

**BREEDING GROUND BANDING OF ATLANTIC POPULATION
CANADA GEESE IN NORTHERN QUÉBEC - 2000**



Due to poor productivity, fewer geese were banded in northern Québec in 2000 than in previous years: total about 4,500.

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BREEDING GROUND BANDING OF ATLANTIC POPULATION CANADA GEESE IN NORTHERN QUÉBEC - 2000

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Summary: The 2000 breeding season was characterised by poor reproductive output in both the eastern and western portions of the breeding range. During banding drives, the number of goslings per breeding female in the Hudson Bay area was 2.26, well below the mean of the three previous years (3.87). In Ungava Bay, the number of goslings per breeding female was only slightly below the long-term average (2.83 vs 2.93), however some typically highly productive salt marsh areas had virtually no broods in 2000. A total of 4,545 geese were banded: 2,616 in the Hudson Bay area and 1,929 in the Ungava Bay area.

Introduction

A large number of Canada geese was banded in the Ungava region of northern Quebec in the 1960's (13,069 geese) and a smaller number in the late 1980's (5,662). However, few (only about 200) of the birds banded in the 1980's were banded in Hudson Bay coastal zone which harbours over 40% of the entire Ungava breeding population (Harvey and Rodrigue 2000). Thus, there have not been large numbers of geese banded in the principal breeding area in over thirty years. The present program of breeding ground banding, initiated in 1997, includes both the western (Hudson Bay) and eastern (Ungava Bay) portions of the Ungava breeding range. The main objective of the banding program is to create a marked population of geese from representative portions of the breeding range for studies of adult and juvenile survival, harvest rate, timing and distribution of harvest and population delineation. Other benefits of capturing large numbers of breeding geese are to obtain pre-fledging immature:adult ratios, breeding ground recaptures of previously banded birds and body size measurements which may be useful in population delineation.

Work conducted in 2000

We captured groups of flightless geese from 28 July to 5 August in southern Ungava Bay and from 5 to 15 August along the northern Hudson Bay coast (Figure 1). The two areas represent the western and eastern portions, respectively, of the Ungava breeding range of Atlantic Population Canada geese. Helicopters were used to round up and drive the geese toward a funnel-shaped trap. While flocks containing goslings were targeted, a few flocks of only adult birds were captured. Based on nesting dates (Hughes 2001), most of the goslings banded near Povungnituk were about 5-7 weeks old and those near Kuujjuaq, 3-6 weeks old at the time of banding. All geese were banded with USFWS 1-800 leg bands. We measured the skull of most of the adult birds captured. We also collected samples of growing feathers (blood quills) in the Ungava Bay area which could eventually be used for genetic analysis.

Since 1998, two banding crews have operated simultaneously in the Hudson Bay area to increase the number of geese banded. In 2000, the first crew was led by R.J. Hughes (CWS) and included Joël Poirier, Francis St-Pierre and Josée Lefèbvre with Canadian Coast Guard helicopter pilot, Gilles Poirier. The second crew was led by Kevin Jacobs (PA) and included Denny Price (MD) with Ontario Ministry of Natural Resources helicopter crew, Mary Ellen Pauli and Jean-Marie Kelley. Both crews used Bell 206L Long Ranger helicopters. The Ungava Bay crew was led by Ted Nichols (NJ) and included Peter May (Makivik Corporation, Kuujjuaq), George Timko (MD) and Jean-Pierre Tremblay (Laval University, Québec). Other Makivik personnel assisted on some bandings. The Canadian Helicopters Astar 350D used in Ungava Bay was piloted by Steve Bouchard.

Results

Geese banded: In 2000, a total of 4,545 geese were banded: 2,616 in the Hudson Bay area and 1,929 in the Ungava Bay area (Tables 1, 2). Based on experience acquired in 1998 and 1999, annual banding goals were revised in 2000 to 1,000 adult geese in the Ungava Bay region and 2,000 adult geese in the Hudson Bay region (Canada Goose Committee, May 2000, Albany NY).



