

THE GREATER SNOW GOOSE IN CANADA

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THE late C. E. Dionne published in his work, 'Les Oiseaux du Canada' (1883), the fact that the Greater Snow Goose (*Chen hyperborea atlantica*) occurs in flocks of considerable size at migration time at certain places on the tidal flats of the St. Lawrence River near Quebec City. In his 'Catalogue des Oiseaux de la Province de Quebec' (1889) the abundance of the species in that vicinity received greater emphasis, for he there states that this goose is "very common" on the river flats at migration time. Finally, in his crowning work, 'Les Oiseaux de la Province de Quebec' (1906), Dionne gave additional detail in a statement that may be translated freely as follows: "The Greater Snow Goose is very common and often occurs in flocks of considerable size in spring and fall at certain places on our river flats, especially at St. Joachim, where I have seen flocks containing from three to four thousand individuals, on the Island of Orleans, and as far as the Seal Islets. When migrating, the flocks of this species are not infrequently seen passing quite close to this city [Quebec]." He also mentions that he had obtained several autumn specimens from St. Joachim, which is on the north shore of the estuary of the St. Lawrence River, about twenty-five miles northeast of Quebec.

Greater Snow Geese are now known to be present each year at St. Joachim and vicinity from the first of April, or even the last of March, to about the 20th of May, and again in the autumn from about September 12 till freeze-up, which may occur at any time between November 15 and 30. How long they have thus made this area a regular resting and feeding place on migration is uncertain, but Mr. Henry des Rivières, of Quebec, who is intimately acquainted with these birds as they occur locally, states that they first began to visit the area in small numbers about sixty-five years ago. About thirty-five years ago the maximum number of Greater Snow Geese to be found at St. Joachim was between 2,000 and 3,000. Since then they have increased in numbers so that now there are at least 10,000 birds in the flock, which probably includes all the Greater Snow Geese in existence. The area at St. Joachim on which they spend most of their time while in that region is a preserve belonging to the Cap Tourmente Fish and Game Club. The Greater Snow Geese, while on this preserve, are protected by both the Royal Canadian Mounted Police and the warden of the Club, with the result that they enjoy practically complete protection during their spring sojourn, and the hunting of them that takes place in autumn is limited and carefully controlled. A few birds, of course, are taken outside

the preserve during the hunting season, but the total number of Greater Snow Geese killed annually on the entire St. Lawrence River area frequented by them is less than four hundred.

It is chiefly during the spring migration, when the flocks of Greater Snow Geese are arriving from the south, that they are seen passing Quebec City. These spring flocks are rather large, in noticeable contrast with the numerous small flocks in which the birds come from the north in the autumn. In May, as the time to leave St. Joachim for the north approaches, the Greater Snow Geese are observed to be unusually restless, flying a great deal, and frequently circling while they rise to a great height, at least as high as the 1,800-foot summit of the rocky mass of Cap Tourmente. When they finally leave on their northward migration, in flocks often containing several hundred birds each, their route lies at first down the St. Lawrence River, where they pass at a moderate height. On May 19, 1932, at Murray Bay, on the north shore of the St. Lawrence about fifty miles below St. Joachim, the junior author saw a flock of about 150 Greater Snow Geese fly overhead at about seven o'clock on a fine, bright morning, heading northeastward along the north bank of the river, which is there about twelve miles wide. The geese were at an elevation of about 500 feet above the land immediately beneath them or about 750 feet above the river-level, and were flying in irregular formation and uttering frequent cries. Local residents who were questioned, said that it is usual to see these geese pass Murray Bay on migration in this way. Just where these birds leave the St. Lawrence and turn more directly northward is uncertain, but it is probably not very far beyond Murray Bay.

An indication of a more northern resting place on the spring migration route of the Greater Snow Geese is contained in a verbal report received indirectly by the junior author from Mr. Walter Giasson, a hunter and trapper, who resides at Seven Islands, Saguenay County, Quebec, but who, in May, is often at the headwaters of the Manikuagan River, a large stream, more than 260 miles long, that discharges into the St. Lawrence estuary from the north about 100 miles northeast of the mouth of the Saguenay. According to this statement, large numbers of Greater Snow Geese habitually stop in late May on the lakes at the headwaters of the Manikuagan, where Indians are accustomed to take some of them for food. The route of these geese from the headwaters of the Manikuagan to the Arctic islands is still largely a matter of conjecture.

Through the interest and kind cooperation of Major-General Sir James MacBrien, Commissioner, Royal Canadian Mounted Police, information concerning Greater Snow Geese in the Arctic was sought by the senior author, by means of questionnaires, from members of that Force who are or have been stationed in that region. The information in a number of

excellent replies¹ received in 1936 may be summarized as follows. In the vicinity of Pond Inlet, on the northeastern coast of Baffin Island, the date of first arrival of Greater Snow Geese varies, in different years, from the first week of May to the last week of that month. The first flocks to arrive usually contain only four or five birds each, but later flocks normally contain about twenty-five birds each. One flock of thirty-eight geese is reported as the largest single flock observed. Near Pond Inlet are two established nesting grounds of Greater Snow Geese, namely, one (the larger) on the southwest point of Bylot Island, facing Eclipse Sound, and one on the west bank of the Salmon River, about a mile and a half from Pond Inlet Detachment. Other nesting grounds farther from Pond Inlet are less definitely reported. A "nesting ground" is a level, poorly drained area, sometimes two or three miles in extent, over which the nests are usually widely scattered. From three to ten eggs in one nest are reported. Hatching generally takes place in the first half of July. Arctic foxes often eat the eggs and the goslings. The period when, because of the moult of the primaries, the adult geese are flightless, normally falls in the latter half of July or in early August. After the shallow lakes and streams are open, the geese obtain in them some of the vegetation on which they feed. Adults and young, travelling in company, generally leave the vicinity of Pond Inlet in the first half of September, on their southward journey.

