

# BRENT GOOSE POPULATION STUDIES, 1958-59

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DURING the past five winters, a study of the proportion of first-winter birds in flocks of Brent Geese in Essex has been made and the results up to 1957-58 have been given in the *9th* and *10th Trust Annual Reports*. The present account deals with observations during the winter of 1958-59 in Essex and other areas.

## Collection of Data

An attempt was made to widen coverage by the collection of observations from other parts of the country and from other countries. A circular explaining the purpose of the counts and the methods employed was sent to persons and bodies in the regions concerned. The response was small, but provided valuable information, and a further extension of the scheme is hoped for in the coming winter.

The observations discussed in this paper are from Essex, Norfolk, Lincolnshire, Holland and Denmark, and concern only the Dark-bellied race (*Branta b. bernicla*).

## Results

**Essex.** The sampling method for the determination of first-winter percentages (Burton, 1958) was abandoned during the winter of 1958-59, as it was found that the flocks of Brent Geese contained hardly any young birds at all. Six visits were made to the coast—four to Foulness, one to Dengie and one to Goldhanger in the Blackwater estuary. Thorough searches revealed only seven first-winter birds in the whole season. One was found among some 600 at Foulness on 29th November, and six were discovered there out of about 1200 on 13th December.

**Norfolk.** The proportion of young birds in the flock wintering at Scolt was about 25%, according to R. Chestney, Warden of the Reserve.

**Lincolnshire.** Observations submitted to A. E. Vine by a Boston wildfowler suggest a situation among the Brent Geese on the Wash more nearly similar to that at Scolt than in Essex. From a flock of 300 watched at Butterwick on 18th December, 1958, a count of 181 first winters (60%) and 119 adults was made, with a possible error estimated at  $\pm 12$ .

**Holland.** Detailed observations were made throughout the winter by T. Lebreit in the Ooster Schelde, near Kattendijke.

21st Nov. 103 ( $\pm 6$ ) of which 2 were first-winters.

23rd Nov. 139 of which 2 were first-winters.

21st Dec. Two flocks totalling 77, containing 3 first-winters.

4th Jan. 126, no first-winters.

4th Feb. 95 seen in the morning and 121 in the afternoon further east.  
Neither flock contained any first-winter birds.

Total 661, including 7 first-winters (1%).

**Denmark.** Observations were made at the reserve of Tipperne on Ringkøbing Fjord, West Jutland, where large flocks are present in spring.

The writer was at Tipperne from 26th to 30th April, and observations were continued by Heine Klausen, of Regensen, Copenhagen, until 25th May, after which no more were seen.

Although a maximum of about 1100 were recorded, neither observer found any first-winter birds during this period.

### Discussion

A summary of results for the last five winters is given in Table I.

TABLE I. Proportions of first-winter Brent in sample counts in Essex, 1954-55 to 1958-59.

Season	Number of geese in sample	Number of first-winter geese	Percentage of first-winter geese
1954-55 ..	776	314	40
1955-56 ..	2020	522	26
1956-57 ..	1484	97	7
1957-58 ..	1810	995	53
1958-59 ..	c. 1800	7	0.4

The agreement of the Dutch and Danish records with the Essex observations in 1958-59 is good evidence that these were indeed typical of a large proportion of the population. They clearly show that the summer of 1958 was one of almost complete breeding failure for these birds. It must be supposed that the birds from the Wash and Norfolk originated from colonies which were not affected in the same way. The alternative hypothesis of a differential migration of age-groups provides no explanation of this discrepancy, as one would expect it to be at least reasonably constant from year to year. Previous winters' results in Essex show that this cannot be so.

Periodic breeding failures are characteristic of the Brent Goose, and have generally been attributed to storms on the breeding grounds. It is thus of some value to examine conditions in the Soviet Arctic during the five year period over which counts have been made. It must be borne in mind, however, that superimposed on any variations caused by weather there are fluctuations of biological origin. These arise from the fact that geese do not breed in their first summer (nor usually their second), though in adult plumage. Thus a good breeding summer one year will give rise to a population the next year containing a high percentage of sexually immature birds in adult plumage. The proportion of young produced in the second summer will then be less. Another difficulty is that local conditions may vary greatly within the same part of the Arctic, and may affect parts of the population without being sufficiently widespread to be detected from the meteorological data available. Hence, only drastic changes are likely to be relatable to weather effects.

Uspenski (1959, see pp. 80-93 of this Report) gives the main breeding range of the Dark-bellied Brent as the North-eastern part of West Taimyr.

It is found also in smaller numbers on Kolguev Island, Yamal north of 70°, North-east Gyda, the southern part of Severnaya Zemlya and on some small islands in the Kara Sea. In Novaya Zemlya, and on the Kanin and Kola peninsulas, only moulting birds are found.

The summer climate of these areas is severe. Kolguev is in the mildest part of the range, while on the mainland temperatures decrease from south to north. The amount of ice in the Kara Sea, especially off the Taimyr coast, varies greatly from year to year and is of considerable importance in relation to the general climate.

Yearly data from these regions have been obtained from two sources. The Daily Weather Report of the Meteorological Office includes data from Taimyr on its weather maps. The principal stations are at Cape Chelyuskin in the North, and Dikson Island at the South-west end of the coast. Another useful source is the report on the Northern Sea Route now given yearly in the *Polar Record*.

