	13.5	95	2.6
Northern Ireland	538	14.0	41	1.8
Republic of Ireland	1,721	10.6	78	2.3
Total	9,406²	15.4	362	2.4

¹Regions are defined as follows:

Northwest England: Lancashire, Cumbria

East central England: Norfolk, Cambridgeshire

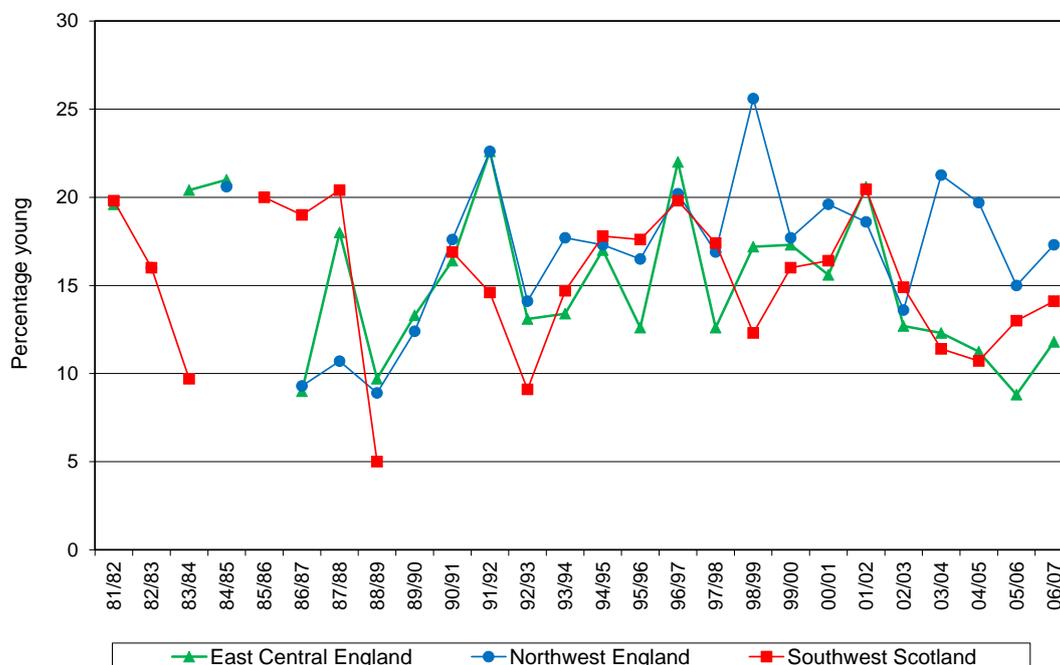
Southwest Scotland: Dumfriesshire, Borders

North and central Scotland: Argyll, Aberdeenshire, Ross and Cromarty, Highland, Inner Hebrides, Western Isles, Grampian

Northern Ireland: Co. Londonderry, Co. Down, Co. Fermanagh

Republic of Ireland: Co. Donegal.

²The total number of swans aged exceeded the maximum number recorded for these areas (1,530 for Northwest England and 270 for Southwest Scotland) because birds at major sites were counted at least twice during December and January. In estimating the total percentage of young, the percentage of young contributed by these two regions was therefore adjusted in line with the maximum counts recorded in these two areas.



The annual average percentage of young Whooper Swans in Northwest England (WWT Martin Mere, blue circles), Southwest Scotland (WWT Caerlaverock, red squares) and East central England (the Ouse Washes, green triangles), 1981/82 to 2006/07.

Mean brood sizes recorded for Whooper Swans during the winter 2003/04 - 2006/07.

	2003/04		2004/05		2005/06		2006/07	
Region	No. of broods	Mean brood size						
Northwest England	124	2.2	153	2.5	143	2.6	28	2.9
East central England	220	2.1	142	1.9	101	2.0	105	2.3
Southwest Scotland	14	2.8	19	2.8	16	3.4	15	2.9
Overall	358	2.4	314	2.4	260	2.4	148	2.5

3. Discussion

The total of 26,366 Whooper Swans recorded during the international census in January 2005 was the highest to date, equating to a 26% increase on numbers counted in 2000. This represents an average annual rate of increase of 4.7%.

