

Waterfowl Ecosystem Studies in the Queen Maud Gulf Migratory Bird Sanctuary

Interim Report for 2012 Activities

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Ray Alisauskas

Research Scientist, Wildlife Science Division
Wildlife and Landscape Science Directorate
Science and Technology Branch
Environment Canada
and
Adjunct Professor
Department of Biology
University of Saskatchewan

Prairie & Northern Wildlife Research Centre
115 Perimeter Rd.
Saskatoon, Saskatchewan
S7N 0X4 CANADA
PH (306) 975-4556
FX (306) 975-4089
EM Ray.Alisauskas@ec.gc.ca

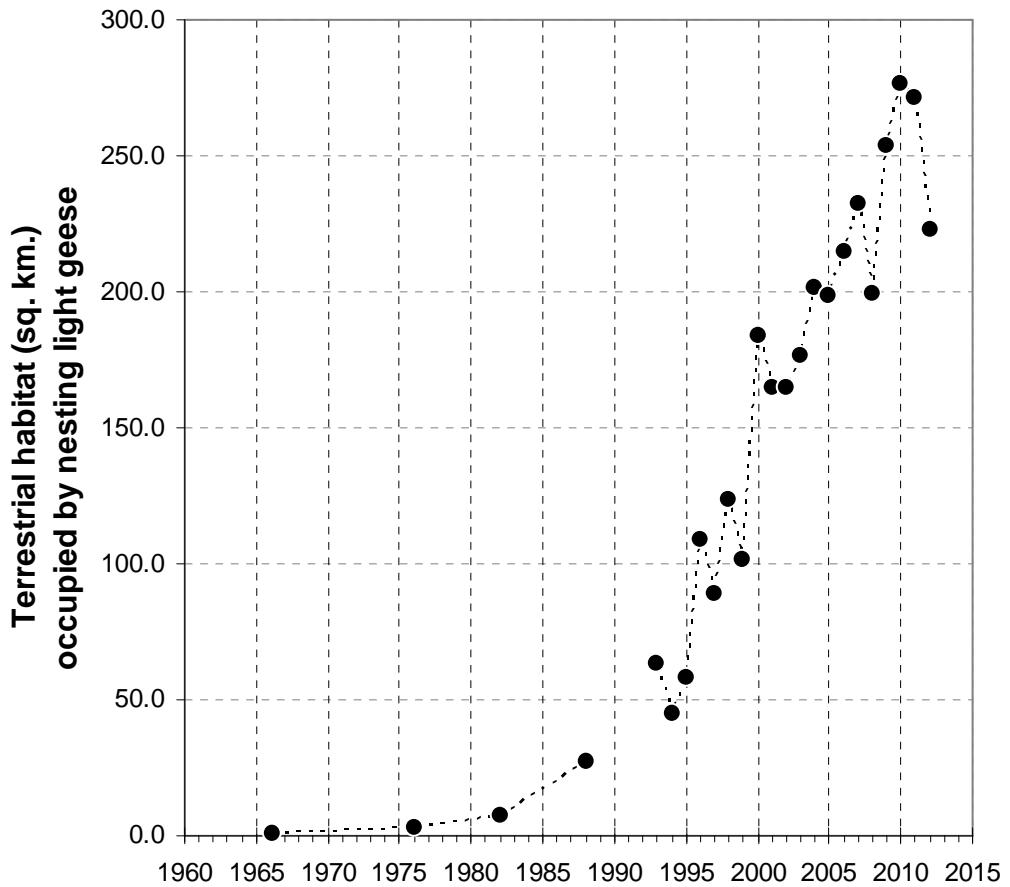
Jim Leafloor

Biologist, Population Conservation
Canadian Wildlife Service
Environmental Stewardship Branch
Environment Canada

150-123 Main Street
Winnipeg, Manitoba
R3C 4W2 CANADA
PH (204) 983-5258
FX (204) 983-5248
EM Jim.Learfloor@ec.gc.ca

