

WWT/JNCC/NatureScot Goose & Swan Monitoring Programme survey results 2020/21

Svalbard Barnacle Goose *Branta leucopsis*

1. Abundance

The adopted total for the Svalbard Barnacle Goose population wintering on the Solway Firth (where the majority of this population winters) in 2020/21 was 39,700 geese (the mean of the maximum count of 42,303 and two other counts within 10% of this, rounded up to the nearest 100). This represents an increase of 3,700 birds (10.3%) on last winter's adopted total of 36,000 geese, almost balancing the loss of 4,000 birds seen that winter (Figure 1).

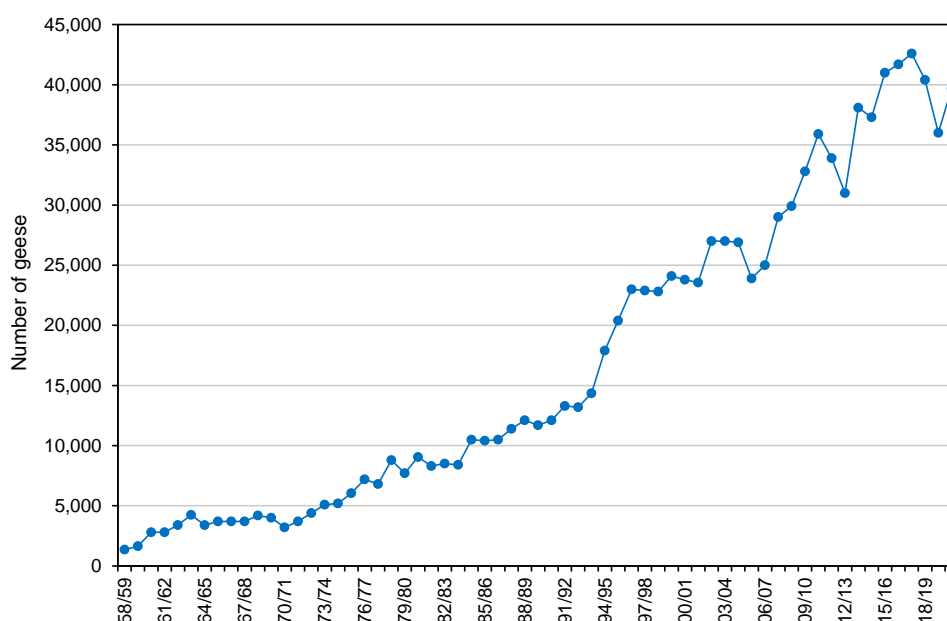


Figure 1. Annual census-derived estimates (for the Solway Firth only) of the Svalbard Barnacle Goose population size, 1958/59–2020/21.

The first arrival of Barnacle Geese thought to be genuine migrants from Svalbard was a flock of 28 birds recorded at WWT Caerlaverock on 16 September 2020, a date that is joint earliest on record, with 140 by 20 September (albeit including a Snow x Barnacle Goose hybrid which could indicate a feral Loch Leven origin for a percentage of these birds) and 2,000 by 27 September. Then there was a gradual build up in numbers to 6,590 on 8 October, with 5,000 being typical for the reserve area from then until 9,086 recorded on 20 October. For the first time in the last 15 years, no peak count above 10,000 was recorded for the reserve area and total counts remained noticeably low, with 4,362 on 27 April and 40 on 2 May 2021 being the final birds recorded during the spring departure period.

The census count on 7 October 2020 recorded 29,900 geese on the Solway and another 800 at Budle Bay, Northumberland, suggesting an early rapid mass exit from Svalbard. By 14 October numbers were already close to the maximum recorded for the winter at 38,100 on the Solway and 2,250 at Budle Bay and by 28 October 2020, the maximum count for the season across the two main sites of the Solway (42,303) and Budle Bay (1,400) was recorded, with six leucistic Barnacle Geese also being noted (the maximum number of leucistic geese recorded in winter 2020/21).

Covid-19 restrictions and advice did not affect as many counts in winter 2020/21 as it did in the latter months of winter 2019/20 (see WWT 2020) with only the December count and February count being affected to a small degree by some counters abstaining. The November count was cancelled due to poor weather and

from December onwards one count section at Boreland of Colvend, rarely used by the geese except in harsh winter conditions, was avoided out of respect for the landowner's wishes.

