WWT/JNCC/SNH Goose & Swan Monitoring Programme

survey results 2008/09

Whooper swan *Cygnus cygnus*

1. Abundance

The fifth International 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 are available in Worden *et al.* (2009).

2. Breeding success

Whooper Swan age counts were conducted within six regions across Britain and Ireland during the 2008/09 winter. A total of 5,844 swans were aged in England (2,720 birds), Scotland (532 birds), Northern Ireland (1,739 birds) and the Republic of Ireland (853 birds) between 16 December and 2 February 2009.

Brood sizes were recorded for 460 families: 202 in England and 29 in Scotland, 151 in Northern Ireland and 78 in the Republic of Ireland. Relatively few families were recorded in Southwest Scotland. Here, the mean brood size was calculated from 18 families identified by darvic ring that were present at WWT Caerlaverock throughout the winter (October to March).

For East Central England (the Ouse Washes, Norfolk), Northwest England (WWT Martin Mere/Ribble Estuary, Lancashire) and Southwest Scotland (WWT Caerlaverock, Dumfriesshire), the percentage of young and mean brood size were derived from age counts conducted on one day. Age counts were conducted on 20 January in Northwest England, on 6 January in East Central England (brood sizes were recorded on 16 December in this region) and on 21 January in Southwest Scotland. This was to avoid any bias that would arise from repeated observations of the same families at certain sites. Fewer counts were conducted in North and Central Scotland and so breeding success was determined from data collected across two days (12 January in Argyll and 25 January in Aberdeenshire). Counts were conducted between 4 January and 2 February in Northern Ireland and between 8 January and 1 February in the Republic of Ireland.

Regional variation was assessed in order to determine the differences in the geographical distribution of family parties

Breeding success was marginally above average for all regions surveyed with the exception of East Central England. Overall, Whooper Swan flocks contained 16.8% cygnets, and the mean brood size of pairs with young was 2.1 cygnets. The mean percentage young at WWT Martin Mere/Ribble Estuary, the Ouse Washes and WWT Caerlaverock (14.9%) was similar to the five-year mean recorded over the five winters up to 2008/09 (14.7% ± 1.6 SE). However, productivity was not as high as that seen in the 2007/08 winter (20.4%).

The proportion of young and mean brood size of Whooper Swan flocks during the 2008/09 winter.

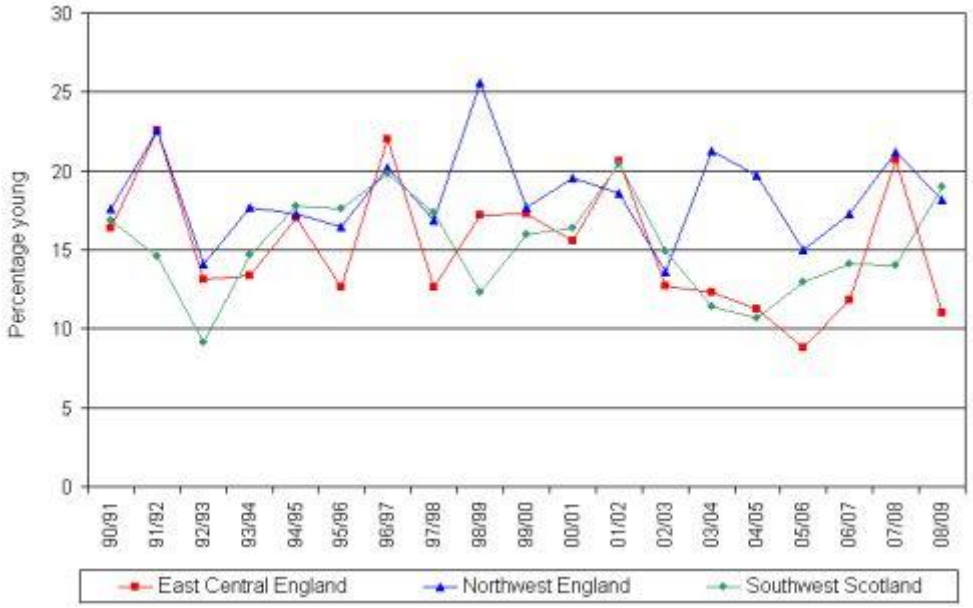
Region[1]	Total aged (no. of young)	% young	No. broods (no. of young)	Mean brood size
Northwest England*	1,299 (237)	18.2	120 (247)	2.1
East Central England*	1,421 (156)	11.0	82 (165)	2.0
Southwest Scotland	331 (63)	19.0	18 (46)	2.6
North and Central Scotland	201 (38)	18.9	11 (26)	2.4
Northern Ireland	1,739 (316)	18.2	151 (316)	2.1
Republic of Ireland	853 (169)	19.8	78 (169)	2.2
Total	**5,844 (979)**	**16.8**	**460 (969)**	**2.1**

[1]Regions are defined as follows:
Northwest England: Lancashire
East Central England: Norfolk
Southwest Scotland: Dumfriesshire
North and Central Scotland: Argyll and Aberdeenshire
Northern Ireland: Co. Londonderry, Co. Antrim, Co. Down, Co. Tyrone, Co. Fermarnagh and Co. Armagh
Rebulic of Ireland: Co. Sligo, Co. Monaghan, Co. Limerick, Co. Laois, Co. Cork and Co. Waterford

* Counts for the total aged (% young) and number of broods (mean brood size) were conducted separately, hence the number of cygnets differ.

