Brent Goose population studies, 1960-61

P. J. K. Burton

Summary

THE numbers of Dark-bellied Brent *Branta b. bernicla* wintering in England in 1960-61 were the highest for at least ten years. The total population of this subspecies in Europe was between 21,000 and 26,000. The number of Pale-bellied Brent *B. b. hrota* wintering in Ireland was nearly 12,000 and there were at least another 7000 of this form on the North Sea coasts of Europe.

The Dark-bellied population had had a good breeding year in 1960, the proportion of young birds being about 45% in Essex and similarly high elsewhere in England and in Holland and France. The Irish Pale-bellied stock also included many young birds.

Introduction

The winter of 1960-61, the seventh season of research on the numbers and productivity of European Brent Geese, was a particularly successful one, owing to the large number of observers who contributed observations. Counts of first-winter birds were made in a large number of areas in several countries and, in addition, a large amount of information on total numbers has been received. Details of observations made in various areas are given below, followed by a discussion of results. Except where stated, all records refer to the Dark-bellied race *Branta b. bernicla.*

England

Devon. Numbers in the Exe estuary were the highest for several years, reaching a maximum of 111. A count of 51 young out of 110 was obtained (P. W. C. Ellicott).

Dorset. No remarkable numbers were seen on Poole Harbour. The largest party reported was of 15 (J. V. Boys & A. Bull).

Hampshire & Sussex. Numbers were higher than usual in both Langstone and Chichester Harbours. The maximum recorded was on 28th February, 1961, when the combined total for both harbours exceeded 1000 (M. Bryant & D. F. Billett). Age-group counts made in both harbours during the winter totalled 373, with 159 young — 43% (B. W. Renyard).

Kent. Numbers higher than for several years—the combined maximum for South Medway and Swale was of the order of 250. A party of 200 was seen at Cliffe on 30th November, 1960 (D. Musson). On the Medway on 1st March, 1961, 41 young were counted out of 70 (J. G. Harrison). Brent were seen passing Dungeness in March and early April in larger numbers than usual, despite unfavourable winds for observation (R. E. Scott).

Essex. The Wildfowl Count totals were the highest since thorough counts were first made in 1950-51. The December and January counts both exceeded 10,000, and over 7000 were seen at Foulness alone (Miss E. Drake & R. V. A. Marshall). Age-group counts made by the writer totalled 3742, of which 1683 (45%) were first-winter birds (see below).

Norfolk. Some 550 birds were present at Scolt Head by 12th December, 1960. In counts totalling 304, 165 young (54%) were observed (R. Chestney). At Blakeney, the flocks reached a maximum size of 1500, lower than in some winters. In a party of 91 feeding at Cley on 3rd February, 1961, 64 young were obsreved (R. A. Richardson).

Wash. A count by members of the Cambridge Bird Club on 15th February, 1961, gave the relatively large total of 2900, only once exceeded in the last ten years, in 1958-59. 56 young were counted in a flock of 99 on 5th February, 1961 (S. Martin & I. C. T. Nisbet).

Yorkshire. On the Humber, the largest party observed was of ten, which is not unusual (P. J. Mountford & H. O. Bunce). On the Tees, 17 were seen on 29th January, 1961, the largest party reported for several years, and apparently containing birds of both races (P. J. Stead).

Northumberland. A large influx occurred at Holy Island during February, 1961, reaching a maximum of about 2000, but nearly all were gone by the end of the month (F. Stabler). Holy Island is visited principally by birds of the Pale-bellied race (*B. b. hrota*).

N.W. England. All reports negative, except for records involving not more than 5 birds (3 certainly *B. b. bernicla*) on the Dee (Cheshire) and Leven estuaries from February to late April, 1961 (E. Hardy).

Wales

Gower. Unusually large numbers wintered on the Burry Estuary, with a maximum of 44 on 12th February, 1961 (H. Dickinson).

Mid-Wales. None reported from the Dovey estuary (D. J. Williams).

North Wales. None reported (A. A. Williams).

Scotland

One Pale-bellied bird at Caerlaverock, 4th-8th February, 1961 (E. L. Roberts). 5 Dark-bellied at Tyningham, East Lothian on 29th January, 1961—not an unusual record (A. T. Macmillan). None in Dornoch Firth and Loch Fleet (I. D. Pennie).

Channel Islands

Guernsey. Approximately 80 on Herm—about average, but fewer than in 1959-60 (W. Burridge).

Jersey A marked increase over numbers recorded in recent years. 350 wintered at Grouville Bay, and slightly smaller numbers at St. Aubin's Bay, though there may have been some interchange (E. D. H. Johnson).