Significant numbers of birds again staged/wintered on the east coast at Budle Bay, Northumberland with an estimated 2,250 there on 14 October 2020 dropping to a more sustained 1,400 to 2,200 for the rest of the winter until at least the last week of February 2021. By the count of 24 March 2021, and on subsequent counts in April and May, no Barnacle Geese were recorded. This pattern of reduced numbers by March is similar to what has been recorded in previous years though it is still not clear if all of these birds are at that time moving southwest to the Solway or to other locations in the UK or elsewhere. An effort to ring or tag a cohort of birds at Budle Bay in late winter would help elucidate what happens to these birds and the extent to which they are short-stopping Svalbard birds.

It is known from past years that ringed birds from small feral flocks at Loch Leven (Perth & Kinross) and the Highland Wildlife Park (HWP, Kincaig, Inverness-shire) can be present throughout the winter on the Solway and that birds over-summering in Cumbria can also be present. Further to this evidence of UK feral/naturalised birds wintering on the Solway Firth, in December 2020 a cohort of 11 geese were tagged with Global Positioning System (GPS) collars on the WWT Caerlaverock reserve, being part of a flock of 450 birds in the field at the time of the catch. These tagged birds stayed close together on the reserve fields and those of neighbouring farms throughout mid-winter and migrated north together to Loch Leven in the last week of February, breeding on St Serf's Island in April/May 2021. The tagged birds were observed at various points during the winter on the fields of the reserve and tended to be in a flock of 4-500 birds. No blue leg-ringed birds from HWP were seen alongside the tagged birds in such flocks so it could be that there are now over 500 feral/naturalised birds wintering on the Solway and perhaps as many as 1,000 if breeding populations in the Lake District and elsewhere also winter wholly or in part on the Solway.

Due to count variation, with possible inaccuracies and the chance of double-counting, an adopted count total for the Solway population is derived by averaging those counts within 10% of the maximum recorded during the winter. In 2020/21, eight full census counts were completed from October–April (May counts are affected by spring migration and not included in the adopted count estimation process) and the counts of 38,090 on 14 October 2020, 42,303 on 28 October 2020 and 38,535 on 28 April 2021 fulfilled this criterion (albeit the late April count could have been affected by some earlier departing geese) and were thus averaged to produce an adopted Solway population total of 39,700 Svalbard Barnacle Geese (rounded up to the nearest 100; *c.f.* 36,000 in 2019/20). Therefore, in terms of either the peak count or adopted count there has been an increase in the population total on the Solway in 2020/21. This increase on the Solway does not take account of birds at Budle Bay and does not account for the UK resident birds referred to above known to be wintering on the Solway.

2. Breeding success

The breeding success of Svalbard Barnacle Geese sampled on the Solway Firth from October 2020 to December 2020 ranged from 2.7% to 28.7% (*c.f.* 0.7% to 14.6% in 2019/20) with a mean of 13.1% young derived from 19 flocks and 14,296 geese sampled (*c.f.* 5.2%; *n* = 14 flocks; 10,111 geese sampled in 2019/20) (Figure 2). Across the same area, the total number of broods sampled was 250, with a mean family size of 2.2 young, ranging from 1–5 young (*c.f.* 1.6 young; *n* = 121 broods; range 1–4 young in 2019/20).

