

WWT/JNCC/SNH Goose & Swan Monitoring Programme

survey results 2009/10

Northwest Scotland Greylag Goose *Anser anser*

1. Abundance

Results of the Scottish Greylag Goose Survey, 2008-09

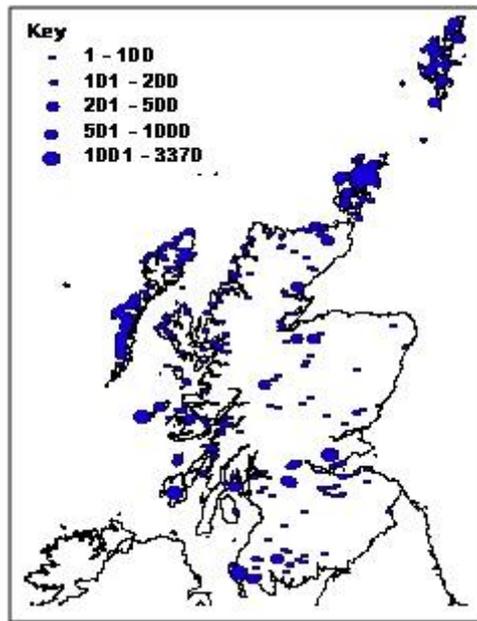
Greylag Geese breed across a wide area to the north and west of the Great Glen, principally on the Outer Hebrides, Inner Hebrides (Coll & Tiree) and, increasingly, in the Northern Isles. From a low point of *c.* 500 birds in the 1930s, the species has increased 40 fold in Scotland in 60 years. This conservation success story was due to a combination of direct conservation measures, favourable changes in agricultural systems and hunting mortality not keeping pace with recruitment. The re-establishment of populations in the south and east of Scotland in the 1930s and 1950/60s started a period of expansion there. However, comprehensive survey of both of these populations had not been undertaken for more than ten years so in order to better assess the current abundance and distribution of the species, a simultaneous comprehensive survey of summering Greylag Geese throughout Scotland was undertaken in the summers of 2008 and 2009.

Counts of moulting Greylag Geese were undertaken at 53 lochs where moult gatherings were thought to occur, in areas to the south and east of the Great Glen. A random stratified survey of another 246 (out of 754, 33%) lochs greater than 5 ha and 248 (out of 4,636, 5%) lochs less than 5 ha was also carried out. Habitat categories, or strata, used in the stratification process were based on altitude, the proportion of water cover, the proportion of woodlands (both conifer and broadleaf) and the recorded presence/absence of breeding records in each 10 km square. In addition, in 2008 post-moult counts were undertaken in areas to the north and west of the Great Glen, apart from Caithness and Shetland which were counted in 2009.

The population estimate of Greylag Geese summering in Scotland in 2008/09 was 47,405 birds (range 44,059 to 51,763). Overall, breeding success was estimated at 23.1% in 2008 and 13.3% in 2009 (the latter based on a smaller sample size) and the mean brood size was 3.19 goslings per successful pair in both years. The annual rate of increase was estimated at 11.9% in north and west Scotland (1997 to 2008/09) and 9.7% in south and east Scotland (1991 to 2008/09).

The largest concentrations were found on Orkney (*c.* 10,000 geese), the Uists (5,948), Shetland (4,1335,133), Tiree (3,370), Harris & Lewis (1,912) and Islay (*c.* 1,500). The figures for post-moult gatherings in late August represent minimum counts. In mainland Scotland, the largest gatherings of moulting Greylag Geese were found at Black/White Lochs combined, Stranraer, (1,395 geese) and Loch Leven, Perth & Kinross (1,014).

