

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

Dark-bellied Brent Goose *Branta bernicla bernicla*

1. Abundance

The abundance of Dark-bellied Brent Geese in the UK during 2016/17 was monitored through the Wetland Bird Survey (WeBS). Results are available on WeBS Report Online.

2. Breeding success

The winter of 2016/17 marked the 32nd consecutive winter that experienced volunteer observers assessed the breeding performance of Dark-bellied Brent Geese (for methods see Hall 2008). Geese were aged at 74 localities within ten estuaries or coastal areas, from the Humber Estuary in Lincolnshire to the Exe Estuary in Devon (Figure 1 & Table 1). Data were collected between 23 September 2016 and 21 March 2017. Of the 113 flocks assessed, the majority were aged in January (26.6%), December (24.5%) and November (16.7%) with 14.7% aged in October, 13.2% in February, 3.9% in March and 0.4% in September.

A total of 24,804 geese were aged. The largest samples came from North Norfolk, North Lincolnshire Coast and The Wash with 6,662, 4,358 and 4,160 geese aged, respectively (Table 1). At all other sites, fewer than 3,000 birds were aged.

The overall percentage of young was 8.6% and of the 277 broods recorded the mean brood size was 1.96 (± 0.06 SE) young per successful pair (Figure 2 & Table 1).



Figure 1. Sites in the UK at which Dark-bellied Brent Geese were aged during winter 2016/17. See Table 1 for key sites.

Table 1. Numbers of Dark-bellied Brent Geese aged at UK estuaries and coastal areas in winter 2015/16.

Sample flocks			Number of flocks	Number of sites	Total aged	% of young	Mean brood size	SE
Estuary	First count	Last count						
1 Exe Estuary	19/11/16	19/02/17	7	6	1,150	6.9	–	–
2 Langstone Harbour	13/09/16	21/03/17	14	12	1,654	3.8	1.90	0.15
3 Chichester Harbour	17/12/16	09/02/17	16	12	1,380	6.9	1.75	0.11
4 Thames Estuary	12/10/16	17/10/16	5	3	2,135	9.0	2.31	0.12
5 Hamford Water	25/10/16	17/02/17	8	5	1,706	16.1	1.89	0.31
6 Stour Estuary	16/01/16	16/01/17	4	2	990	7.6	–	–
7 North Norfolk	26/10/16	07/03/17	14	13	6,662	6.5	1.77	0.10
8 The Wash	30/09/16	07/03/17	20	9	4,160	7.4	–	–
9 North Lincolnshire Coast	17/11/16	01/03/17	24	11	4,358	13.0	2.13	0.18
10 Humber Estuary	14/01/17	14/01/17	1	1	609	6.6	–	–
Total	23/09/16	12/03/16	113	74	24,804	8.6	1.96	0.06

