



An assessment of breeding success in the Dark-bellied Brent Goose *Branta b. bernicla* in the UK in 1997

R. D. Hearn

The Wildfowl & Wetlands Trust, Slimbridge, Gloucestershire GL2 7BT

SUMMARY

A total of 86,530 Dark-bellied Brent Geese was aged at 22 estuaries and coastal sections in Great Britain between September and December 1997. The overall proportion of juvenile birds present was 9.0%, varying between 6.4% in October and 10.3% in November. Of 853 broods recorded, the mean brood size was 2.26 young per successful pair.

INTRODUCTION AND METHODS

Britain has long been a major wintering area for Dark-bellied Brent Geese *Branta b. bernicla*. The UK Government has a special responsibility to safeguard this species under international legislation (Stroud et al. 1990), and because it is an 'Amber Listed' species (RSPB et al. 1996). Information is gathered not only about the abundance and distribution of Brent Geese wintering in Britain (e.g. Cranswick et al. 1997) but also on age ratios (e.g. Mitchell et al. 1997), through which estimations of the annual recruitment can be made.

For the thirteenth consecutive autumn, the breeding performance of Dark-bellied Brent Geese was assessed by experienced voluntary observers. First-winter Brent Geese have obvious white edging to the wing coverts which the adults lack. Using a telescope in good light conditions, ageing is feasible at distances of up to 400 m. Sample sizes are variable and determined by flock size and field conditions. To determine brood size, distinct groups composed of two adults and one or more juveniles that could be recognised by behaviour or spatial separation from other geese were regarded as a family. Data were collected between 20 September and 7 December. Observers were asked to note the location, date, time and habitat for all observations and the size of flocks, number aged, total number of young and brood sizes.

RESULTS

Brent Geese were aged at a total of 103 localities within 22 estuaries or coastal sections from North Lincolnshire to Devon. Summaries of the counts where birds were aged are given on a regional basis in Table 1. Of 332 flocks assessed, 1 % were in September, the majority in October (32%) and November (56%), and 11 % in December. A total of 149,688 geese was counted of which 86,530 were aged (an increase of 2.5% over the number aged during 1996). These included 7,812 young, a proportion of 9.0%. The largest numbers of birds aged were on the Blackwater Estuary, Essex (16,547), the Thames Estuary (15,189) the Exe Estuary, Devon (15,005),

Langstone Harbour (8,361) and The Wash (8,163). Sample sizes at all other estuaries were less than 8,000 birds.

The average proportion of young present in flocks was greater during the latter half of the census period, from 0% in September, 6.4% in October, 10.3% in November to 9.6% in December, supporting the typical arrival pattern of Brent Geese into the UK, with non-breeding birds and failed pairs arriving before the family groups (Figure 1).

Table 1. Numbers of Dark-bellied Brent Geese counted and aged at 22 British estuaries and coastal areas in autumn 1997 and the distribution of flocks across habitats,

