

WWT/JNCC/SNH Goose & Swan Monitoring Programme survey results 2016/17

East Canadian High Arctic Light-bellied Brent Goose *Branta bernicla hrota*

1. Abundance

In autumn 2015 and 2016, the 19th and 20th consecutive censuses, respectively, of the East Canadian High Arctic population of Light-bellied Brent Goose were organised by the Irish Brent Goose Research Group. The flyway-wide censuses included aerial surveys in Iceland that were conducted by the Icelandic Institute of Natural History.

In 2015, a total of 37,192 geese was recorded, which was 16% higher than recorded in 2014 (31,985) (Figure 1). However, no survey was carried out in Iceland in 2014, and although the census was undertaken later in the year (early November) to try to compensate for this gap in coverage, the total is likely to have been an undercount.

In 2016, a near-simultaneous count in mid-October recorded 36,811 birds, just 1% lower than the previous year (Figure 1). No geese were recorded as far south as France by mid-October, with the first birds recorded there by the end of the month. The majority of birds at the time of the census, as is typical, were in Ireland (29,617; 80%), with the largest concentration recorded at Strangford Lough, Northern Ireland (22,000). Aerial surveys in Iceland recorded over 7,000 birds.

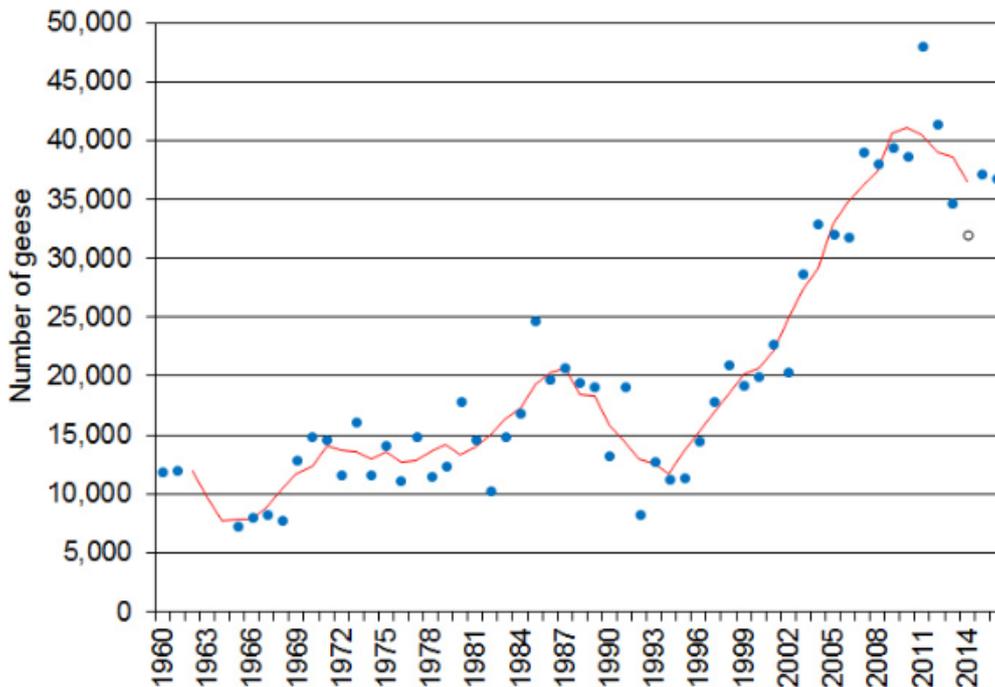


Figure 1. Annual census-derived estimates of Canadian Light-bellied Brent Goose population size, 1961–2016. Five-year running mean shown as red line (e.g. mean for 2011 is from population estimates for 2009–2013). The open circle in 2014 represents a likely undercount due to a lack of coverage in Iceland.

2. Breeding success

Productivity in 2015/16 and 2016/17 was above average, suggesting favourable Arctic breeding conditions in both years.

In 2015/16, 12% of the birds aged were young birds, this being higher than the previous ten-year mean ($9.4\% \pm 3.2$ SE) (Figure 2). The average brood size was 2.16 young per successful pair, which was slightly below average (2.58 ± 0.26 SE for 2005/06–2014/15).