Hudson Bay

Many high quality rearing areas were virtually devoid of broods in 2000.

Ungava Bay



We reached this goal for Ungava Bay but fell short at Hudson Bay. On the Hudson Bay coast, near Povungnituk, brood flocks were smaller and more widely scattered than in previous years. Thus, more search time was required to locate brood flocks of a size worth catching. Also, heavy rain and high winds grounded both crews for three days from 12-14 August. In coastal marshes along Ungava Bay east of Kuujjuaq, where large concentrations of broods are normally found, there were almost none in 2000. However, at inland tundra sites north-west of Kuujjuaq, the situation was much better. Brood flocks were more abundant than in previous years.

Productivity: We examined the immature:adult (I:A) ratio in the flocks we captured to evaluate productivity. In several cases, a few birds in a flock escaped capture. When the number of escaped adults and goslings were known, they were included in the totals for the catch; otherwise, these flocks were excluded from the analysis. Flocks containing no goslings (n=4) were also excluded. The mean (\pm se) I:A ratio at the time of banding was 0.99 ± 0.06 for Hudson Bay flocks (n=73) and 1.16 ± 0.10 for Ungava Bay flocks (n=34). The mean I:A ratio was not significantly different in Hudson Bay versus Ungava Bay flocks (t-test, $P=0.14$). Although mostly flocks with goslings were captured, a number of non-breeding adult geese were usually included in the flock. In order to correct for this potential source of bias, we differentiated between breeding and non-breeding females by the presence or absence of a brood patch (BP). By comparing the number of young to the number of BP-females (I:BP), we were able to obtain a non-biased estimate of productivity at the time of banding. However to do this, all of the adult female geese in a flock had to be examined. Thus, flocks in which any number of adult geese escaped capture (except those able to fly which were assumed to be sub-adults or moult-migrants) were excluded. The mean I:BP ratio was 2.26 ± 0.31 (n=4) at Hudson Bay and 2.83 ± 0.24 (n=28) at Ungava Bay. The I:BP ratio was not significantly different between the two locations (t-test, $P=0.39$).

In the Hudson Bay area, banding was co-ordinated with a study of reproductive success being conducted at the Polemond River, approximately 60 km south of Povungnituk (Hughes 2001). Thus, several banding drives were conducted in the same area where nesting geese were studied earlier in the year in order to recapture goslings marked in the nest with individually numbered web tags. All of the recaptured goslings were measured to determine their rate of growth,

however too few (<10% of the 225 goslings marked) were recaptured in 2000 to evaluate gosling survival (see Hughes 2001).

Band Returns

Since 1997, 21,105 adult and juvenile geese have been banded on the Ungava breeding grounds. From 1997 to 1999, several of these birds were shot by Canadian and American sport hunters during early resident goose seasons in September or during regular and late seasons in areas not thought to be frequented by wintering migrant AP Canada geese (Table 3). Regular season hunting, closed since 1995 in areas known to be occupied by migrant geese, was partially reinstated in the 1999-2000 hunting season in most Atlantic Flyway jurisdictions. Since then, the number of reported bands increased considerably. Finally, a number of banded birds have been reported by Aboriginal subsistence hunters in northern Québec. At the time of writing this report, a total of 432 band recoveries have been reported by hunters.

Discussion and Plans for 2001

The 2000 breeding season was characterised by poor reproductive output in both the eastern and western portions of the range as evidenced by the scarcity of goslings at several sites in the Hudson Bay and Ungava Bay areas. The number of goslings per brood-patch female was low in the Hudson Bay area in 2000: 2.26 compared to the 1997-1999 mean of 3.87. In the Ungava Bay area, the ratio in 2000 (2.83) was near the 1997-1999 mean of 2.93, however the most productive areas in past years, salt marshes in southern Ungava Bay, had virtually no broods at all. Based on these observations, it is clear that a reliable index of productivity must not be limited to the proportion of young in brood flocks. Some evaluation of the abundance of broods or brood flocks throughout the known breeding range (ex. from aerial brood surveys) should also be obtained.