| Estuary | Counts | | | No. sites | Total Count | Total aged | % Young | Mean Brood Size | Total count % distribution across | | | | | |
|-------------------|--------|--------|-----|-----------|-------------|------------|---------|-----------------|-----------------------------------|------|-------|-------|--------|--|
| | First | Last | No, | | | | | | Water | Mud | Marsh | Grass | Cereal | |
| Beaulieu | 1 Nov | 1 Nov | 1 | 1 | 60 | 60 | (5) | 1.5 | 100 | | | | | |
| Blackwater | 19 Oct | 9 Dec | 22 | 7 | 33,146 | 16,547 | 7.5 | 2.23 | 1.6 | | 1.3 | 91.9 | 4.5 | |
| Chichester | 13 Oct | 30 Nov | 29 | 13 | 6,030 | 5,711 | 11 | 2.16 | 52.7 | 8 | 0.5 | 23.1 | 15.7 | |
| Colne | 11 Nov | 1 Dec | 2 | 1 | 1,057 | 1,057 | 7.9 | 2.2 | | | | 100 | | |
| Crouch | 8 Nov | 7 Dec | 6 | 6 | 3,950 | 3,620 | (13.3) | 2.73 | | | 4.5 | 43.7 | 51.8 | |
| Deben | 16 Nov | 14 Dec | 3 | 1 | 1,753 | 1,753 | 3.7 | - | | | | | | |
| Exe | 6 Oct | 5 Dec | 83 | 7 | 15,466 | 15,005 | 11.1 | 2.56 | | 40.9 | | 59.1 | | |
| Hamford Water | 18 Oct | 24 Nov | 4 | 3 | 741 | 741 | 13.5 | 1.67 | | 9 | 18.8 | 72.2 | | |
| Jersey | 21 Oct | 21 Oct | 1 | 1 | 2,320 | 427 | (13.3) | - | | 100 | | | | |
| Langstone | 14 Oct | 7 Dec | 52 | 12 | 9,857 | 8,361 | 9.9 | 2.16 | 21.6 | 8.5 | 3.8 | 64.1 | 2 | |
| Lymington | 23 Nov | 23 Nov | 1 | 1 | 400 | 400 | (20) | - | | | | 100 | | |
| Medway | 7 Nov | 23 Nov | 5 | 3 | 461 | 452 | (21.2) | 3.25 | | | 16.3 | 10.9 | 72.8 | |
| North Lincs coast | 20 Sep | 7 Dec | 19 | 6 | 3,038 | 3,038 | 8.3 | 2.03 | | 21.9 | 69.2 | | 8.9 | |
| North Norfolk | 31 Oct | 3 Dec | 14 | 6 | 1,614 | 1,149 | 15.2 | 2.41 | | 3.5 | 1.1 | 92.3 | 3.1 | |
| Pagham Harbour | 17 Oct | 17 Oct | 1 | 1 | 14 | 14 | (21.4) | 1.5 | 100 | | | | | |
| Poole Harbour | 28 Nov | 28 Nov | 1 | 1 | 46 | 46 | (6.5) | 1.5 | 100 | | | | | |
| Portsmouth | 29 Oct | 29 Oct | 1 | 1 | 55 | 55 | (43.6) | 2 | | | | 100 | | |
| Southampton | 14 Oct | 14 Oct | 1 | 1 | 25 | 25 | 0 | - | | 100 | | | | |
| Stour | 29 Sep | 1 Dec | 46 | 19 | 5,345 | 3,057 | 8.1 | 1.87 | 48.6 | 24.8 | 26.6 | | | |
| Thames | 26 Sep | 8 Nov | 20 | 4 | 53,116 | 15,189 | 4.6 | 2.32 | 8 | 92 | | | | |
| The So lent | 15 Oct | 1 Dec | 8 | 3 | 1,901 | 1,660 | 4.5 | 2.67 | 0.7 | 65.8 | | 33.5 | | |
| The Wash | 21 Oct | 9 Dec | 12 | 5 | 9,293 | 8,163 | 11.2 | 2.11 | | | 90.5 | | 9.5 | |
| Totals | 20 Sep | 14 Dec | 332 | 103 | 149,688 | 86,530 | 9 | 2.26 | 8.7 | 42.2 | 8.9 | 36 | 4.2 | |

Note: percentage young in parentheses are based on small sample sizes (less than 500 birds aged)

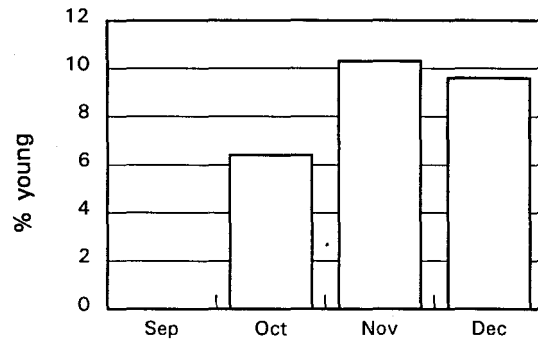


Figure 1. The proportion of young recorded in each month in autumn 1997

There was wide variation in the frequency of the proportion of young recorded: 13% of the age counts contained no young, 20% contained < 5% young (excluding 0% young), 20% contained 5-10% young, 27% contained 10-25% young, 15% contained 25-50% young and 5% contained > 50% young (Figure 2). Note, however, that these values ignore the number of geese aged within each sample.