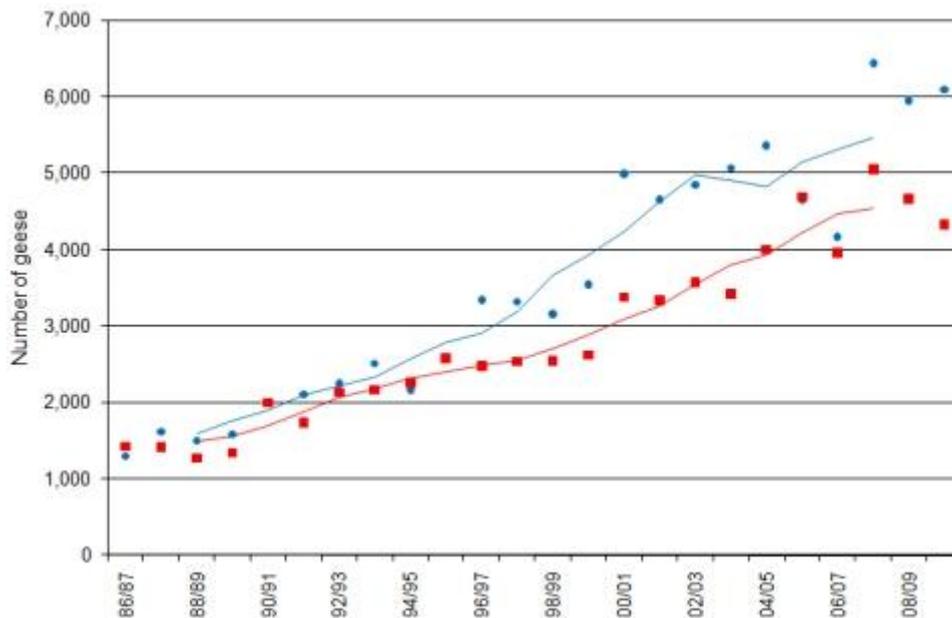
In 2000, there was an estimated 24,500 re-established Greylag Geese in Britain (including Scotland) and numbers were increasing at an average per annum increase of 9.4% (Austin *et al.* 2007) similar to the figure calculated for re-established Greylag Geese in the current study. The annual index based on the Wetland Bird Survey shows a period of continued increase in numbers since the 1990s (Austin *et al.* 2008) and assuming a continued rate of annual increase (9.4% per annum) the number of re-established Greylag Geese in Britain is likely to have risen to *c.* 50,000 birds by 2008. Combining that estimate with the number of Greylag Geese recorded in north and west Scotland in the current study (*c.* 34,000 birds) suggests the total number of Greylag Geese summering in Britain is probably *c.* 84,000 birds.



Summary distribution of Greylag Geese encountered during the 2008-09 survey of Scotland.

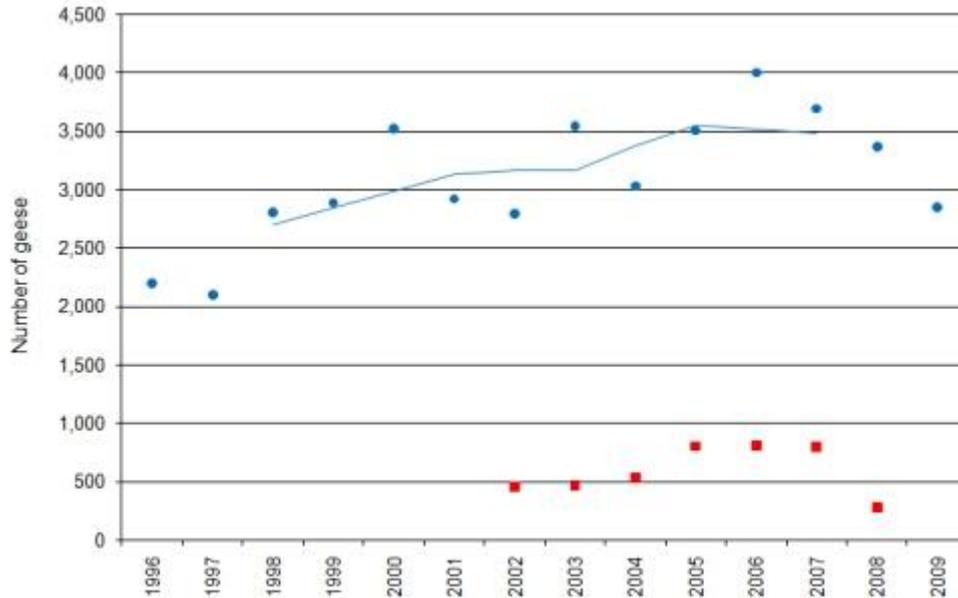
2009/10 Results of surveys at key sites

A total of 6,098 Greylag Geese was counted on the Uists in late August 2009. This was an increase of 2.5% on the August count for the previous year. During February 2010, however, a count of 4,321 was made, a decrease of 7.3% on the count in February 2009. North Uist held the largest percentage of birds in both August 2009 (48.0%) and February 2010 (66.3%), whilst South Uist held 40.7% and 28.7%, respectively. Smaller numbers were counted on Benbecula.



