ORIGINS AND MOVEMENTS OF SNOW GEESE IN NEW YORK STATE

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On 11 Feb 2002, I noticed three adult Greater Snow Geese (*Chen caerulescens atlanticus*) on the East Pond at Jamaica Bay Wildlife Reserve ,NYC with yellow neck-collars bearing the letter/number combinations **EU38**, **HM30** and **JP72**. Subsequent inquiries revealed that all three were females that had been captured by a Canadian research group studying the bioenergetics and foraging behavior of Greater Snow Geese on Bylot Island in the Canadian high Arctic (Gilles Gauthier, pers. comm.). The marking of birds with yellow collars (and radio transmitters and green collars on a few) has been in progress for ten years, with the first letter indicating the initial capture year . Thus for the Jamaica Bay WR birds, **EU38** was first captured in August 1997, **HM30** in August 1998 and **JP72** in August 2001. The month of August is the focus of these studies because this is when the geese undergo a short flightless period after the young have fledged permitting easy capture with minimal disturbance.

Interestingly, **HM30** has been seen at least twice before (28 Oct 1999 and 1 Apr 2000) in southern Canada near the town of Victoriaville, Québec (Sylvain Mathieu, pers. comm.). This area is part of an important staging site for Greater Snow Geese and lies south of the St. Lawrence River, midway between Montréal and Québec City. Following a direct route, the distance between Jamaica Bay, New York and Bylot Island is just less than 2000 miles. As will be described below, it is likely that the geese follow a longer route that passes through the St. Lawrence River Valley and Ungava Peninsula of northern Québec.

Bylot Island – Goose Central

Bylot Island (72.9°N, 79.5°W) lies off the northeast coast of Baffin Island in the new territory of Nunavut. The island's southwest plain hosts the largest colony of nesting Greater Snow Geese in the world (a massive 16% of the total world population visit in the summer) as well as Canada's largest colonies of Thick-billed Murres (320,000) and Black-legged Kittiwakes (53,000). Since 1954, the southwestern part of the island has been recognized as a federal migratory bird sanctuary (Bylot Island Migratory Bird Sanctuary) and hopefully this will soon be afforded greater protection when it is included in the new proposed North Baffin National Park Reserve. The breeding avifauna of Bylot Island represents an interesting mix of Old and New World species. For example, Red Knots, Common Ringed Plovers and Northern Wheatears breed on the island but migrate to Europe and Africa to winter. Among the North America species,

there is a mix of low and high Arctic breeders. Sandhill Cranes and Pectoral Sandpipers, of low Arctic affinity, nest in proximity to Ruddy Turnstones and White-rumped Sandpipers, which are more typical of the high Arctic (Lepage et al. 1997). A Pink-footed Goose that wintered in Pennsylvania accompanied a Snow Goose flock that included birds from Bylot, and perhaps these acted as the carrier species (David Czaplak pers. comm.).

Annual cycle of migration between the high Arctic and Atlantic seaboard

The Greater Snow Geese arrive at their breeding grounds in early June and remain until September when the soil and freshwater ponds begin to freeze (Mowbray et al. 2000). The majority then travel south to staging grounds along the St. Lawrence River in southern Canada, particularly the tidal marshes at Cap Tourmente National Wildlife Area near Québec City. Although the journey between Bylot and the St. Lawrence River can be made in five or six days, most birds do not appear at Cap Tourmente until the first half of October. After leaving the high Arctic, the geese move southeast, following the valleys of northern Baffin Island and the Foxe Basin, to reach their staging sites on the Ungava Peninsula. Pausing only briefly, they continue onwards to the upper St. Lawrence River, flying over long stretches of high tundra and boreal forest. Some 20% are thought to skip the St. Lawrence River altogether and fly direct to their wintering grounds on the Atlantic Coast (Maisonneuve and Bédard 1992).

The Snow Geese that stage on the St. Lawrence River will stay for a few weeks (average 15-19 days) to replenish their energy reserves before continuing their migration to United States wintering grounds in early November. The most spectacular concentrations in southern Québec occur between 5 and 20 Oct. High tide counts on the marshes at Cap Tourmente NWA, for example, can exceed 100,000 birds! In general, Snow Goose numbers are on the rise (averaging 11% per year) and in fall 2001, a remarkable 837,000 Snow Geese were counted in the St. Lawrence River Valley and estuary (data from the Canadian Wildlife Service web site).