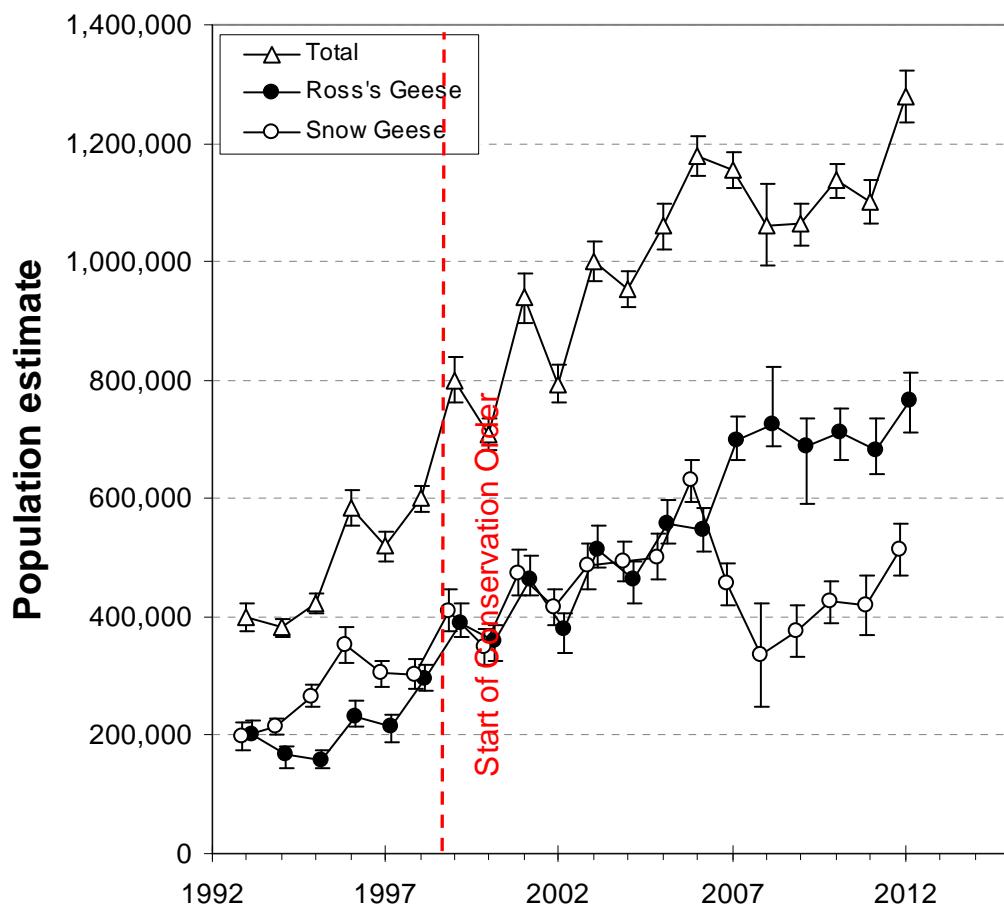
Waterfowl research conducted by Environment Canada in the Queen Maud Gulf Bird Sanctuary is focused on population ecology of arctic-nesting geese (lesser snow, Ross's, white-fronted, and cackling geese) and sea ducks (king eiders, long-tailed ducks). Most activities are conducted at the Karrak Lake Research Station where there is a large colony of nesting lesser snow and Ross's geese. Much of the work at Karrak Lake consists of nesting studies and is done on foot. Additional work done at Karrak Lake includes research on the interactions of geese with arctic fox, other predators, and small mammals. Other operations occur near the mouth of the Perry River, where white-fronted and cackling Geese are captured and marked.

The amount of terrestrial habitat (water not included) occupied by nesting lesser snow and Ross's geese (together, referred to as light geese) was 223 km² in 2012.



Within this area, 253 nest plots were sampled in 2012, from which nesting density, clutch size, nest survival, and nesting population size were estimated. Despite retraction of the terrestrial habitat occupied by the light goose colony, the number of nesting light geese at Karrak Lake increased from 1.1 million birds in 2011 to nearly 1.3 million birds in 2012. Since 1993, the proportion of Ross's geese has been increasing, while that of lesser snow geese has declined in

recent years. Overall, however, the total number of birds nesting at Karrak Lake has increased through time.