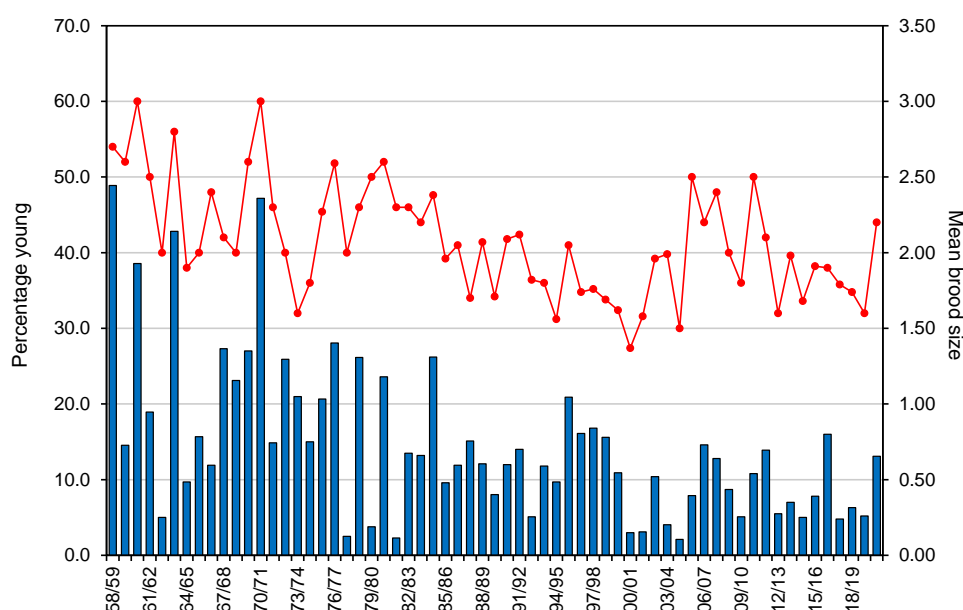


Figure 2. The mean percentage of young (blue columns) and mean brood size (red circles) of Svalbard Barnacle Geese, 1958/59–2020/21.

3. Discussion

The adopted count of 39,700 represents a recovery of the total population size wintering on the Solway, the gain in numbers being similar to the loss reported in winter 2019/20. This increase is likely to be a response to the above average breeding season, the percentage young being the second highest in the last decade and well above the current ten-year mean of 8.3%. Thus the previous stable population trajectory over the longer term remains.

It is becoming increasingly apparent from marking and tracking work that a considerable percentage of the birds wintering on the Solway, perhaps around 2.5% or more, are naturalised/feral birds mostly resident and breeding within the UK, with c. 3,000 recorded as UK naturalised by the Wetland Bird Survey (WeBS) up to 2019/20 (Frost *et al.* 2021). It has already been established that many of those from two breeding sites at HWP and Loch Leven, the only sites with substantial marking/tracking programs, do winter on the Solway. Therefore it could be the case that many of these naturalised/feral birds at sites in the north of England and Scotland may well be using the Solway in winter and thus mixing with, and remaining indistinguishable from, the Svalbard flyway birds and thus contributing to the population counts recorded and the percentage juvenile and brood size estimates.

As the naturalised population has mainly had an exponentially positive growth rate over the last five years up to 2019/20, while the Solway population trajectory has been mainly stable, these naturalised birds will presumably be making an increasing contribution to the population metrics that the Goose & Swan Monitoring Programme (GSMP) monitors. This means that any future population counts or assessments of juvenile productivity should more fully try and take account of this element within the Svalbard flyway population especially if using such monitoring data for modelling for any adaptive management plans. Efforts to ring or tag birds across other feral populations of the UK would help elucidate the true number of UK “resident” birds (albeit some HWP birds have turned up in Iceland and in Norway) wintering on the Solway.

Another issue of relevance to the understanding of the true numbers of birds wintering on the Solway that are of Svalbard origin is the degree to which feral/naturalised birds move away from the Solway and the timing of such movements in relation to any counter movements from short-stopping sites such as Budle Bay, Northumberland. GPS tracking of a group of Loch Leven breeding Barnacle Geese revealed that they departed the Solway in late February at a time when possibly the Solway numbers were being topped up by up to 2,000 birds from the Budle Bay area, many of which seem likely to be genuine Svalbard birds based on ring sightings. However we have very limited knowledge of these site switches by relatively large groups of

birds and how that affects the stability of the population counts that the GSMP is able to achieve and so again marking/tracking of a proportion of the birds at Budle Bay would be recommended.

The peak count for the flyway population across the Solway and Budle Bay sites on 28 October 2020 was 43,700 (albeit this will include an unknown number of naturalised UK birds). Any backward calculation of historical flyway totals would have to take account of WeBS counts for Budle Bay, and possibly other east coast sites, to be comparable with the population total given here, and might need to consider the timing of movements and size of UK naturalised populations too.

4. Acknowledgements

Many thanks to the Solway census team and to the counter at Budle Bay for their continued support.

5. References

Frost, T.M., N.A. Calbrade, G.A. Birtles, C. Hall, A.E. Robinson, S.R. Wotton, D.E. Balmer & G.E. Austin. 2021. *Waterbirds in the UK 2019/20: The Wetland Bird Survey*. BTO/RSPB/JNCC, Thetford.

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Goose & Swan Monitoring