At Craig Harbour Detachment, on the south coast of Ellesmere Island, not many Greater Snow Geese are seen, but an occasional flock, containing about twenty-five of these birds, passes that vicinity on migration in June. The nesting place of such Greater Snow Geese is not certainly known, but reports, apparently authentic, obtained from Eskimos, are to the effect that numbers of Greater Snow Geese nest about Lake Hazen, in northern Ellesmere Island, and in the vicinity of Stolz Peninsula and Mokka Fiord, in the eastern and southeastern parts of Axel Heiberg Island. No one now lives at these places.

That the breeding Snow Geese of northern Baffin Island and northward are Greater Snow Geese is corroborated by specimens in the collection of the National Museum of Canada. The northernmost specimen of Lesser Snow Goose (*Chen hyperborea hyperborea*) in that collection from the eastern Canadian Arctic is an adult (sex?) taken at Clyde River, on the east coast of Baffin Island, in the summer of 1927. The collection contains the following specimens of Greater Snow Goose (*C. h. atlantica*) from the eastern Canadian Arctic:

¹ Replies have been furnished by the following members of the R. C. M. Police: Acting Sergeant H. Stallworthy, Corporal H. Kearney, Acting Lance Corporals R. C. Gray and R. W. Hamilton, and Constables L. A. Austin, J. W. Doyle, A. E. Fisher, A. Monro, and J. C. M. Wishart.

Cumberland Sound, Baffin Island, 1 adult female, "1929."

Clyde River, Baffin Island, 1 adult (sex?), "summer of 1927."

Pond Inlet, Baffin Island, 1 adult female, June 9, 1928; 1 adult female, June 10, 1928.

Bylot Island, 1 adult (sex?), "summer of 1927."

Eclipse Sound, Bylot Island, 2 heads, June 20, 1927.

Bylot Island or Navy Board Inlet, 3 adults (sex?), "summer of 1927."

Dundas Harbour, Devon Island, 1 adult male, June 22, 1928; 1 adult female, June 22, 1928. One egg was obtained with these two specimens and was sent to the National Museum with them.

Croker Bay, Devon Island, 1 adult male, June 22, 1928; 1 adult female, June 22, 1928.

Heads and other parts of geese examined by the senior author in 1934 at Pond Inlet, in the vicinity of which they had been taken, were identified as parts of Greater Snow Geese.

In the autumn migration the first of the Greater Snow Geese to reach the feeding and resting grounds at St. Joachim, Quebec, arrive there about September 12. Thereafter the birds continue to arrive gradually, in small flocks, for about a month, until all are present. On this autumn migration they are said to arrive at the Seal Islets, about twenty-five miles east of St. Joachim, some ten days before they are seen at the latter place. The first arrivals in the autumn are adults, and their numbers at St. Joachim are said to increase gradually to about 2,000 before any birds of the year are to be found with them. Whether or not these early-arriving adults are all or nearly all of one sex is not known. Later the birds often arrive in what appear to be family groups, which sometimes include two adults to the group, but often only one. After October 10, young birds form a majority of the assemblage.

When freeze-up causes the departure of these geese from St. Joachim in the autumn, they leave practically all together, generally by daylight, but sometimes at night.

The flat or muddy shore at St. Joachim on which the Greater Snow Geese feed, extends westward from Cap Tourmente for a distance of three or four miles. It is a tidal shore, on which the tide normally goes out for 200 yards or more. At a little distance from the shore is a sand-bar that is exposed only when the tide is low. The geese feed on the muddy shore during the rising and falling of the tide, as well as at high tide, but while the tide is down they generally betake themselves to the outlying sand-bar to rest and to obtain the supply of sand needed for digestion of their food. The food, while they are in this area, consists chiefly of the rootstocks and sprouts of a sedge, *Scirpus americanus* Pers., which grows on the muddy shore, but in the spring the geese sometimes have to resort to fields above the shore to obtain sufficient food. That the geese thrive on the food they obtain here is indicated by the fact that when they arrive at St. Joachim in the autumn

their average weight is between five and six pounds, but by the time when they depart southward their average weight has increased to about eight pounds. Occasionally some feeding is done at high tide in the night, but generally geese arrive on the feeding grounds shortly after daylight, coming from some small, low, rocky islands out in the river. They fly in any formation,—V's, lines, or bunches,—indiscriminately.

When the geese are feeding, there is practically always one large group of them at the eastern end of the muddy shore, close to Cap Tourmente, and often, but not always, another large group on the western end of the feeding ground. Small flocks fly back and forth between these large groups at frequent intervals, especially when the tide is rising, thus giving the hunters their opportunity. On windy days such small flocks may fly at a height of less than thirty feet. The birds of the year, lacking experience, are generally very tame, but the adult birds are very wary and, when live decoys were used, frequently recognized them as such and turned aside out of gunshot, trying by their calls to induce the young to do likewise.

It was on this muddy shore at St. Joachim that the regular annual field excursion of the American Ornithologists' Union viewed the main flock of Greater Snow Geese on October 21, 1932.

Sportsmen who have frequented the shore of St. Joachim regularly for many years report that conditions there are gradually changing. The shore appears to be higher than it was formerly, presumably because of deposition of silt. This change is having an unfavorable influence on the sedge preferred by the Greater Snow Geese, with the result that this plant is diminishing in abundance. If this process continues, this fine flock of geese will eventually have to seek other feeding grounds.

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