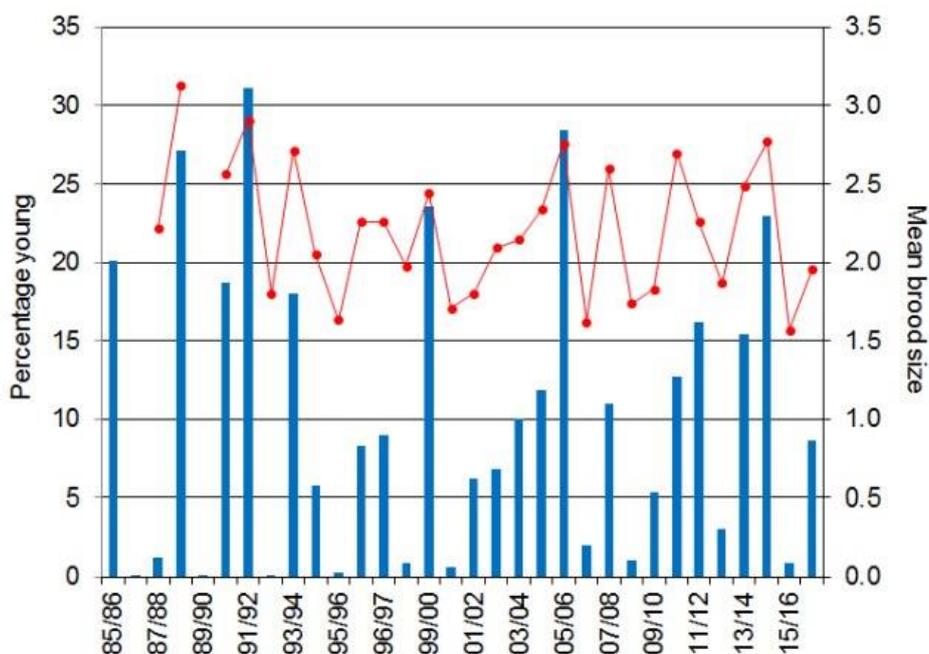


Figure 2. The percentage of young (blue columns) and mean brood size (red circles) of Dark-bellied Brent Geese recorded in the UK, 1985/86–2016/17. No brood size data were collected in 1985/86, 1986/87 or 1989/90.

The percentage of young in flocks remained fairly consistent throughout the winter and below 11.1% in all months (Table 2). The mean brood size of successful pairs peaked in October at 2.26 (± 0.12 SE) and ranged between 1.77 (± 0.20 SE) and 2.06 (± 0.20 SE) during other months.

Table 2. Monthly variation in the percentage of young and mean brood size of Dark-bellied Brent Geese in the UK during winter 2016/17.

Percentage of young		Mean brood size			
Month	%	n	Mean	SE	n
September	0	101	–	–	–
October	7	3,638	2.26	0.12	16
November	8.3	4,145	2.06	0.20	18
December	11.1	6,075	1.83	0.11	24
January	7.2	6,596	1.78	0.09	30
February	9.7	3,273	1.77	0.20	17
March	6.5	976	1.82	0.33	6
Total	8.6	24,804	1.96	0.06	113

The percentage of young within individual flocks varied from 0% to 53.8%. Flocks most frequently (47.8%, n = 54) held between 5-15% young, whilst 26.5% (n = 30) contained <5%, of which 15 flocks held no young at all. Notably fewer flocks held above 15% young: 18.6% (n = 21) held between 15-30%; five flocks (4.4%) contained 30-50%; and three flocks (2.7%) held >50%.

