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Given much discussion about changes in the distribution, abundance and population composition of the Canada Goose (*Branta canadensis*) population in the Atlantic Flyway (Trost and Malecki 1985, Hindman and Ferrigno 1990), no attention has been paid to the possible contribution of Greenland-nesting birds to this flyway. Boertmann (1994) recently reviewed the status of birds in Greenland and described the Canada Goose as a locally common breeder in West Greenland, the population of which is increasing and expanding. We supplement his status review with the first captures and banding recoveries of Canada Geese from Greenland and the results of local aerial surveys to substantiate the claim that nesting birds in Greenland make an increasing contribution to the Atlantic Flyway Canada Goose population.

Salomonsen (1967) mentioned two small races of Canada Geese occurring in West Greenland: *hutchinsii* and *parvipes*. Palmer (1976) and Johnsgard (1978) considered that *hutchinsii* bred regularly in the Ilulissat district (69°N) and that molting, nonbreeding groups occurred in the Uummannaq district (70°N). It has been suggested that most recent breeding records from Disko Island (69°N; Bennike 1990) also related to this race. H. Ettrup (pers. comm.) reported 35 to 40 *hutchinsii* on the eastern Svartenhuk Peninsula (71°N) during a ground survey in August 1989. There has been one breeding record of *parvipes* from Disko Island (Pedersen 1984). Palmer (1976) also reported a recovery of a bird banded in Kingsville, Ontario (considered a logical area for *interior*) from Uummannaq in July 1964, and many recent records of summering or breeding birds have been of larger races and often have been ascribed to *interior* (e.g. Pedersen 1980, Best and Higgs 1990, Frimer and Nielsen 1990, Boertmann 1994). Since the subspecies *interior* breeds to the south and east of Hudson Bay, this race also is a potential breeder in western Greenland. However, this population has shown marked reductions in recent years (especially in the southern James Bay area; Trost and Malecki 1985, Malecki and Trost 1986). The breeding range of the slightly larger nominate race *canadensis* comes closer to the western coast of Greenland than does that of *interior* (Delacour 1954, Hanson 1965, Owen 1986), breeding in extreme northeastern Canada and southern Baffin Island (Hanson 1965), although little is know about the number and distribution of Canada Geese breeding in Newfoundland and Labrador (Hindman and Ferrigno 1990).

There is no doubt that there has been a considerable increase in the numbers of Canada Geese in Greenland since Salomonsen (1950) reported very few records of the species. Until the late 1970s, the species was still described as a rare and irregular breeding bird in the Disko Bay region (Salomonsen 1981). In 1985, a flock of 75 to 100 Canada Geese was reported from Ilulissat; this was the largest group recorded in Greenland (referred to in Bennike 1990) and, since then, there has been a spectacular increase in numbers. By the late 1980s, Bennike (1990) was describing the Canada Goose as the most common breeding goose species in many parts of Disko Island. He also documented records from the adjacent Nuussuaq Peninsula (70°N) and the Svartenhuk Peninsula further north. One of the birds on Narsaq, Svartenhuk carried a yellow neck-collar, showing the bird to have been marked in North America; this was the first such record from Greenland. Unfortunately, the bird was too wary to allow observers to read the code.

In Isungua, Sisimiut Municipality (67°08′N, 50°23′W), an area close to Kangerlussuaq (Søndre Strømfjord) visited several times since 1988 to survey or catch Greenland White-fronted Geese (*Anser albifrons flavirostris*), numbers of Canada Geese also have shown an increase. A ground survey covering about 300 km² found 12 Canada Geese in 1988 (including a family of two goslings), 17 in 1989 (3 families, 11 goslings), 26 in 1991 (3 families, 12 goslings), and 17 in 1992 (in a much reduced area of search, including a family of five goslings).

In July 1992, 10 Canada Geese were captured in Isungua; their measurements are summarized in Table 1. The mass measurements closely approximate those reported for molting *interior* birds by Hanson (1965); from photographs in the field, the dull gray coloration of the breast and other plumage characteristics suggest the birds more likely belonged to *interior* than the nominate one. Three of these birds were recovered, all shot together, at Sandy Island, Labrador, Canada (56°43′N, 61°20′W) in November 1992. These are the first recoveries of Canada Geese banded in Greenland. Unfortunately, no resightings of the remaining banded Canada Geese have been reported to confirm the wintering areas of these birds.

TABLE 1. Body measurements ($\bar{x} \pm$ SE) of 10 (7 male and 3 female) adult Canada Geese caught on 27 June 1992 in Isungua, Sisimiut Municipality, West Greenland (67°08'N, 50°23'W), with comparable measurements from the literature. All birds sexed by cloacal examination, body mass determined to nearest 25 g, total tarsus (sensu Dzubin and Cooch 1992) measured to nearest 0.5 mm, and head length (sensu Dzubin and Cooch 1992) measured to nearest 1 mm using calipers.

Sex	Body mass (g)	Total tarsus (mm)	Head length (mm)
Birds caught in Isungua			
Male	3,568 ± 124	104.4 ± 1.2	122.0 ± 2.9
Female	3,433 ± 148	99.2 ± 1.4	115.6 ± 3.3
Branta canadensis canadensis			
Male	4,880[a]	70.8[b]	—
Female	4,390[a]	85.9[c]	—
B. c. hutchinsii			
Male	2,150[b]	70.3[b]	—
Female	1,870[a]	67.4[b]	—
Branta canadensis interior			
Male	3,946[d]	89.1[a]	—
Female	3,349[d]	83.6[e]	—

[a] Palmer (1976). [b] Aldrich (1946). [c] Bellrose (1980). [d] From specifically molting birds (Hanson 1965). [e] Raveling (1968).