After refueling, the flocks move further up the St Lawrence River to Lac St. Pierre near Montréal and then south along the Richelieu River to the head of Lake Champlain. Major flights pass over Lake Champlain into New York State and south along the Hudson River to coastal New York, New Jersey and Delaware. Some may also reach the coast by following the Connecticut River (Barnards 1994). Upwards of 100,000 birds spend the winter on the shores of Delaware Bay (Sibley 1993) but many push further south into Maryland, Virginia and the Carolinas. During the winter, the geese feed on cordgrass and other marshland plants as well as agricultural crops such as rice. Since the late 1960s, Snow Geese have gradually moved inland to exploit farming areas, raising concerns about increased crop damage.

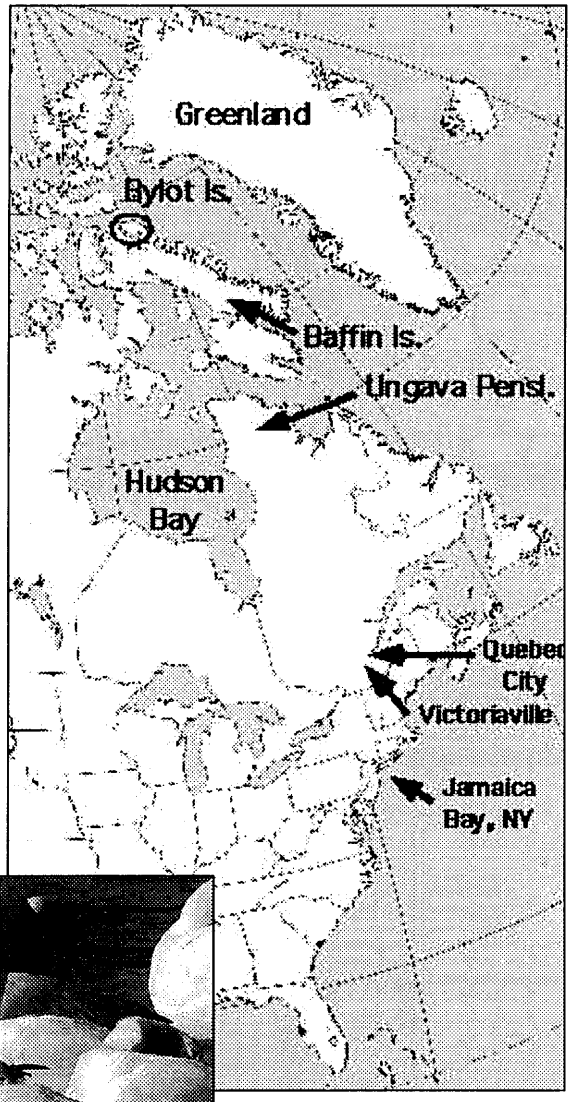
Towards the end of the winter, the large flocks reassemble and by retracing their fall migration route, return to the St Lawrence Valley in late April and early May. After rebuilding fat and protein reserves, the geese take wing, often en masse, in the third week of May and return to their nesting grounds along a fairly well-defined migration corridor, some pausing once more on the Ungava Peninsula.

New York acts as an important corridor for migrant Snow Geese

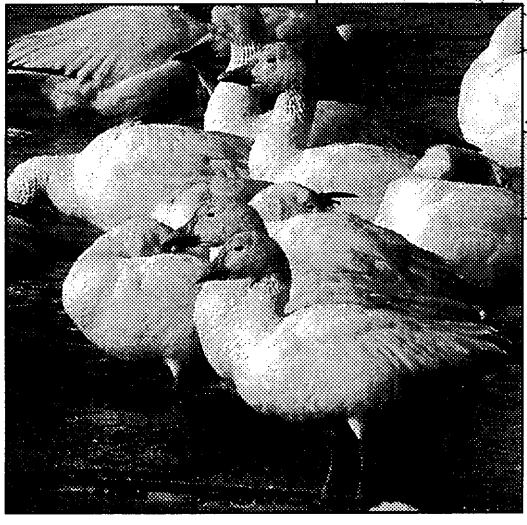
Most of the Snow Geese that winter in the Atlantic states, including New York, nest on the high Arctic islands of Bylot, Ellesmere, northern Baffin and a smaller number in northwestern Greenland (Cooke et al. 1995; Mowbray et al. 2000). These are primarily Greater Snow Geese but some Lesser Snow Geese (including blue morphs) from breeding colonies in Hudson and Foxe Bays also migrate to the Atlantic seaboard via Rupert Bay in Québec and then to extreme southeastern Ontario and western New York (Bull 1985; Cooke et al.1995).