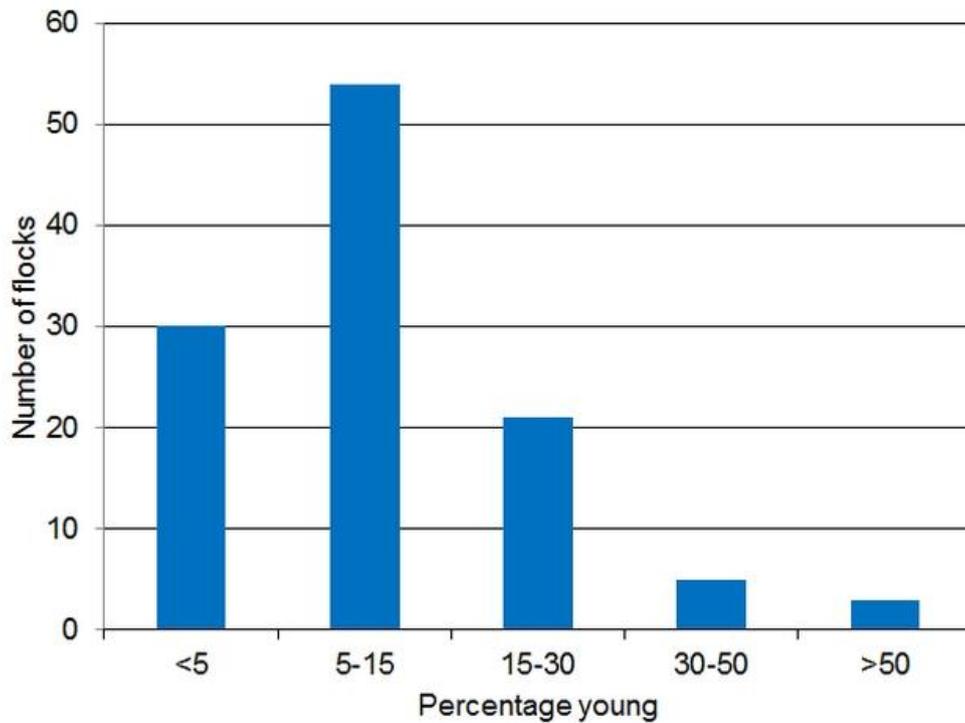


Figure 3. Frequency distribution of the percentage of young in individual flocks (n=113) of Dark-bellied Brent Geese in the UK during 2016/17.

The percentage of young was highest amongst flocks of fewer than 100 geese (12.1%) and was lowest amongst flocks of 1,000-1,999 geese (6.3%). Mean brood size ranged from 1.7 (± 0.12 SE) to 2.3 (± 0.14 SE) young per successful pair (Figure 4). No brood sizes were recorded in flocks of 1,000-1,999 birds.

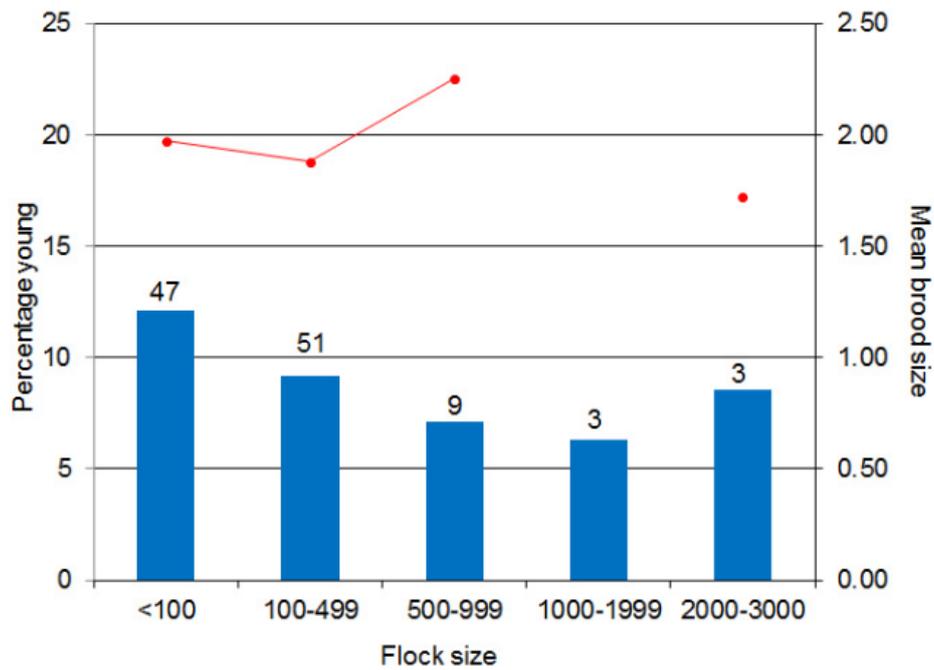


Figure 4. The percentage of young (blue column) and the mean brood size (red circles) of Dark-bellied Brent Geese in the UK in flocks of different sizes during winter 2016/17. Sample sizes (number of flocks) are given above the columns.

Dark-bellied Brent Geese were recorded using five main habitat types in 2016/17; water, intertidal (including *Enteromorpha spp.* and *Zostera*), saltmarsh, grass and cereal fields (including arable stubbles and oilseed rape). The highest percentage of young was seen amongst flocks on water and feeding on cereals (11.2% and 11.0%, respectively). Mean brood size ranged from 1.75 (± 0.11 SE) to 2.13 (± 0.08 SE).

