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The feeding ecology of the greater snow goose on a staging haunt in the St. Lawrence Estuary: a progress report

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Unlike many other holarctic geese the Greater Snow Goose *(Anser caerulescens atlanticus)* has maintained a high degree of reliance on natural marshland for feeding. On the major staging haunt in the St. Lawrence estuary feeding is largely restricted to fresh water tidal marshes where the staple diet is the rhizomes of *Scirpus americanus*. That habitat is relatively restricted in extent and distribution in the St. Lawrence. In recent decades there has been a dramatic increase in goose numbers which has led to some fear of the bird over-exploiting the available food supply and causing a deterioration of the marshland. The work reported on here is aimed at examining the effects of today's large number of Greater Snow Geese on their traditional staging marshes of *Scirpus americanus*.

The study area is the large tidal marsh of the Cap Tourmente National Wildlife Area near Quebec City. That area is the most important single expanse of *Scirpus* marsh in the St. Lawrence, accommodating about 30 % of the population. It is characterized by an extensive mudflat which supports a 400 hectare *Scirpus* marsh which is flooded twice daily by tides of 4 to 6 m.

To appraise the influence of rhizome eating by geese on the marsh a measure of rhizome availability is necessary. The extraction of mud samples to directly measure rhizome availability is hindered by the thick mud and large tides and it is only recently that these problems have been overcome. Since 1971, however, the status of the *Scirpus* has been monitored annually by the indirect method of determining the mean density of aerial shoots at the end of the growing season, a technique proposed by LEMIEUX (1959). Density of aerial shoots has been remarkably constant for 5 of the 7 years, with high values recorded in the remaining 2 (Figure 1). These annual indices of the standing crop of *Scirpus* are compared (Figure 1) to the corresponding levels of feeding pressure applied by the geese. Feeding pressure did not influence the density of aerial shoots produced in the subsequent period of growth. On the other hand, feeding pressure was positively correlated to the standing crop of *Scirpus* present.

Assuming then that the density of aerial shoots is an accurate indicator of rhizome quantity, there is no evidence that the geese are having a detrimental effect on their food supply. The validation of that assumption is now of great importance because the

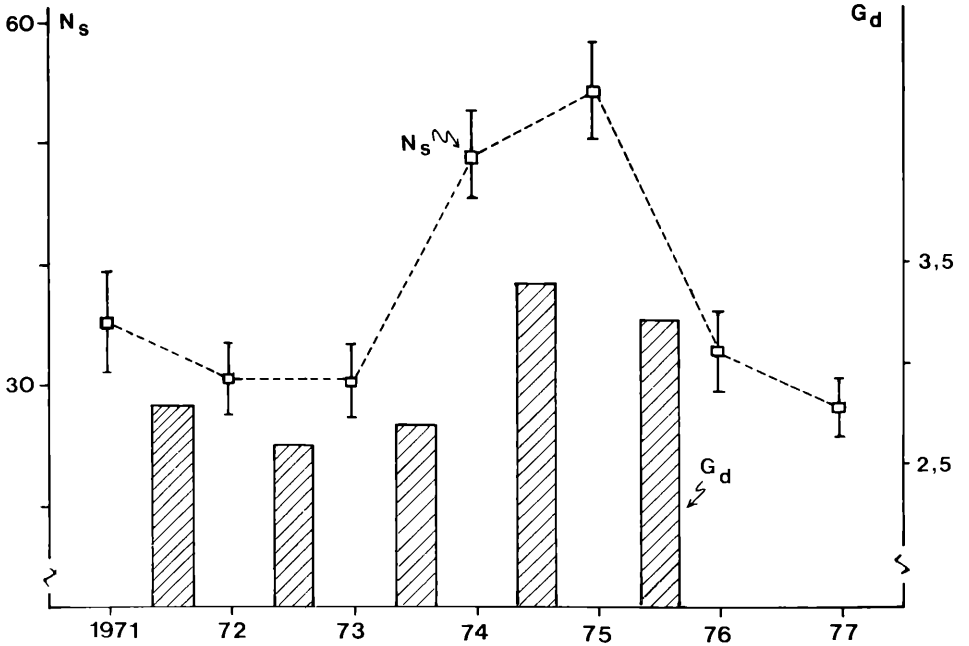

Fig. 1 Mean density of shoots of *Scirpus americanus* (N_s — given in mean number of aerial shoots with standard deviation per square foot) and number of goose days (G_d — total for fall and spring of the following year; number of goose days in millions), Cap Tourmente 1971—77.
Densité moyenne des tiges de *Scirpus americanus* (N_s — nombre de tiges/pi²) et nombre de jours-oies (G_d — millions), Cap Tourmente 1971—77.
Sproßdichte von Amerikanischen Binsen *Scirpus americanus* (N_s — Halme pro Quadratfuß) und Zahl der 'Gänse-Tage' (G_d — in Millionen), zusammengefaßt für Herbst und Frühjahr des folgenden Jahres, für Cap Tourmente 1971—77.

feeding pressure maintained through the 1970's is much higher than that of preceeding decades and could increase dramatically with further population increases and/or losses of habitat. With most of the technical problems solved direct sampling of rhizomes is now being conducted. Analysis of that material will permit a thorough appraisal of the situation in the near future.

Reference

LEMIEUX, L. (1959): Histoire naturelle et aménagement de la Grande Oie blanche, *Chen hyperboria atlantica*. Naturaliste canadien 86: 133-192.