In the first year of the present breeding ground banding program, it was evident that a sufficient number of geese could be banded, at least in good production years, to provide a useful data set

for studies of survival and harvest rates. In poor production years however, it may not always be possible to meet banding quotas by targeting brood flocks. One alternative would be to target groups of failed breeders and sub-adult birds, however in doing so there will be a risk of banding birds originating from other breeding populations. Greater effort is required to band a similar number of geese in the Hudson Bay area compared to Ungava Bay due mainly to the more widespread distribution of broods and more variable breeding success. However, because the Hudson Bay area accounts for a substantially greater portion of the total breeding population (Malecki and Trost 1990, Harvey and Rodrigue 1999), it is important to maintain a strong banding effort there. Given the importance of a large banded sample of geese for survival (and other) analyses, particularly in view of the gradual re-opening of sport hunting, we plan to again have two banding crews working simultaneously in the Hudson Bay area in 2001. In 2000, we expanded the geographical coverage of bandings farther to the north of Povungnituk and to the east and north-west of Kuujuuaq. In 2001, we will continue to expand the geographical coverage of the bandings in both the Hudson and Ungava Bay areas.

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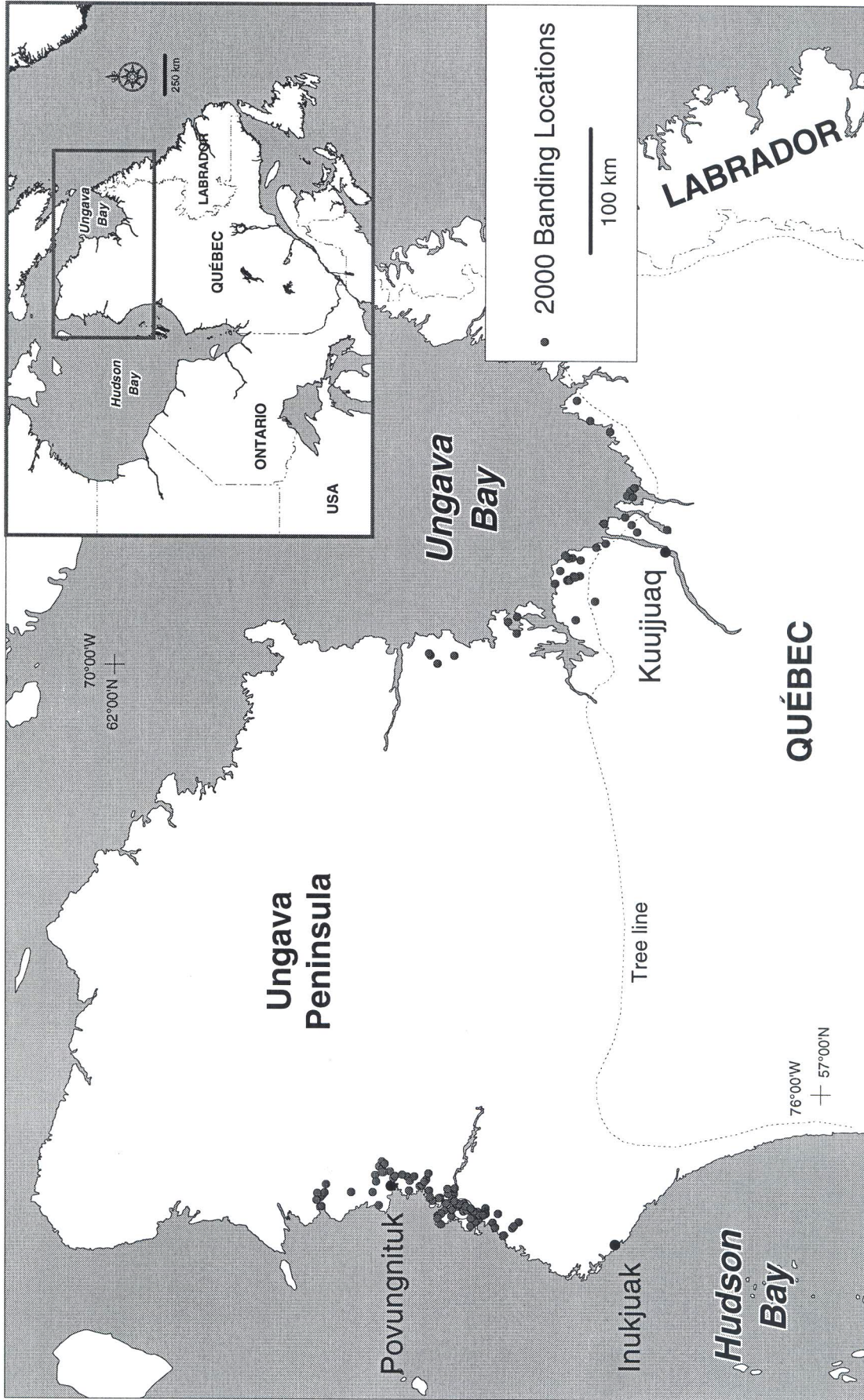


