OBSERVATIONS IN ICELAND AND NORTHWEST EUROPE OF BRANT FROM THE QUEEN ELIZABETH ISLANDS, N.W.T., CANADA

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Extensive ornithological surveys were initiated in the summer of 1973 on those islands in the Canadian High Arctic that are likely to be affected by well drilling and pipeline routes resulting from explorations for natural gas and oil. One of the projects involved a thorough investigation of the numbers and distribution of Brant (*Branta bernicla*) on Melville Island and adjacent territory known collectively as the Queen Elizabeth Islands. To obtain data on the distribution of these Brant on their wintering areas, a number of geese were banded. This involved the capture of flightless young and molting adult geese by setting up a portable net corral and driving the birds into it with a helicopter (Heyland, 1970). In 1973, only standard numbered aluminum leg-bands were used, but in 1974 painted aluminum neck-collars were also placed on the birds. The collars were yellow with black lettering as developed by C. D. MacInnes et al. (1969). Table 1 records the extent of banding in 1973-74, and the numbers of Brant leg-banded by Heyland in 1971 and 1972.

The first indications that any light-bellied Brant (*B. b. hrota*) nesting in the High Arctic of North America wintered in Europe came in 1971 when two adults banded by Heyland on 8 August 1971 at Okse Bay, Ellesmere Island (77° 07′ N, 87° 53′ W) were recovered in Northern Ireland: one at Lough Neagh (54° 57′ N, 06° 00′ W) and the other at Strangford Lough, Co. Down (54° 30′ N, 5° 40′ W). A band from a third goose from this catch was found at Ballina, Co. Mayo, Eire (54° 30′ N, 9° 10′ W) in August 1973. Another flock of Brant was banded at Okse Bay on 6 August 1973. An adult male was subsequently recovered at Bréhal, France (48° 50′ N, 1° 30′ E) on 24 February 1974. On 2 February 1974, a light-bellied Brant banded at Bracebridge Inlet at Bathurst Island on 30 July 1972 was recovered at Samish Bay, Washington (48° 30′ N, 122° 40′ W). A light-bellied Brant, banded by Maltby-Prevett on Bathurst Island on 4 August 1973, was found dead at Lough Neagh, Ireland on 16 October 1973. The details of these recoveries are summarized in Table 2.

The Brant found in the western Arctic islands are largely intermediate in belly-color between the very dark *B. b. orientalis* as defined by Delacour (1954), and the light *B. b. hrota*. Their status will be dealt with elsewhere (Boyd and Maltby-Prevett in prep). Here it is sufficient to record that 22 of the Brant banded on Melville Island and two of those banded on Prince Patrick Island were shot on the Pacific coast of the U.S.A. in the winter of 1973-74; none of these was very light-bellied, most being "intermediate" in color.

In September 1974 at Hjorsey in Myrar, S. W. Iceland (64° 32′ N, 22° 18′ W), James Wilson (pers. comm.) saw neck-collared

TABLE 1.

Numbers of Brant banded and neck-collared in the Queen Elizabeth Islands, during July-August 1971-1974.

		July-August 1971		July 1972	July-August 1973		July-August 1974	
Island	Area	Adults	Juveniles	Adults (only)	Adults	Juveniles	Adults (only)	With collars
Ellesmere	Okse Bay	10	17	29	13	3	0	0
Bathurst	Bracebridge Inlet	0	0	12	14	30	0	0
Axel Heiberg	Surprise Fiord	0	0	0	0	0	87	23
	South Fiord	0	0	0	0	0		51
Melville	12 sites	0	0	0	292	93	279	176
Prince Patrick	6 sites	0	0	0	221	0	73	30
Eglinton	1 site	0	0	0	0	0	10	9

TABLE 2.

Recoveries in Europe reported to August, 1974 of Brant banded in the Queen Elizabeth Islands, 1971-1974.