Peak counts of Northwest Scotland Greylag Geese recorded in August (blue circles) and February (red squares) on the Uists, Outer Hebrides, 1986/87-2009/10. The five-year running means (eg mean for August 2007 is from counts for August 2005-2009) are shown as lines.

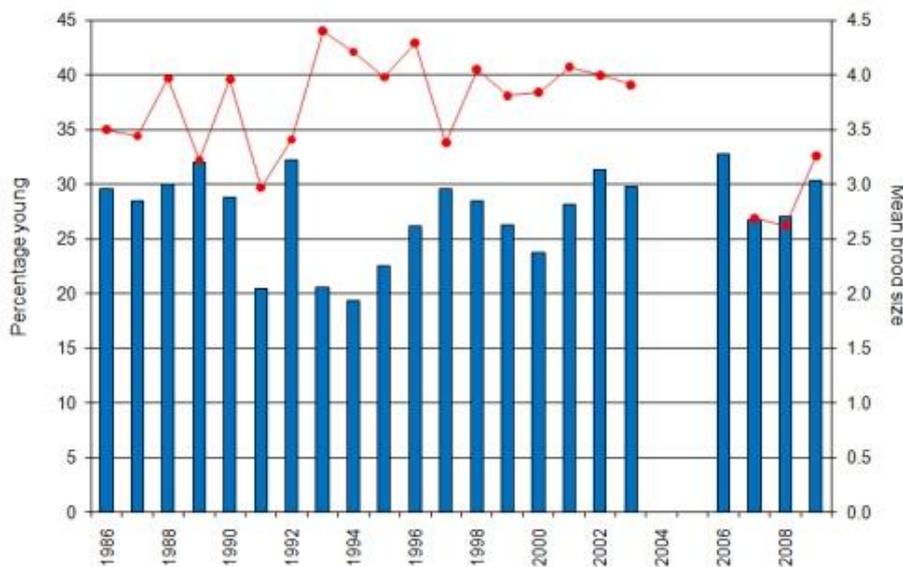
The other key area monitored on an annual basis is the island of Tiree, in the Inner Hebrides. An island-wide census in late August 2009 produced a count of 2,848 birds, a decrease of 15.5% on the count in August 2008. However, this is considered an underestimate since shooting of the geese throughout August had dispersed them more widely than usual and made them harder to count (J. Bowler pers. comm.). Nevertheless, numbers on Tiree are thought to have declined after reaching a high point in 2006 (4,005 birds), presumably reflecting the increase in the number of birds shot under licence.



Peak counts of Northwest Scotland Greylag Geese recorded in late August on Tiree, Inner Hebrides (blue circles), 1996-2010. The five-year running mean (eg mean for August 2007 is from counts for August 2005-2009) is shown as a line. Coordinated counts for Coll, Inner Hebrides are also shown (red squares; no data were available for 2010).

