

# WWT/JNCC/SNH Goose & Swan Monitoring Programme survey results 2007/08

## Dark-bellied Brent Goose *Branta bernicla bernicla*

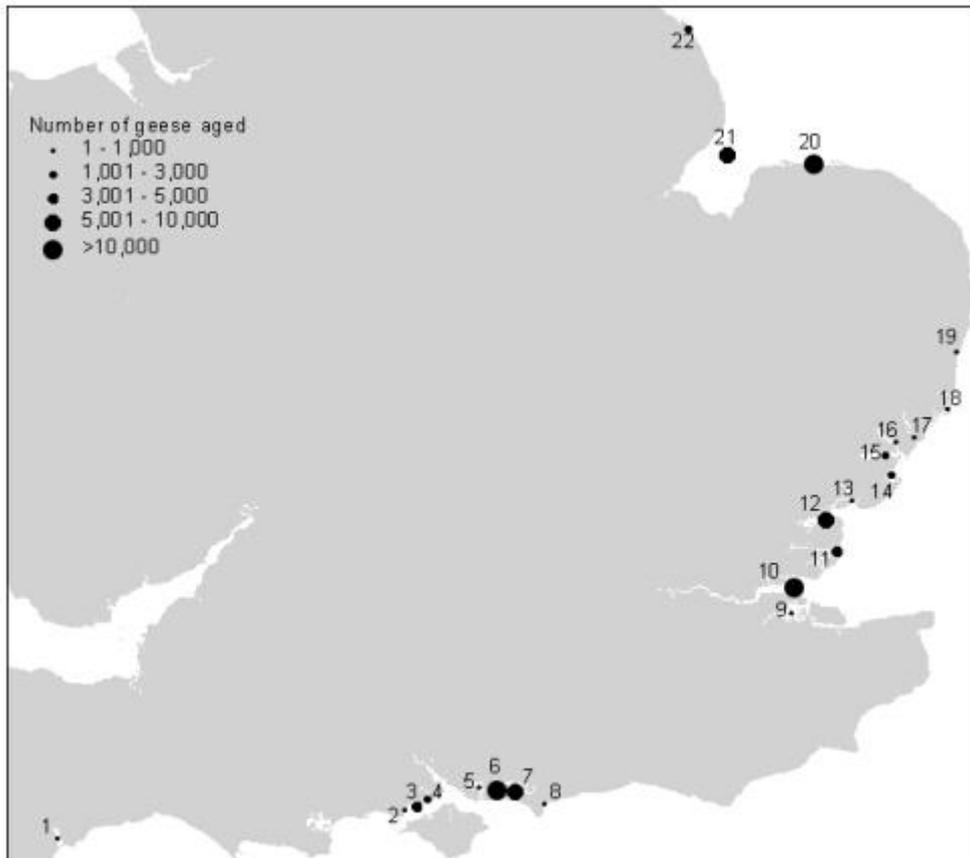
### 1. Abundance

The abundance of Dark-bellied Brent Geese during 2007/08 was monitored through the Wetland Bird Survey (WeBS).

### 2. Breeding success

For the twenty-third consecutive winter, experienced volunteer observers assessed the breeding performance of Dark-bellied Brent Geese in winter 2007/08. Geese were aged at a total of 174 localities within 22 estuaries or coastal areas on the English east and south coasts, from the north Lincolnshire coast to Devon.

Of the 341 flocks assessed, 22.0% were in October, the majority were in November (31.7%), decreasing to 23.5% in December through to 6.7% in February. Only 11 flocks were aged in March and April. A total of 84,361 geese was aged, the largest numbers at Langstone Harbour (15,931), the Thames Estuary (15,482) and the North Norfolk Coast (10,793). Between 7,200 and 9,110 birds were aged at Chichester Harbour, Blackwater Estuary and The Wash, with sample sizes at all other sites smaller than 4,000 birds.



Sites at which Dark-bellied Brent Geese were aged during winter 2007/08.

## Key to sites:

1	Exe Estuary	12	Blackwater Estuary
2	Lymington Estuary	13	Colne Estuary
3	Northwest Solent	14	Hamford Water
4	Beaulieu Estuary	15	Stour Estuary
5	Portsmouth Harbour	16	Orwell Estuary
6	Langstone Harbour	17	Deben Estuary
7	Chichester Harbour	18	Alde-Ore Complex
8	Pagham Harbour	19	Blyth Estuary
9	Medway & Swale Estuaries	20	North Norfolk Coast
10	Thames Estuary	21	The Wash
11	Crouch Estuary	22	North Lincolnshire Coast

The overall proportion of young was 11.0%, increasing from a low of 8.7% in October to a peak of 13.6% in November. It then fluctuated throughout the winter, rising to 13.1% in April, though the sample of aged birds was notably lower than in previous months.