As mentioned above, eastern New York represents the major migration corridor for Greater Snow Geese in passage between the St. Lawrence River estuary and coastal wintering areas such as the Delaware Bay. Indeed the bulk of marked Snow Geese observed on the New York/Vermont border at the head of Lake Champlain are from Bylot Island (David Hoag, pers. comm.). Large numbers of Snow Geese also pass through central New York staging in the wet areas at the head of Cayuga Lake including Montezuma National Wildlife Refuge. Migration across central New York is heaviest in the spring, with a peak of 30,000 Snow Geese at Montezuma on 18 Apr 1983 (Griffith 1998). These individuals are very likely headed for the St. Lawrence River. During February 2002, searches of 10-15,000 migrant Snow Geese near Montezuma revealed a dozen marked Greater Snow Geese from Bylot Island as well as four Lesser Snow Geese from Baffin Island (Pete Hosner and Matt Williams, pers. comm.). At least one of the collared Greater Snow Geese has been seen the previous winter at Victoriaville, Québec (Sylvain Mathieu, pers. comm.).

Snow Geese have traditionally been classified into two subspecies: the virtually color monomorphic (all white) Greater Snow Goose (*Chen caerulescens atlantica*) and the dimorphic (white and blue morphs) Lesser Snow Goose (*C. c. caerulescens*). The two are mainly differentiated by size and weight. However, there is considerable overlap and field identification is extremely difficult. Size differences between the sexes are compounded by the fact that final body size of adults is known to be influenced by feeding conditions when they were goslings and thus size is not always a good indicator of population (Cooch et al. 1991; Lepage et al. 1998). Given these overlaps and variable frequencies of blue morphs, several leading authorities have argued that the subspecific designation is of little scientific utility but might be retained for management purposes



Route from breeding grounds to Jamaica Bay Showing major migration stops.



Snow Geese
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(Cooke et al.1995; Mowbray et al. 2000). The presence of small but significant numbers of blue morph Snow Geese (infrequent in Greater Snow Geese) at Jamaica Bay and on Lake Champlain suggests that Lesser Snow Geese reach southern and eastern parts of the state. This is not a recent phenomenon as Bull mentions a number of Lesser Snow Goose specimens (identified by wing measurement) from the New York City area (Bull 1964).

Getting involved

There is still much to learn about the migration and wintering of Snow Geese in New York State. Birders can contribute important data by checking local goose flocks for marked birds and reporting this information to the USGS Bird Banding Laboratory at Laurel, Maryland or the Canadian Wildlife Service Bird Banding Office at Hull, Québec. The Bird Banding Lab maintains an excellent web site (http://www.pwrc.nbs.gov/bbl/) that explains and illustrates the different types of auxiliary markers used for waterfowl and provides addresses, phone numbers and interactive pages for reporting geese with collars or bands.

Many different marking projects are in progress and any goose flock, not just Snow Geese, can yield marked birds. Key elements to report are your name and address, the collar number, the date and exact location the bird was observed and the species if known. Special attention must be given to the arrangement of the letters, numbers and other symbols, as these are not always in a linear series, and also the color and shape of the collar. Observers may be rewarded with a certificate of appreciation from the banding lab indicating where and who banded the birds.

Ross's Goose (*C. rossii*) has undergone a similarly massive population increase with accompanying eastward expansion in wintering range. As a result, Ross's Geese are now annual in the state in small numbers. Birds from several breeding localities have been marked with collars and could occur in our area.

As I hope this note illustrates, the results can be fascinating and provide a wonderful reminder of the complex migration patterns used by this seemingly familiar species. Studies of marked Canada Geese in New York reveal a similarly rich story and show how much more there is to be learned about the comings and goings of geese (Gretch 1990; Marcotte 1998).

Acknowledgements

Many thanks to Gilles Gauthier (Université Laval, Sainte-Foy, Québec), Sylvain Mathieu (Montréal, Québec), David Hoag (Grand Isle, Vermont), Matt Williams (Sunderland, Massachusetts) and Pete Hosner (Ithaca, New York) for communicating sightings or banding data. Robert F. Rockwell (American Museum of Natural History) provided valuable comments on the manuscript.

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