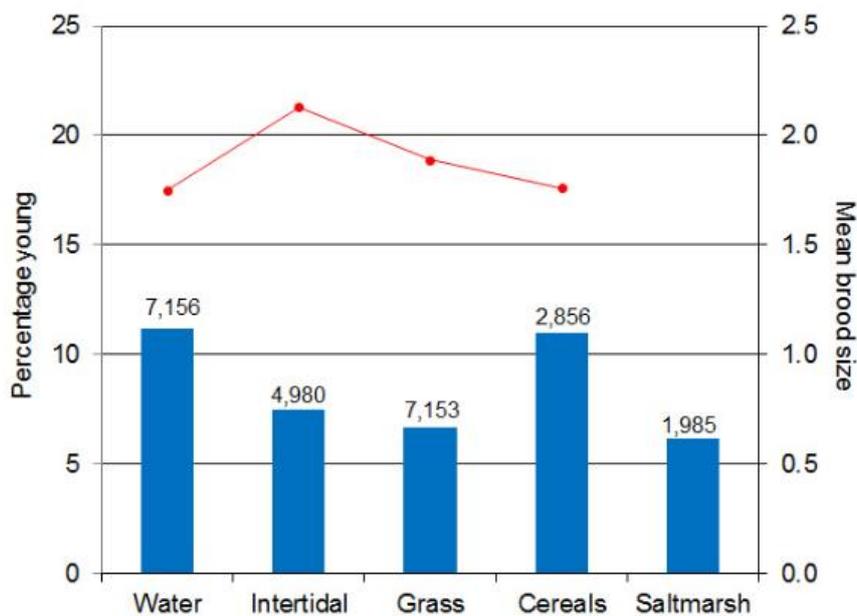


Figure 5. The percentage of young (blue column) and mean brood sizes (red squares) of Dark-bellied Brent Geese in the UK recorded in different habitat groups during winter 2016/17. Sample sizes (total number aged) are given above the columns.

3. Discussion

Results from age assessments made at wintering sites in the UK indicate that the breeding success of Dark-bellied Brent Geese in 2016 was 7.7% higher than the previous year, although it remained below the previous ten-year mean ($9.7\% \pm 2.43$ SE). Mean brood size was also higher than in 2015/16 but below the previous ten-year mean ($2.1\% \pm 0.14$ SE).

The results during 2016 follow a poor breeding performance in 2015 (0.9% young) and a good breeding season in 2014 (23.0% young), and the previous three years (2011/12 to 2013/14) also followed a similar pattern, perhaps suggesting some return to the three-year cycle of lemming and predator abundance which greatly influences Dark-bellied Brent Goose breeding success.

No data on breeding success among birds wintering outside the UK are available at the current time, so it is uncertain how representative are the estimates from the UK. Reports from monitoring stations in the breeding grounds in Arctic Russia suggest that rodent abundance was relatively low in 2016 and predators such as Arctic Fox were scarce after record high abundance in 2015 (Soloviev & Tomkovich 2017). Breeding success of Dark-bellied Brent Geese is greatly influenced by interactions between rodent abundance and predator pressure. Usually when rodent abundance is low, breeding success is reduced as Arctic Foxes turn their attention to goslings; however, with low numbers of Arctic Fox reported in 2016 as well as low rodent abundance, this may explain why the geese had a slightly better breeding season than the previous year.

4. Acknowledgements

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5. References

Hall, C. 2008. *The breeding success of Dark-bellied Brent Geese Branta bernicla bernicla in 2007, as assessed in the UK*. Wildfowl & Wetlands Trust Report, Slimbridge.

Soloviev, M & P Tomkovich. (Eds.) 2017. Online database: <http://www.arcticbirds.ru/> Accessed June 2017.

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Goose & Swan Monitoring