Figure 1. Ungava region of Quebec showing areas where breeding Atlantic Population Canada Geese were studied.

Table 1. Summary of banding operations of Atlantic Population Canada Geese in northern Québec, 2000.

	Hudson Bay	Ungava Bay
Dates	5 - 15 August	28 July - 5 August
Adults Banded	1,291	1,033
Juveniles Banded	1,325	896
Total Geese Banded	2,616	1,929
Recaptures:	102	67
No. Of Catches	80	37
Mean No. of Geese/Catch	34	54
Helicopter Hours Used	47	35

Table 2. Summary of Canada Geese banded in northern Québec, 1997-2000¹.

Year	Hudson Bay	Ungava Bay	Total
1997	1,161	2,000	3,161
1998	3,821	2,007	5,828
1999	5,332	2,239	7,571
2000	2,616	1,929	4,545
Total 1997-2000	12,930	8,175	21,105

¹ Hughes and Reed 1999, 2000; Reed and Hughes 1998.

Table 2. Recoveries of AP Canada geese banded in northern Québec between 1997 and 1999 and shot during early resident Canada goose seasons (September) and regular/late seasons (October-March) from fall 1997 to 26 January 2001. (updated: 5 February 2001)

State/Province	Early Season					Regular/Late Season					Grand Total
	1997	1998	1999	2000	Total	1997-98	1998-99	1999-00	2000-01	Total	
Labrador	0	0	0	1	1	0	0	0	0	0	1
New Brunswick	0	0	0	0	0	0	2	0	1	3	3
N. Québec ¹	0	0	8	0	8	5	15	38	0	60	66
S. Québec	1	0	6	2	9	0	8	39	33	80	89
Ontario	0	1	5	5	11	1	1	26	9	37	48
Maine	0	0	0	0	0	0	4	0	0	4	4
N. Hampshire	0	0	0	0	0	0	5	5	0	10	10
Vermont	0	1	0	0	1	0	0	0	4	4	5
Massachusetts	0	0	0	0	0	0	1	2	0	3	3
Connecticut	0	0	0	0	0	0	4	6	4	14	14
Rhode Island	0	0	0	0	0	0	1	0	0	1	1
New York	0	2	14	9	25	0	1	12	10	23	48
Pennsylvania	0	0	1	2	3	0	4	17	9	30	33
New Jersey	0	0	0	1	1	2	1	12	11	26	27
Delaware	0	0	0	0	0	0	0	0	0	0	0
Maryland	0	2	0	0	2	3	1	2	6	12	14
Virginia	0	0	1	0	1	3	8	12	15	38	39
West Virginia	0	0	0	0	0	0	0	0	0	0	0
North Carolina	0	0	0	0	0	0	0	3	2	5	5
Other Flyways	0	0	3	1	4	1	2	7	8	18	22
Total	1	6	36	21	64	15	58	183	112	368	432

¹ N. Québec: Aboriginal subsistence harvest. "Early season" is August-October (i.e. before fall migration); "Regular season" is April-July (most recoveries are from the spring hunt in April & May).