The proportion of young and mean brood size of Dark-bellied Brent Geese in the UK during winter 2007/08.

Month	Proportion of young		Mean brood size		
	overall	n	Mean	s.e.	n
Oct	8.7	23,121	2.62	0.09	299
Nov	13.6	19,110	2.76	0.08	383
Dec	11.2	17,124	2.48	0.11	134
Jan	10.5	13,882	2.25	0.09	193
Feb	11.2	8,579	2.20	0.18	49
Mar	10.9	1,575	2.80	0.66	5
Apr	13.1	1,030	2.67	0.67	3
<b>Total</b>	<b>11.0</b>	<b>84,361</b>	<b>2.57</b>	<b>0.04</b>	<b>1,063</b>



The percentage of young (blue columns) and mean brood size (red circles) of Dark-bellied Brent Geese in the UK during winter 2007/08.

The percentage of juveniles within individual flocks varied from 0% to 80%. The majority of flocks contained between 5-15% young (39.6%, n = 135), and less than 5% young (29.3%, n = 100). The proportion of young varied across flock size, ranging from 14.9% young, observed in flocks of fewer than 100 geese, to 4.8% young recorded in two flocks of 2,000-5,000 birds.

Of the 1,063 broods recorded, the mean brood size per successful pair was 2.57 ( $\pm 0.04$  s.e.). Mean brood size varied across flock size between 2.04, observed in flocks of 2,000-5,000 birds, and 3.04, recorded in two flock size categories, 500-999 birds ( $\pm 0.12$  s.e.) and those of more than 5,000 ( $\pm 0.19$  s.e.).

Grass fields supported the highest proportion of young (14.3%), followed by cereal fields (11.3%), while other habitats saw a similar percentage of young amongst flocks; 9.0% on water; 8.3% on intertidal habitats; and 7.9% on saltmarsh. Mean brood size was also greatest in flocks found on grass fields (2.79,  $\pm 0.07$  s.e.), although it did not vary greatly across these habitats.

### 3. Discussion

Results from age assessments made at wintering sites in the UK indicate that breeding success of Dark-bellied Brent Geese in 2007 was higher than in the previous year, and above the most recent ten-year mean ( $9.9\% \pm 2.96$  s.e.). There was a marked increase in the number of broods observed compared with 2006 and the mean brood size was also higher, reflecting the improved breeding success.

The breeding success of Dark-bellied Brent Geese has previously been shown to follow a three-year cycle of good, poor and variable success (Dhondt 1987), and is greatly influenced by interactions between lemming abundance, predator pressure and other factors such as weather. In 2007, though only a few reports are currently available, monitoring stations along the Taimyr and Yamal Peninsulas in Russia indicated that lemmings were present in variable numbers (low numbers at the Yamal; common to abundant at the Taimyr), and Arctic Foxes were rare or absent (Soloviev & Tomkovich 2008). Between the mid 1990s and 2005, whilst there was still considerable annual variation in Brent breeding success, the pattern shifted away from a predictable three-yearly cycle, and there were fewer than expected good breeding seasons. This suggested that the connection between rodent abundance and breeding success may not have been functioning in the same way, or that rodent abundance was not following such a predictable pattern. Over the most recent three years, however, breeding success has been good (28.4% young in 2005), poor (2.0% young in 2006) and variable (11% in 2007). This also follows a similar pattern to that of lemming abundance at the breeding grounds, which saw exceptionally high numbers in 2005, a crash in 2006, and a variable year in 2007. These results suggest that breeding success may be returning to the more predictable three-yearly cycle; it will, however, take a few years of further monitoring to establish whether this is the case.

### 4. References

Dhondt, AA. 1987. Cycles of lemmings and Brent Geese *Branta b. bernicla*: a comment on the hypothesis of Roselaar and Summers. *Bird Study* 34: 151-154.

Soloviev, M & P Tomkovich. (Eds.) 2008. *ARCTIC BIRDS: an international breeding conditions survey*. Online database: <http://www.arcticbirds.ru/> Accessed 15 May 2008.

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## Goose & Swan Monitoring