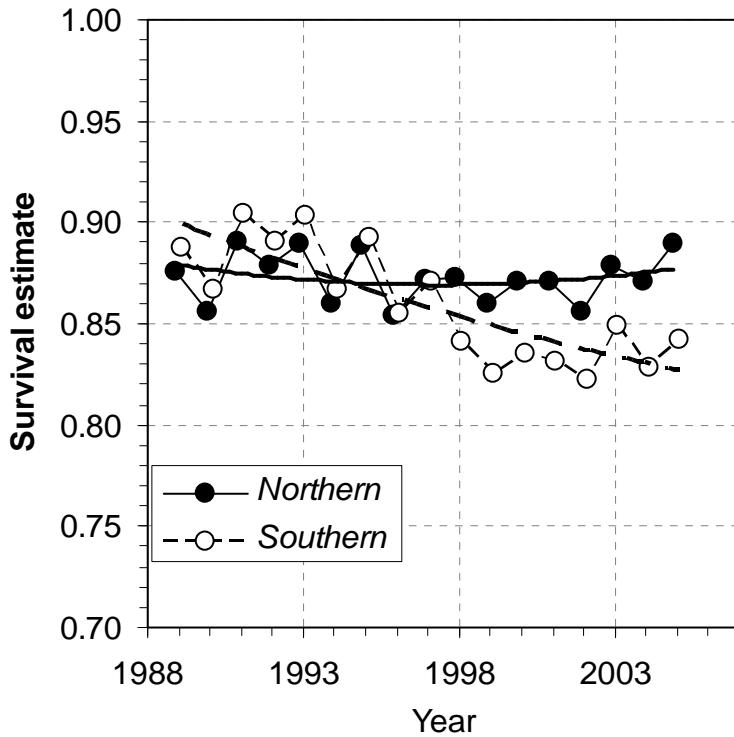


There does not appear to be any decline in the annual rate of population growth at Karrak Lake, despite continental efforts to reduce midcontinent snow goose populations with liberal hunting regulations. Conservation order efforts to control midcontinent lesser snow goose populations, which started during the 1998-1999 hunting season, appeared not to be having an effect on population growth of either species nesting at Karrak Lake. Instead, the decline in number of nesting snow geese from 2006 to 2007-2011 appeared to be related most to the lateness of snow melt and nesting delays in the majority of those years.

Lesser snow geese at Karrak Lake tend to have poorer nest success than Ross's geese, and seem to be more negatively influenced by late springs.

During banding operations in Queen Maud Gulf Bird Sanctuary in 2012, 3,486 lesser snow, 9,548 Ross's, 29 Ross's-snow hybrids, 2,159 white-fronted, and 235 cackling geese were captured and marked with legbands. As a result, over nearly 220,000 geese have been marked in Queen Maud Gulf Bird Sanctuary during 1989-2012. Many of these have been recaptured in subsequent years, or recovered by hunters throughout North America. This continues to be unique and important data critical for evaluation of management practices of these harvested species, and in particular, for evaluation of efforts implemented to reduce midcontinent lesser snow goose populations.

Annual survival probability for midcontinent lesser snow geese has been estimated for those marked as part of Arctic Goose Joint Venture banding operations in Canada's arctic for two strata: northern lesser snow geese (from Queen Maud Gulf, Southampton Island and Baffin Island) and southern lesser snow geese (from La Perouse Bay, Cape Henrietta Maria, and Akimiski Island). Survival estimates suggest that harvest of lesser snow geese, even with virtually completely liberalized hunting regulations, has been insufficient to reduce survival to less than 0.80. Although survival of southern birds, which only contribute 10% of the midcontinent population, has declined somewhat from 1989 to 2006 (from about 0.89 to 0.83), survival of northern birds has not declined and has remained at about 0.88. Because southern birds nest at lower latitudes, they migrate sooner and face greater harvest pressure than northern geese. Preliminary analysis suggests that harvest of southern birds occurs about 10 days earlier than that of the much more numerous northern population.



King Eiders and Long-tailed Ducks

In 2012, 242 king eider and 30 long-tailed duck nests were monitored on the islands of Karrak and Adventure Lakes, and 73 and 12 female king eiders and long-tailed ducks, respectively, were captured on nests. Since 1995, 562 individual adult female king eiders have been captured on nests, many in several years. In addition, 40 king eider ducklings were marked at nests in 2012. These data are important in estimation of clutch size, nest survival, adult survival, and fidelity to nesting areas. Wintering location of hens can be determined using stable isotope analysis of head feathers collected at Karrak Lake, and it appears that some females exhibit heterogeneity of wintering location (i.e., eastern near Greenland versus western in the Pacific).

Acknowledgements

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