There was a disproportionate increase in the number of birds using sites in Britain during January 2005 compared with the rest of the range. Numbers increased by just 11% in Ireland, in contrast to 55% in Britain, between 2000 and 2005 (compared with 29% and 36% increases between 1995 and 2000). The increase in numbers of birds in England was not accompanied by a significant increase in the number of flocks recorded, and distribution is concentrated at relatively few sites. In fact, the continuing increase in numbers using the Ouse Washes in Norfolk accounted for 82% of the rise in total numbers found in England.

It is possible that the increasing British numbers of Whooper Swans, particularly in East central England, may be inflated by an increasing proportion of birds from the Northwest European population wintering in Britain. This population breeds from Fenno-Scandia to northwest Russia and winters in continental Europe, but it is known from ringing studies that a small number winter in Britain. A greater understanding of the extent of interchange between populations and use of British and Irish wintering grounds by the Northwest European population is necessary to ascertain the true size of these expanding populations.

The percentage of cygnets in wintering flocks was below average for Whooper Swans in the UK and Ireland during 2006/07, with 15.4% recorded. When excluding early autumn counts from the Republic of Ireland, breeding success was still relatively low (16.5%). A low proportion of cygnets in 2006/07 may be partly attributed to there being a higher proportion of non-breeding sub-adults in the population, following the relatively successful breeding season in 2004. Moreover, unseasonably cold temperatures and snow on Icelandic breeding grounds during May 2006 are likely to have reduced the swans' breeding success, particularly in eastern locations which suffered the worst weather.

Flocks with the highest proportion of young were found in Northwest England (17.3%) whilst flocks in Southwest Scotland and Northern Ireland also had higher productivity than most other regions (14.1% and 14.0%, respectively). Given that there is a tendency for Whooper Swans from western Iceland to winter in Ireland (Gararsson 1991; Rees *et al.* 2002), this suggests that swans in the western part of the breeding range had greater breeding success in 2006 than swans in other parts of the range.

The distribution of families was more consistent between regions in winter 2006/07 than in the three preceding winters. Regional variation was still evident, however, with higher proportions of young recorded in regions in the Northwest (Northwest England, Southwest Scotland and Northern Ireland) than in the Southeast (East central England), reflecting the likely preference of Whooper Swan families in selecting sites closest to their Icelandic breeding grounds, with non-breeding birds migrating further south (Rees *et al.* 1997b). The low percentage of young recorded in flocks at the most southerly region sampled (East central England), provides further evidence for this. Such regional variation confirms the need for comprehensive collection of age data across the wintering range for providing an accurate estimate of the population's breeding success.

4. References

Garðarsson, A. 1991. Movements of Whooper Swans *Cygnus cygnus* neckbanded in Iceland. In Sears, J & PJ Bacon (eds.). Proceedings of the 3rd IWRB International Swan Symposium, Oxford, 1989. *Wildfowl Special Supplement No. 1*: 189-194.

Rees, EC, K Colhoun, Ó Einarsson, G McElwaine, Æ Petersen & S Thorstensen. 2002. Whooper Swan *Cygnus cygnus*. In Wernham, CV, MP Toms, JH Marchant, JA Clark, GM Siriwardena & SR Baillie (eds.) *The Migration Atlas: Movements of the Birds of Britain and Ireland*. Pp. 154-157. T & AD Poyser, London.

Rees, EC, JS Kirby & A Gilburn. 1997b. Site selection by swans wintering in Britain; the importance of habitat and geographic location. *Ibis* 139: 337-352.

This report should be cited as:

WWT. 2007. *Goose & Swan Monitoring Programme: survey results 2006/07 Whooper swan* *Cygnus Cygnus*. WWT/JNCC/SNH, Slimbridge.

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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 (on behalf of Natural Resources Wales, Natural England and the Council for Nature Conservation and the Countryside) and Scottish Natural Heritage.



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