Ireland

Two censuses of the Pale-bellied Brent wintering in Ireland were made in 1960-61 (Major R. F. Ruttledge, and see *Irish Bird Report,* 1960, p.9). Just under 12,000 were found on 19th-20th November, 1960 and about 11,000 on 21st-22nd January, 1961. These are much larger numbers than those given by Salomonsen (1958) and Ruttledge and Hall-Watt (1958) and the population in 1960 was perhaps half as big again as it had been four or five years earlier. Observations in Strangford Lough, near Dublin, in Wexford Harbour and at Dungarvan showed 308 young in 787 geese (39%) with no significant variations

Dungarvan showed 435 young in 1087 geese (40%) with no significant variations from place to place. 44 broods seen near Dublin averaged 2.9 (H. Boyd & R. F. Ruttledge).

Continental Europe

Denmark

Tipperne. In spring first seen 19th March, 1961. First large numbers seen 8th April (1500); maximum 1600 (20th April and 1st May); last seen 20th May, 1961. More young were noticed than usual, though the only count possible gave 12 young out of 41 on 30th March (H. Klausen).

Jordsand. In the autumn, the first seen were 70 on 20th September. The maximum was 3000 from 4th-8th October and the last were seen on 7th December, 1960. A count on the mainland from Jordsand to Esbjerg on 6th November, 1960 gave a total of between 1950 and 2250, in addition to the 2000 still present on Jordsand Island at that time.

In spring, first seen on 12th February, 1961, with a maximum for the island of 600 in mid-March, when about the same number were present on the mainland. The maximum for the mainland was 1080 on 1st May. Last seen on 26th May, 1961.

50 Brent were caught and ringed on Jordsand during the winter. 35 of them were first-year birds (Dr. Knud Paludan).

København. Up to 16 on several occasions in October, 1960—more often seen than for several years (Svend Christoffersen).

Blåvandshuk. High numbers seen on autumn coastal passage—up to 321 on one day, 9th October, 1960 (Carsten Mürmann).

N. Jutland. Few wintered in N. Jutland in 1960-61 (Jens Poulsen). Brent wintering in N. Jutland are predominantly Pale-bellied.

Nissum Fjord. An area favoured by Pale-bellied Brent in spring and autumn. 1200 counted on 13th May, 1961, by Dr. Finn Salomonsen, who received the following reports from local wildfowlers: - No Brent wintered on Nissum in 1960-61. The Brent began to arrive there in early March, 1961 and soon built up to a peak estimated at 7000, the largest number they had ever seen. Numbers decreased considerably during April.

France

Golfe du Morbihan & Anse du Pô. An estimated maximum of about 5000 was recorded in 1960-61, a marked increase. In age-group counts totalling 793, 482 first-winter birds were seen (61%) (R. Bozec).

Vendée. 250-400 present at Pointe d'Arçay, as against 50-100 in 1959-60. 50% young estimated (F. Spitz). Large numbers were also present at Baie de Bourgneuf.

Counts from other areas in France do not show whether there was an increase in the total wintering in 1960-61 (F. Roux).

Holland

Zeeland. Counts of total numbers and age-groups have been made on the Ooster Schelde. On 26th February, 1961, 5-600 were observed near Middelplaten—the largest flock since 1947-48. Counts of young birds made throughout the winter gave 229 young out of 443 birds (52%) and 145 out of

299 (48%)—counts by T. Lebret and Mrs. Vaas-van Oven respectively. The combined total is 374 young out of 742 (50%).

Terschelling. Maximum numbers in mid-December, 1960 were 1400—not particularly high—and in early May, 1961, 2300, which is high, but not exceptionally so. A few counts in autumn, 1960 gave first-winter ratios of 36-58% (J. Tanis).

Germany

On 11th May, 1961, P. Kramer examined a flock of 600 Brent off the island of Mellum. Of about a quarter of these which could be distinguished with certainty, 45% were young birds.

Finland

Finnish observers organised by P. Saurola made a most valuable series of counts of Brent and Barnacle (*B. leucopsis*) Geese migrating past islands in the Gulf of Finland in spring 1961. Only about a third of those observed could be definitely assigned to one species, but of those definitely identified 88% were Brent. The largest numbers were recorded from 2nd to 19th May, on Rönnskär (59°56′N, 24°24′E) and from 20th to 29th May on Sommarö (59°55′N, 24°15′E) by the same team of five observers. 29,111 black geese were counted during this period (2nd-29th May, 1961); 5542 Brents were identified with certainty, but assuming that approximately 80-90% of the total were Brent, the true figure would appear to be in the range 23,000-26,000.

The proportion of young birds in the Dark-bellied Brent population

Although data are available from several areas, it is not possible to arrive at a reliably representative figure by merely totalling them, owing to the differences in the numbers of birds and in sample sizes in various regions. A fairly accurate figure can be obtained for Essex by weighting counts and number of samples used according to the number of birds present throughout the winter in the different areas. However, the same method cannot give more than a fairly rough approximation when applied to the population as a whole. Table I only includes Essex data; a comparison of these and figures from other areas is made in the discussion which follows.

Table I. Proportion of first-winter birds in sample counts of Dark-bellied Brent in Essex, 1945-55 to 1960-61.