The highest proportions of young were recorded in the Republic of Ireland (19.8%) and Southwest Scotland (19.0%). Those wintering in Southwest Scotland had the highest breeding success there since the 2001/02 season (20.5%) whilst breeding success in East Central England (11.0%) fell below the five-year average for the area (13.0% ± 2.1 SE). Following an improvement in breeding success between 2005/06 and 2007/08 in Northwest England, the proportion of young recorded there in 2008/09 (18.2%) decreased by 14.2%.

Cygnets appear to have been less evenly distributed across the wintering range than in winters 2005/06 (8.8-14.9%), 2006/07 (11.8-17.3%) and 2007/08 (2.3-3.6%). Regional variation in brood size was also evident, ranging from an average of 2.0 cygnets per family for flocks wintering in East Central England and 2.6 cygnets per family in Southwest Scotland.



The annual average percentage of young Whooper Swans in Northwest England (WWT Martin Mere), Southwest Scotland (WWT Caerlaverock) and East central England (Ouse Washes), 1990/91 to 2008/09.

Mean brood sizes recorded for Whooper Swans during winters 2004/05 - 2008/09.

	2005/06		2006/07		2007/08		2008/09	
Region	**No. of broods**	**Mean brood size**	**No. of broods**	**Mean brood size**	**No. of broods**	**Mean brood size**	**No. of broods**	**Mean brood size**
Northwest England	143	2.6	28	2.9	109	2.5	120	2.1
East central England	101	2.0	105	2.3	119	2.5	82	2.0
Southwest Scotland	16	3.4	15	2.9	17	3.6	18	2.6
Overall	**260**	**2.4**	**148**	**2.5**	**245**	**2.6**	**220**	**2.1**

There was evidence of regional variation in the percentage of young recorded between regions with the highest proportions recorded in North and East Scotland (29.2%), Northern Ireland (20.2%) and Northwest England (19.4%). Those wintering in East Central England had considerably lower breeding success than that found in all other regions (10.8%) and this also represented the lowest proportion of young recorded in the area since 2005/06 (8.8%). Regional variation in brood size was evident, ranging from an average of 1.9 cygnets per family for flocks wintering in Northwest and East Central England and 2.5 cygnets per family in the Republic of Ireland.

The proportion of young and mean brood size of Whooper Swan flocks during the 2009/10 winter.

Region[1]	**Total aged (no. of young)**	**% young**	**No. broods (no. of young)**	**Mean brood size**
Northwest England	1,738 (337)	19.4	133 (249)	1.9
East Central England	5,593 (603)	10.8	307 (584)	1.9
Southwest Scotland	260 (47)	18.1	20 (47)	2.4
North and East Scotland	89 (26)	29.2	4 (8)	Limited data
Northern Ireland	1,563 (315)	20.2	160 (315)	2.0
Rebublic of Ireland	8,375 (1,391)	16.6	105 (262)	2.5
Total	**17,618 (2,719)**	**15.4**	**729 (1,465)**	**2.0**

[1]Regions are defined as follows:
Northwest England: Lancashire
East Central England: Norfolk
Southwest Scotland: Dumfriesshire
North and East Scotland: Grampian, Roxborough, Fife
Northern Ireland: Co. Londonderry, Co. Antrim, Co. Tyrone, Co. Fermanagh, Co. Armagh
Republic of Ireland: Co. Cavan, Co. Clare, Co. Cork, Co. Donegal, Co. Galway, Co. Kerry, Co. Kildare, Co. Kilkenny, Co. Laois, Co. Leitrim, Co. Limerick, Co. Longford, Co. Mayo, Co. Meath, Co. Monaghan, Co. Offaly, Co. Roscommon, Co. Sligo, Co. Tipperary, Co. Waterford, Co. Westmeath, Co. Wexford, Co. Wicklow

3. Discussion

The percentage of young was slightly above average for Whooper Swans wintering in the UK during 2008/09 (16.8%) and higher than the 5-year mean of 14.7% for birds aged at WWT centres during winters up to and including 2007/08. However, breeding success was lower than that recorded during the most recent international Whooper Swan census, made in January 2005 when 19.2% young were recorded (Worden *et al* 2009). Average breeding success in summer 2008 was most probably influenced by the warm and dry conditions encountered across Iceland in May, June and July, where temperatures were above or close to average (Icelandic Meteorological Office; accessed 20 July 2009).

The distribution of families was less consistent between regions in winter 2008/09 than in the three winters preceding, with higher proportions of young recorded in the Republic of Ireland and Southwest Scotland than in other regions. The poorest breeding success was found for birds wintering in East Central England (11.0%). This may reflect the likely preference of Whooper Swan families in selecting sites closest to their Icelandic breeding grounds, with non-breeding birds travelling further south (Rees *et al* 1997).

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 (Worden *et al* 2009).

Reasons for the regional variation in mean brood size have yet to be determined, but may be due to the large more dominant family groups (Black & Rees 1984) displacing pairs with fewer young and non/failed breeders from areas closer to the breeding range.

4. References

Worden, J, O Crowe, O Einarsson, A Gardarsson, G McElwaine & EC Rees. 2009. Population size and breeding success of the Icelandic Whooper Swan *Cygnus cygnus*: results of the January 2005 International Census. *Wildfowl* 59:17-40.

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WWT. 2009. *Goose & Swan Monitoring Programme: survey results 2008/09 Whooper swan* Cygnus Cygnus. WWT/JNCC/SNH, Slimbridge.

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