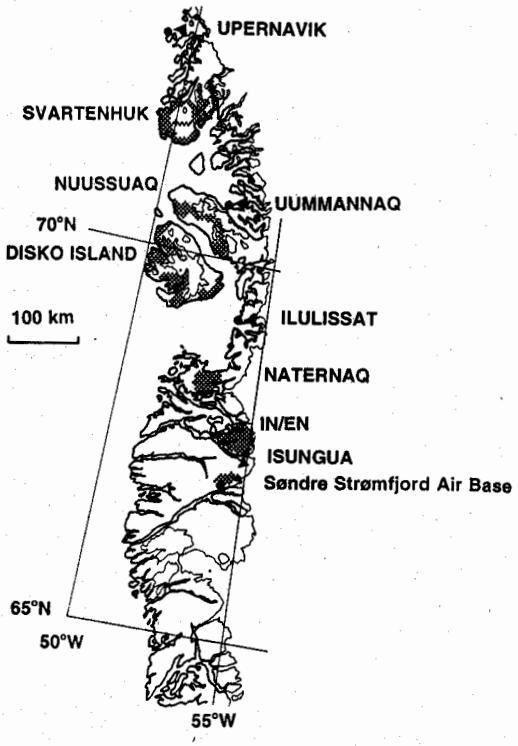

Fig. 1. Map of West Greenland showing areas covered by aerial survey conducted by Greenland Environment Research Institute in 1992 (shaded). Thick lines indicate coastline of West Greenland; fine line indicates extent of inland ice sheet. Canada Goose totals were 397 from Svartenhuk, 102 from Disko and Nuussuaq, 11 in Naternaq, 5 from Ipiutaarssup nunaa/Eqalungmiut nunaat (IN/EN on map), and 17 from Isungua. An additional 90 Canada Geese were reported from western Disko and 3 from southwest Disko by Bennike (1990).

In 1992, an extensive aerial survey was carried out by the Greenland Environmental Research Institute in West Greenland (by C.G., D.A.S., and J.F.) to map the distribution and abundance of White-fronted Geese. These surveys covered a number of areas (Fig. 1) and located 532 Canada Geese, including two broods on Svartenhuk and a brood on Disko. In addition, Bennike (1990) found other Canada Geese on parts of Disko Island (90 birds mainly on the western coast) and Nuussuaq Peninsula (11 birds) not surveyed in 1992. In late May and early June 1994, four pairs, plus 10 other birds were observed in three areas near Kangerlussuaq. Farther north, a brood was seen on western Nuussuaq in early July (D. Boertmann and A. Mosbech pers. comm.). During seabird surveys in late August and early September 1994, 90 Canada Geese were counted in Mellemfjord, Disko Island, and about 150 on Svartenhuk (D. Boertmann and A. Mosbech pers. comm.).

It is clear from incomplete but extensive surveys that there are substantial numbers of Canada Geese summering and breeding on the western coast of Greenland, especially north from Disko Island. There has been one aerial census of lowland areas north from Nuussuaq to Upernavik, but no Canada Geese have been found in this area (D. Boertmann pers. comm.). The presence of a few pairs breeding in continental areas close to the icecap in central West Greenland also suggests that larger numbers may occur farther south as well. Observations from Isungua suggest that broods of Greenland White-fronted Geese and Canada Geese forage together, and studies of the gosling and adult diet is a future priority to assess the extent of overlap. Further comprehensive aerial survey would confirm the full extent and distribution of the colonization, which may have important consequences for both species given the potential for interspecific interactions with White-fronted Geese.

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Aspects of the Breeding Biology of Pollen's Vanga (*Xenopirostris polleni*) in Southeastern Madagascar

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The radiation of trophic structures among the 14 species of Malagasy vangas (Vangidae or, more recently, as members of Vangini, Malaconotinae, Corvidae; Sibley and Monroe 1990) is comparable to that of the Hawaiian drepanids and the finches of Galapagos (Amadon 1950, Carlquist 1965). Despite their interest to biologists, many basic aspects of vanga biology remain unknown. In particular, little is known of the breeding biology of the rare (Collar and Stuart 1985) or endangered (King 1981) Pollen's Vanga (*Xenopirostris polleni*), which ranges along the length of the eastern Malagasy rain forest, from Marojejy (14°S) to near Tolagnaro (25°S; Dee 1986). Nesting occurs October through December, and the clutch size is two (Langrand 1990, Safford and Duckworth 1990). Here I provide the first detailed information on the breeding biology of Pollen's Vanga. I also examine dichromatism in this species, as disagreement exists in the literature on distinguishing the sexes.

I observed one nest from 28 to 30 September 1988 at what is now Ranomafana National Park (21°16′S, 47°28′E) at an elevation of 1,000 m above sea level. The nest was 10 m off a trail, near trail marker A1150 m, in a part of the park once cleared of many of its trees and near a former village (P. Daniels and P. Wright pers. comm.). During three days of observa-