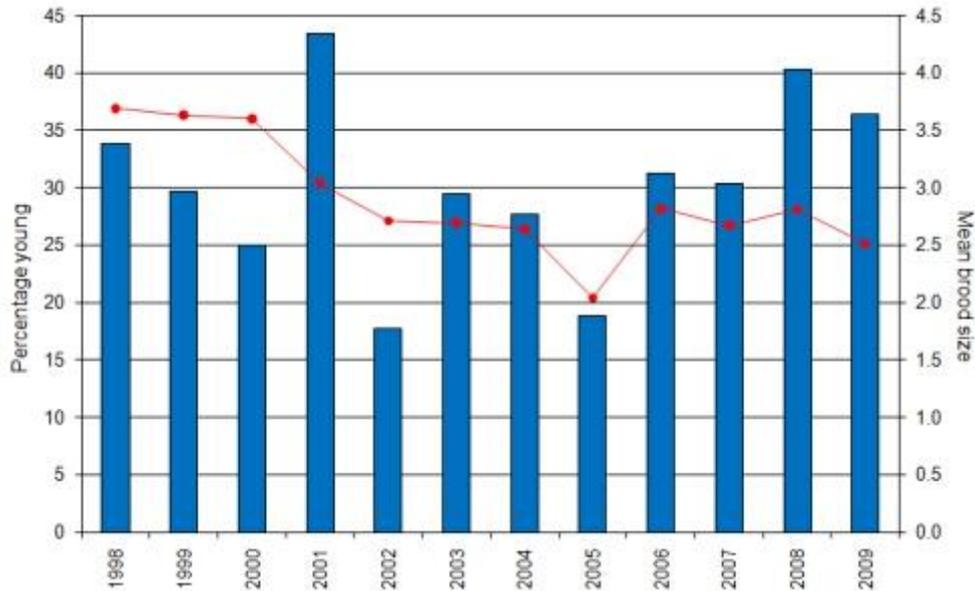
2. Breeding success

Productivity data were collected from the Uists, with a total of 502 birds in 14 flocks aged between 22 and 23 August 2009, and brood sizes collected for 32 families. The percentage of young birds in the post-breeding August count was 30.3% - similar to the mean for the three previous years (mean 2006-2008: 28.9% ± 1.97 SE). The mean brood size was higher than that recorded in the two previous years at 3.26 goslings per successful pair (mean brood size 2007-2008: 2.66 ± 0.04 SE).



The mean percentage of young (blue columns) and mean brood size (red circles) of Northwest Scotland Greylag Geese on the Uists, 1986-2009. No data were available for 2004 and 2005. No mean brood size data were available for 2006.

A total of 1,921 Northwest Scotland Greylag Geese was aged on Tiree on 24/25 August 2009, and brood sizes were collected for 279 families. The percentage of young birds in this post-breeding August count was 36.4% - similar to the mean for the previous five years (mean 2004-2008: $38.3\% \pm 3.47$ SE). The mean brood size was similar to that recorded in the previous five years at 2.51 goslings per successful pair (mean brood size 2004-2008: 2.66 ± 0.14 SE).



The mean percentage of young (blue columns) and mean brood size (red circles) of Northwest Scotland Greylag Geese on Coll and Tiree, 1998-2009. Data from Bowler *et al.*(2005) and J. Bowler pers. Comm.

3. Discussion

The number of Greylag Geese counted on the Uists in August 2009 was 2.5% higher than the same month in the previous year, and the breeding success was also higher than the previous year. However, the February 2010 count was lower than the February 2009 count by 7.3%. It is thought that a recent increase in the number of birds being shot on the Uists may account for this decrease in numbers. Numbers counted on Tiree in late August 2009 were 15.5% lower than the previous year, although this is believed to be predominantly accounted for because the 2009 count was probably an underestimate. However, some decrease in the Tiree population is thought to be likely. In both areas (Tiree and the Uists) annual breeding success remained high with over 30% young in post-breeding flocks. Both areas have been subject to licensed shooting and this extra mortality appears to have halted, or at least slowed, the gradual increase witnessed over the last 10-20 years.

Since the last national census in 1997, the Northwest Scotland Greylag Goose population is now known to have increased in number and range. In some parts of Scotland, the Re-established and Northwest Scotland populations overlap and are therefore indistinguishable. It is likely that it will become increasingly difficult to separate these populations in future, with consequences for monitoring schemes. A complete census of summering Greylag Geese in Scotland was completed in 2009 and estimated the population at 47,500 birds (Mitchell *et al.* 2010). The Uists (*c.* 6,000 birds) and Tiree (*c.* 2,000-3,000 birds) contributed significantly to this total. However, the number and distribution of summering Re-established Greylag Geese in south and east Scotland is also increasing such that separation of the two populations is becoming meaningless. There is, however, still a need for more information on the movements of these Greylag Geese, especially between breeding areas, and on mortality patterns. This could be achieved through increasing the number of individually marked birds.

4. References

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Goose & Swan Monitoring