Leg-band No.	Age	Sex	Banding Date			Recovery		How obtained
937-80781	Ad.	♀	08/08/71	Ellesmere Is.	(77°07′N, 87°53′W)	10/09/71	Lough Neagh, (54°57′N, 6°00′W) Ireland	Shot
937-80780	Ad.	♂	08/08/71	Ellesmere Is.	(77°07′N, 87°53′W)	10/09/71	Strangford Lough (54°30′N, 5°40′W) Ireland	Shot
937-80785	Juv.	♀	08/08/71	Ellesmere Is.	(77°07′N, 87°53′W)	08/00/73	Ballina, (54°30′N, 9°10′W) Eire	Band only
867-78956	Ad.	♂	08/06/73	Ellesmere Is.	(77°07′N, 87°53′W)	02/24/74	Brćhal, (48°50′N, 1°30′E) France	Caught by hand, bird dead
867-52867	Juv.	♂	08/04/73	Bathurst Is.	(75°20′N, 90°50′W)	10/16/73	Lough Neagh, (54°57′N, 6°00′W) Ireland	Found dead

Brant on three different occasions and was able to read the symbols identifying 23 individuals. On 7 and 8 September he saw 23 with yellow collars among ca. 3,500 Brant; on the 14th he saw 13 in spite of being able to scrutinize only part of the 4,000 geese present; on the 15th he saw 11 with collars. Not all of the symbols were easily identifiable because the paint used was inadequate and some symbols were worn away. The numbers read showed that 22 of the geese had been banded on Axel Heiberg Island in 1974. The other, an adult female, was one of 38 banded east of Chad's Point, Melville Island (76° 11′ N, 109° 35′ W) on 18 July 1974. Of the geese from Axel Heiberg, eight were from 23 marked at Surprise Fiord (78° 17′ N, 90° 45′ W) on 26 July; the remaining 13 were 51 neck-collared at South Fiord (79° 27′ N, 94° 20′ W) on 27 July. The numbers seen were thus in similar proportion to the numbers marked on the two days. The geese from the two banding sites, some 120 miles apart, had remained partially segregated. On 7 September all eight individuals identified were from South Fiord: four seen 14 September were also from South Fiord, two of them being closely associated with the Melville Island birds. Nine identified on the 15th in a group feeding closely together included seven from Surprise Fiord and two from South Fiord.

An adult female from South Fiord observed on the 15th had also been seen on the 7th in the same group as two South Fiord yearling females not noted with it on the 15th, but recorded as probable siblings at the time of marking. Evidence of continuing family groupings of Brant beyond the first winter is difficult to obtain, but it is likely that family bonds in 1973 were especially liable to persist through the summer of 1974 because of the virtual absence of breeding effort that year by mature Brant in the Queen Elizabeth Islands. Heavy snowfalls during the winter and spring and a cold spring left the ground covered with snow well past the usual period of nest initiation, and as a consequence very few pairs attempted to nest.

The current wintering population of Brant in Ireland consists of 10-14,000 birds (R. F. Ruttledge, pers. comm.). It is not likely that light-bellied Brant breeding in Spitsbergen make up a significant portion of this population, because they winter in Denmark and along the North Sea coast as far as northeast England (Salomonson, 1958). Hitherto there had been no evidence to suggest that the geese seen in Ireland were from the Greenland-Canada rather than the Spitsbergen stock. The regular occurrence of light-bellied Brant in northeast France has only recently been recognized, and the numbers involved are believed to be small (A. St. Joseph, pers. comm.).

The numbers of Brant now known to occur in northern Greenland and in the eastern Queen Elizabeth Islands fall far short of the numbers seen in Iceland and Ireland. Although a few nest in Peary Land and Hall Land, there is no evidence of large movements along the northeast coast of Greenland. The majority of the geese from Iceland fly across the Greenland ice cap from the Angmagssalik District in the southeast to the middle of the west coast,