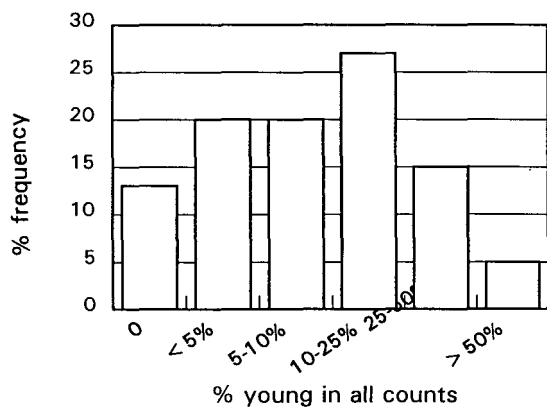


Figure 2. The frequency of the proportion of young recorded in age counts in 1997

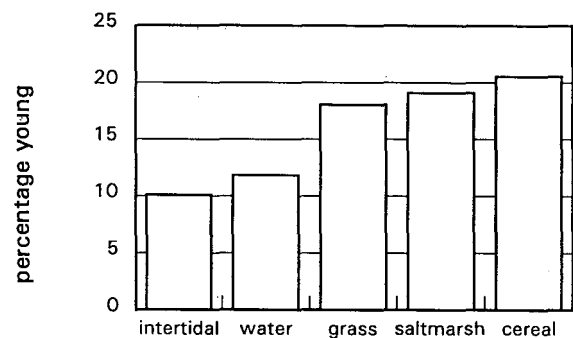


Figure 3. The average proportion of young on different habitat types in autumn 1997

Geese were recorded in one of five main habitat types; water, intertidal mud/shore (including *Zostera* beds), saltmarsh, grass/pasture and cereal fields. The first three habitat types, which together represent all the intertidal habitats, supported 59.8% of birds counted, while a further 36.0% were found in grass fields and just 4.2% were counted in cereal fields. However, the proportion of young contained within the flocks in each habitat varied, with a far greater proportion of young in flocks on cereal and pasture than those on intertidal habitats (Figure 3), indicating the increased use of better quality feeding areas by families.

METHOD LIMITATIONS

Counters were encouraged to check flocks whenever possible and no emphasis was placed on obtaining a co-ordinated census that avoided double-counting. Thus, counts conducted at the same estuaries on different dates will have undoubtedly recorded some birds more than once in these totals, e.g. the greatest number of counts from a single estuary was 83 from the Exe Estuary. Some repeat counting of the same birds is therefore inevitable.

The overall proportion of young Brent Geese recorded, taking the maximum sample size on a single visit to each site at any time during the census period (i.e. to eliminate double counting at each site), was exactly the same as when all counts were included in the analysis, i.e. 9.0%. This suggests that by including probable double-counts in the estimation of percentage young that a true reflection is determined.

DISCUSSION

The proportion of young present in Britain in each year since 1988 is shown Figure 4.

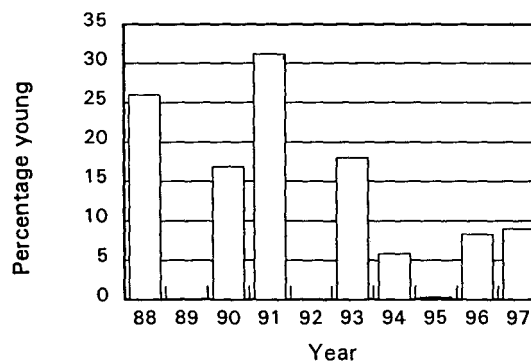


Figure 4. The proportion of young Dark-bellied Brent Geese recorded in Britain, 1988 to 1997.

It is notable that there have been no years with a particularly large proportion of young since 1991 and, consequently, whilst numbers in Great Britain have fluctuated during this period, indices have shown no overall increase (Cranswick et al. 1997). The severity of the winter in the three most recent years appears to have had a large influence on numbers reaching Great Britain, particularly the timing of influxes from the continent, and it is possible that this has affected the proportion of young recorded in this country. Nevertheless, it appears that the characteristic pattern of years of good, poor and variable breeding success persists, though recent 'good' years have not been as productive as during the 1980s. No information on the overall population size or the percentage young recorded in other range countries had been received at the time this report was published.

Brood size has been broadly similar in recent years (between 2.0 and 3.0 young per successful pair in years with good or moderate breeding success). This suggests that the variation in the overall proportion of young is related to a varying proportion

of adults in the~ population which attempt to breed, or alternatively that there is a varying proportion of complete brood failures in different years.

Unlike 1996, when large numbers of families continued to arrive from the continent in mid winter, and which caused estimates of breeding success based on autumn figures to be lower than the true value, the proportion of young recorded in 1997 stabilised relatively quickly: figures of around 10% in both November and December were only slightly higher than the overall average (Figure 1). Thus, barring a continued influx of families in 1998, autumn age counts in 1997 appear to have provided an accurate indication of overall breeding success.

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