Uspenski (*loc. cit.*) gives arrival dates on Taimyr as 10th to 15th June, and on Severnaya Zemlya as 18th to 22nd June. The first nest on Taimyr was found on 22nd June; the earliest hatched young would thus be expected in late July. Madame Kozlova (in Bannerman, 1957) and Dresser (1908) both state that Brent in the Soviet Arctic are often found breeding on elevated tundra. Hence a smaller proportion should be affected in the event of tide-storm flooding than for instance, the Black Brant on the Yukon delta which nest mainly in low-lying areas (Hansen & Nelson, 1957).

Comparison of breeding success with meteorological records, however, suggests that a crucial factor may be the date at which the ground becomes snow free. The importance of this to Barnacle Geese arriving on the breeding grounds has been shown by Goodhart and Wright (1958): and Handley (1950) found that many Brant on Prince Patrick Island in 1949 failed to breed following a later thaw.

Breeding failures in Brents were noted in 1958 and 1956; counts by Le Bret (1956) point to one also in 1948. No direct information on snow cover is available, but the mean temperature at Cape Chelyuskin for these three years in the first three weeks of June is 27°F., 3° lower than the mean for the good years (1954, 1955 & 1957). At the same time, pressures were lower and snow showers more frequent. Berg (1950) gives a map indicating snow cover north of 70° to have a mean duration of 260 days. It lasts from the beginning of October, which puts the date of thaw at about 17th June. This agrees with the statement of Dementiev and Gladkov (*per* Harber, 1955) that the Brent arrives on the breeding grounds when everything is still frozen. Hence temperatures during this period would be critical in influencing the time at which the snow disappears.

Conditions in 1958 were generally the poorest of the five summers. Both at Cape Chelyuskin and at Dikson, temperatures throughout the season were well below average. At Chelyuskin, the mean for the whole summer was only 32.1°F. (compared with 35.6°F. for 1957). Shipping on the Northern Sea Route in 1958 was much delayed and hindered by very difficult ice between Dikson and Chelyuskin (*Polar Record*, May 1959).

In the early winter of 1948, Lebret (*loc. cit.*) found less than 1% young in two counts totalling 528 in Holland. The summer of this year had also started with very low June temperatures, both at Cape Chelyuskin and Dikson Island. Gales occurred on several occasions. 1956 was a year of less complete breeding failure, with 7% young in the Essex flocks during 1956-57. It is likely that a smaller area of the breeding grounds was affected than in 1958 and 1948: the records from Dikson Island in 1956 were good, but those from Chelyuskin were extremely low, with a mean (31.9°F.) below freezing point for the whole summer. Possibly the birds wintering in Essex originate from the northern part of the Taimyr peninsula. This is supported by the occurrence in two successive winters in Essex of a Black Brant (*B.b. orientalis*) (*Essex Bird Report*, 1957 & 1958). The range of this form borders that of *B.b. bernicla* in the Taimyr peninsula according to Uspenski (*loc. cit.*).

It is interesting to note that during the winter of 1958-59, other species from the same breeding areas also showed markedly reduced breeding success. White-fronted Geese had a proportion of first-winter birds of about 14% (see p. 19 of this Report), and Bewick's Swans of about 7-9% (A. E. Vine, personal communication). Such agreement was not noted in 1956-57 when first-winter birds made up 38% of the first flocks of White-fronted Geese arriving at the New Grounds. This is a further indication that the breeding failure of Brent that year was not so widespread as in 1958.

In 1956, the breeding failure coincided with low numbers wintering in Essex, and a direct connection is not unlikely. In 1958, however, despite the breeding failure, numbers in Essex reached spectacular heights. This would seem to indicate that a considerable increase occurred as a result of the good year of 1957, although for some reason its effects were not so apparent during 1957-58.

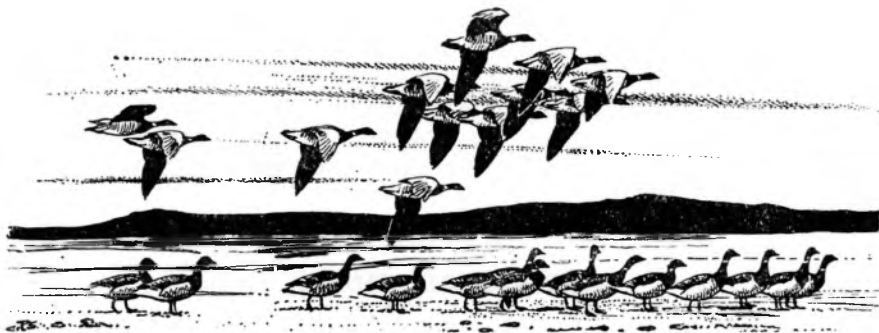
The recent increase in the numbers visiting Britain is almost certainly a direct consequence of protection, but it is unlikely that the maximum possible population has yet been attained. At the time of writing the decision as to the continuance of protection in Great Britain has yet to be taken, but if an extension is granted and if in addition complete protection for the species in Denmark can be secured, this should greatly hasten recovery. An increase in the numbers nesting on Kolguev and other areas outside Taimyr would be especially valuable. The present distribution renders this race unduly vulnerable to mishaps in the harsh and uncertain climate of that area.

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*Brent Geese*