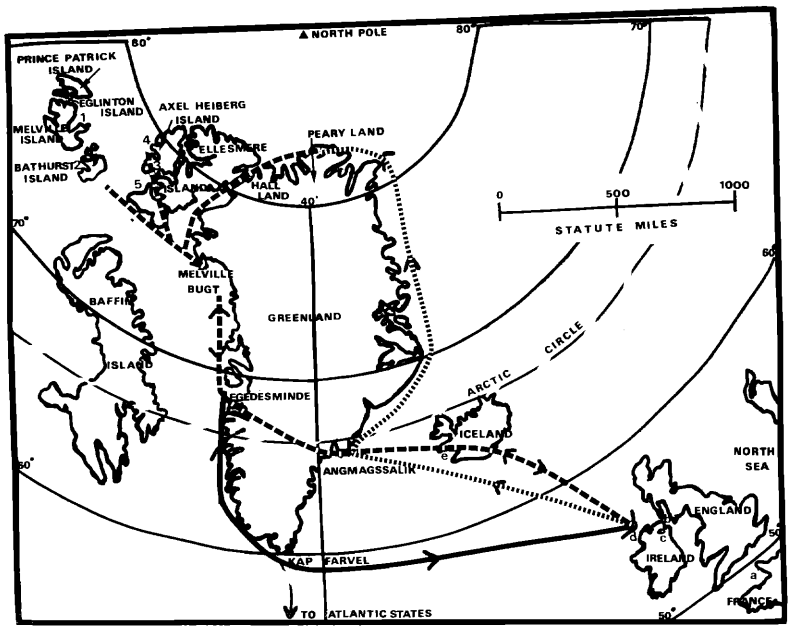

FIGURE 1. Banding locations, recovery sites and migration routes of Brant breeding in the Canadian Arctic Islands.

Banding locations: 1. Chad's Point, 2. Bracebridge Inlet, 3. Surprise Fiord, 4. South Fiord, 5. Okse Bay.

Recovery sites: a. Bréhal, b. Strangford Lough, c. Lough Neagh. d. Ballina, e. Reykjavik.

■■■■■ Spring migration of Brant
▬▬▬ Fall migration of Brant
▬■▬■ Fall and spring migration of Brant

then move north to nesting sites north from Melville Bugt (Salomonsen, 1967). Further searches and banding in both Greenland and Canada are needed to find all the geese wintering in Ireland and to discover whether any of the Brant wintering on the U.S. Atlantic coast come from breeding areas also supplying birds to Ireland. Brant hunting seasons have been closed on the U.S. Atlantic coast for four years, thus precluding large numbers of hunter-reported bands from there. However, the fact that there have been no recoveries of our banded Brant reported from this area does not eliminate it as a wintering ground for these geese.

Probably most Brant from the western islands (Melville and Prince Patrick) winter on the U.S. Pacific coast and the majority of Brant from the eastern islands (Axel Heiberg and Ellesmere) winter in Europe. The dividing line between the two populations

may be on a north-south line through Bathurst Island because Brant from the latter have been recovered in both wintering areas.

The lack of previous proof that Brant from northern Canada visit Iceland on passage to Ireland is in part due to the small numbers of Brant banded in the northern islands and also to a lack of any tradition of goose shooting in western Iceland. As a result leg-banded birds are relatively unlikely to be detected there. There is also a reduced probability of band reports from Ireland where Brant have received total legal protection for some years and where 3 of 4 recoveries come from such atypical localities as Lough Neagh, over 25 miles inland from the nearest major marine wintering area in Strangford Lough.

The expansion of the visible marking project and the use of improved patterns of neck-collars now being developed should lead to more data on the range of different stocks of Brant, including the possible overlapping in the north of geese wintering on the U.S. Atlantic coast, in Ireland, and on the Pacific coast.

SUMMARY

At least 23 of 289 Brant marked with yellow neck-collars in the Queen Elizabeth Islands, N.W.T., Canada, in July and August 1974 were seen in western Iceland in September 1974, providing the first proof that Brant from the Canadian High Arctic visit Iceland en route to winter quarters in Ireland. All but one of the geese seen had been marked on Axel Heiberg Island, the other had come from Melville Island. Four leg-banded, light-bellied Brant from Ellesmere and Bathurst Island had earlier been recovered in Northern Ireland, and one in northwest France. Legal protection afforded the geese in Iceland, Ireland, and (temporarily) on the U.S. Atlantic coast greatly reduces the chance of geese without visible markings being reported from these parts of their range. Improved neck-collar designs and coloring will facilitate observations of Brant movements in the future. There appears to be a dichotomy in the autumn migration of High Arctic Brant, eastern birds travelling to Europe and those from the western islands migrating to the U.S. Pacific coast.

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