In 2016/17, 11.9% young was recorded amongst a sample of 13,452 geese aged, which was, again, above the previous ten-year mean ($9.2\% \pm 3.2$ SE) (Figure 2). The average brood size was 2.6 young per successful pair and slightly higher than average (2.48 ± 0.25 SE for 2006/7–2015/16).

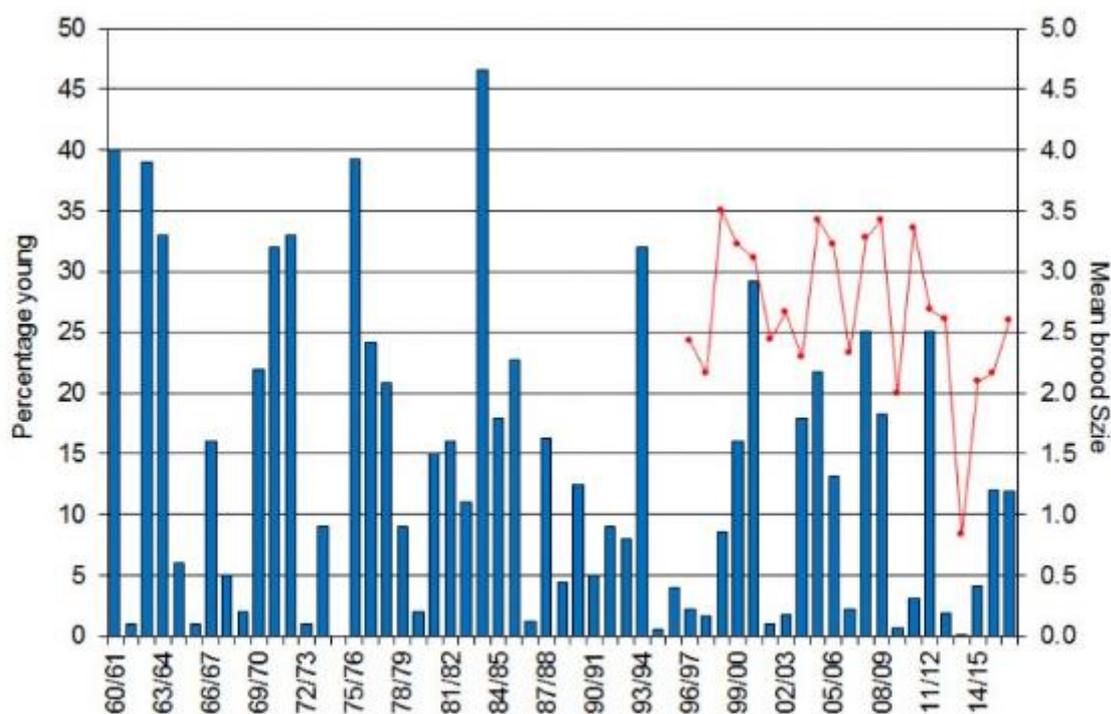


Figure 2. *The percentage of young (blue columns) and mean brood size (red circles) of East Canadian High Arctic Light-bellied Brent Geese, 1960/61–2016/17.*

3. Discussion

Following a significant decrease in overall abundance in 2013 and 2014, no doubt due to the very low breeding success in 2012-14, the size of the population appears to have increased again to around 37,000 in the last few years following two successive reasonably good breeding seasons with ~12% young in 2015 and 2016.

The continuation of aerial surveys in western Iceland (missed only in recent years in 2014) is a critical component of accurately estimating the total size of the population.

Recent analyses of our monitoring information and our extensive mark-resightings database has led to estimation of survival rates and a better understanding of the roles of climate in between-year variation in survival rates of adults and productivity (Cleasby *et al.* 2017).

4. References

Cleasby, I.R., T.W. Bodey, F. Vigfusdottir, J.L. McDonald, G. McElwaine, K. Mackie, K. Colhoun & S. Bearhop. 2017. Climatic conditions produce contrasting influences on demographic traits in a long-distance Arctic migrant. *Journal of Animal Ecology* 86: 285–295.

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Goose & Swan Monitoring