Season	Total count	No. of first-winter birds	Mean no. per sample of 50	S.D.	S.E. of mean	No. of samples
1954-55 ..	776	314 (40%)	--	—	—	—
1955-56 ..	2020	522 (26%)	13.3	6.40	1.19	29
1956-57 ..	1484	97 (7%)	3.5	3.90	0.78	25
1957-58 ..	1810	955 (53%)	26.3	5.53	0.95	34
1958-59 ..	Hardly any young observed					
1959-60 ..	1664	379 (23%)	11.7	7.05	1.31	29
1960-61 ..	3742	1683 (45%)	23.2	6.23	0.67	54

Family Sizes

Counts of small parties, of 8 or less, seen in flight have been continued, as this method appears to give a good estimate of family size (Burton 1961). In Table II the results of counts of flying parties and families identified on the

ground by the writer and by T. Lebret are included, with the results of the previous season's counts. The difference between the mean brood-sizes for the two seasons is not statistically significant.

Table II. Mean brood-size and frequency distribution of brood-sizes among Dark-bellied Brent in England and Holland, 1959-60 and 1960-61.

Season	Number of young in brood						Total no. of broods	Mean	S.E. of mean
	1	2	3	4	5	6			
1959-60 ..	10	13	19	15	9	5	71	3.21	0.17
1960-61 ..	13	18	33	28	26	10	128	3.52	0.12

Discussion

It is quite clear that 1960 was a successful summer for Dark-bellied Brent throughout their range. The high proportion of young must also have been due partly to the two poor breeding years preceding, reducing the number of immature birds in adult plumage. The mean brood size is high, and these and brood counts made in previous years are now showing some evidence of correlation between brood size and the proportion of young in the flocks.

Counts made in Essex in previous seasons had revealed a tendency for the proportion of young in sheltered waters to be higher than that on exposed coasts. In 1960-61, a special effort was made to investigate this by collecting enough counts from the various areas throughout the season to give statistically valid results. The results were as follows:

Foulness:	November:	213 in 450 (47%)
	Dec.-Jan.:	602 in 1468 (41%)
	Total:	815 in 1918 (42%)
Ray Sands:	March:	105 in 252 (42%)
St. Peter's flats:	Dec.-Mar.	344 in 764 (45%)
Blackwater estuary:	Dec.-Feb.:	419 in 708 (59%)

The means of samples of 50 obtained from the exposed coasts of Foulness and Ray Sands on the one hand and the Blackwater estuary on the other are respectively 21.75 (40 samples) and 27.83 (12 samples). $\sigma^d=2.02$, $t=3.01$ and $P<0.01$, indicating a significant difference between the two groups. Taken in conjunction with similar differences in previous years, this result suggests that the flocks which disperse from Foulness to other parts of the coast after their arrival there early in the season, contain a greater proportion of young than those which stay behind. The highest proportions of young birds are reached in estuaries. It is likely that this pattern of movements reflects a tendency on the part of geese without families to avoid landlocked, and potentially more dangerous, waters.

Differences between areas outside Essex in the proportion of young birds reported are quite wide. In view of the differences which have been shown to occur even within one county, caution must be exercised in interpreting these. However, the counts made by l'Abbé R. Bozec in Morbihan and Anse du Pô probably give a good estimate for this area. The mean for 15 samples of 50 is 30.33. In a comparison with the 54 Essex stamples, $\sigma^d=1.72$, $t=4.18$ and $P<0.01$—a clearly significant difference. It remains to be seen whether this difference will persist over several years, but it is possible that some differential migration of age-groups may occur in view of the results of Hansen and

Nelson (1957) who showed from ringing recoveries that a greater proportion of young Pacific Black Brant *B. b. orientalis* tend to winter in the southern part of their range.

The total number of Dark-bellied Brent in the winter of 1960-61

The exceptionally high numbers of Brent in Essex in the winter of 1960-61 prompted an attempt to assess the total size of the Dark-bellied Brent population. The situation was complicated by conflicting reports about movements of Pale-bellied birds, but reasonable figures are available for the period about mid-February, 1961. The estimated total was between 21,000 and 23,000. This does not include counts from Germany, and some numbers may easily have been missed in Denmark; so the true total may well have been rather larger. This estimate is consistent with the figure, given above, of 23-26,000 Brent passing through the Gulf of Finland in spring.

The picture of the status of the Brent continues to be one of gradual but irregular increase. Influxes such as that experienced in Essex in the winter of 1960-61 give a rather exaggerated impression of the magnitude of increase unless considered in conjunction with counts from other areas. However, it is significant that the influxes which have occurred in Essex during the past eight years have been successively larger. The population in England, and probably in Europe too, during 1960-61 was the largest since protection of this species in Great Britain was afforded in 1955. That this occurred despite two poor breeding years is a tribute to the evidently low natural mortality of the species and the benefits of protection.

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