Waterfowl Ecosystem Studies in the Queen Maud Gulf Migratory Bird Sanctuary

Interim Report for 2013 Activities

January 2014

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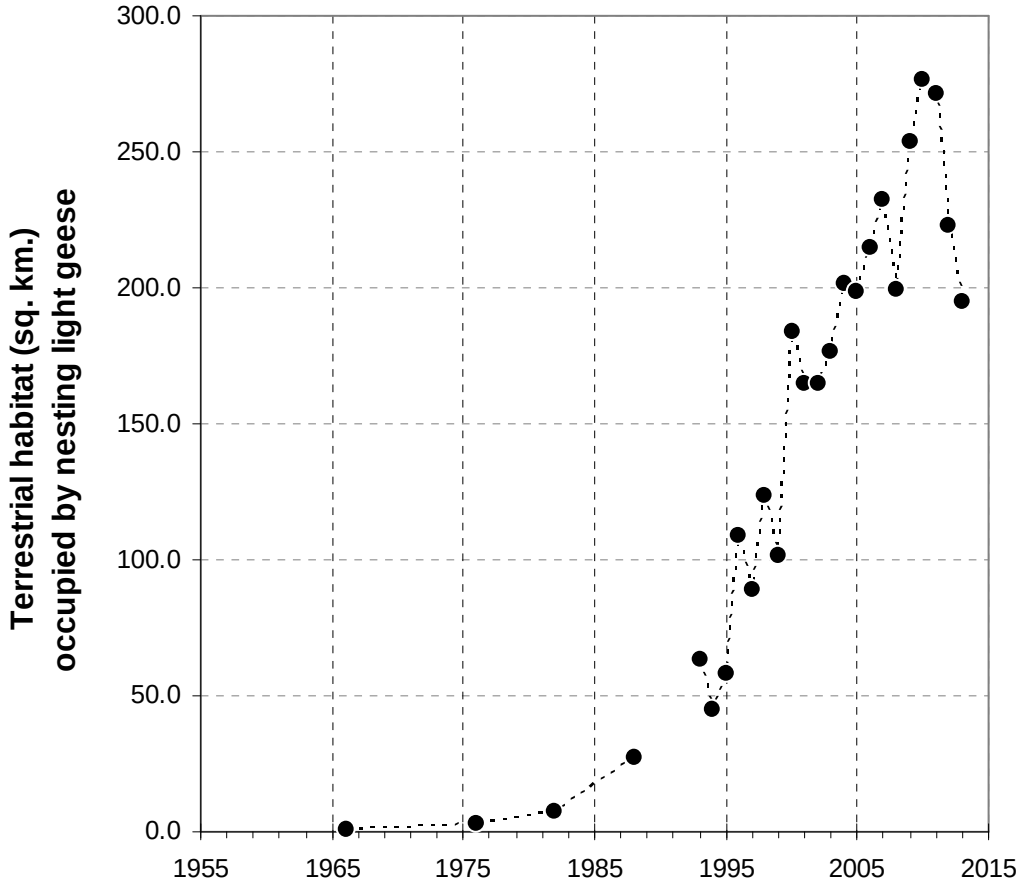
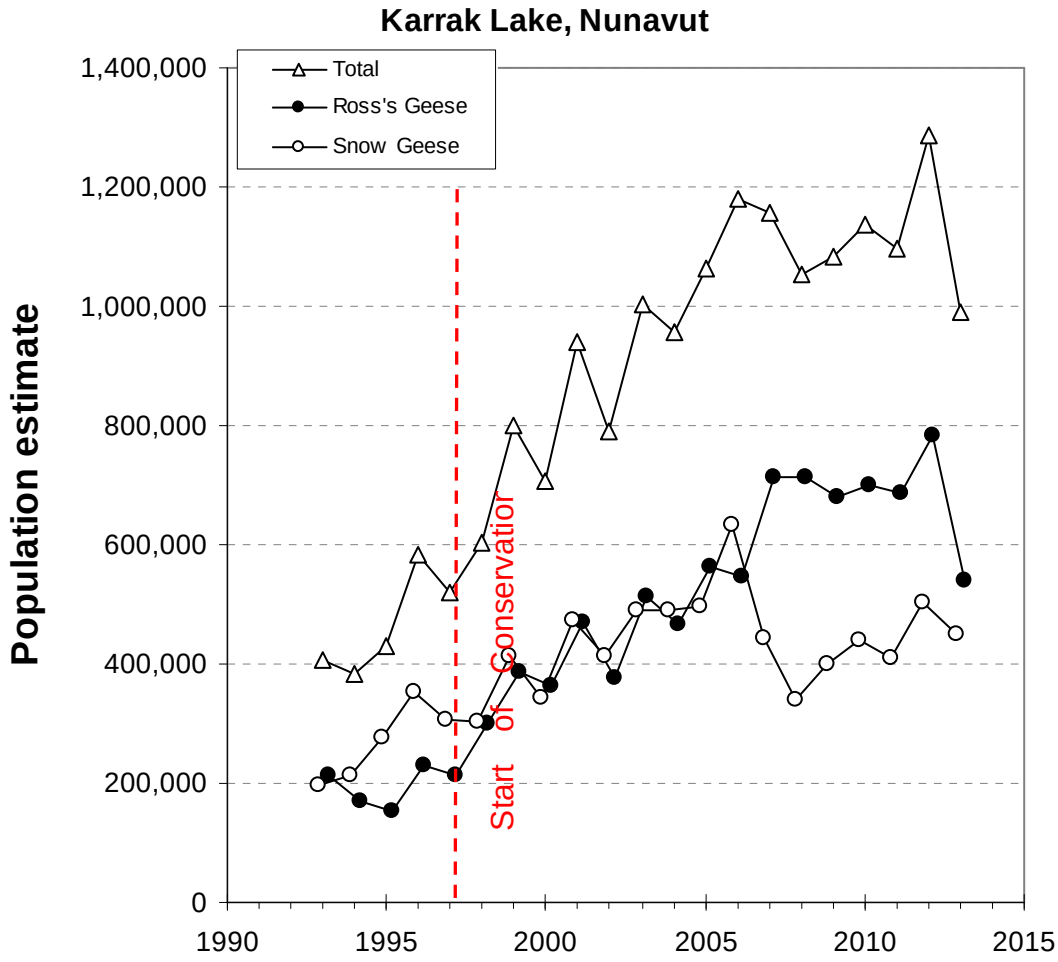
Waterfowl research conducted by Environment Canada in the Queen Maud Gulf Bird Sanctuary is focused on population ecology of arctic-nesting geese (lesser snow, Ross's, white-fronted, and cackling geese) and sea ducks (king eiders, long-tailed ducks). Most activities are conducted at the Karrak Lake Research 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 195 km^2 in 2013, a decline from 220 km^2 in 2012.



Within this area, 223 nest plots were sampled in 2013, from which nesting density, clutch size, nest survival, and nesting population size were estimated. The number of nesting light geese at Karrak Lake decreased 1.3 million birds in 2012 to nearly 990,000 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.



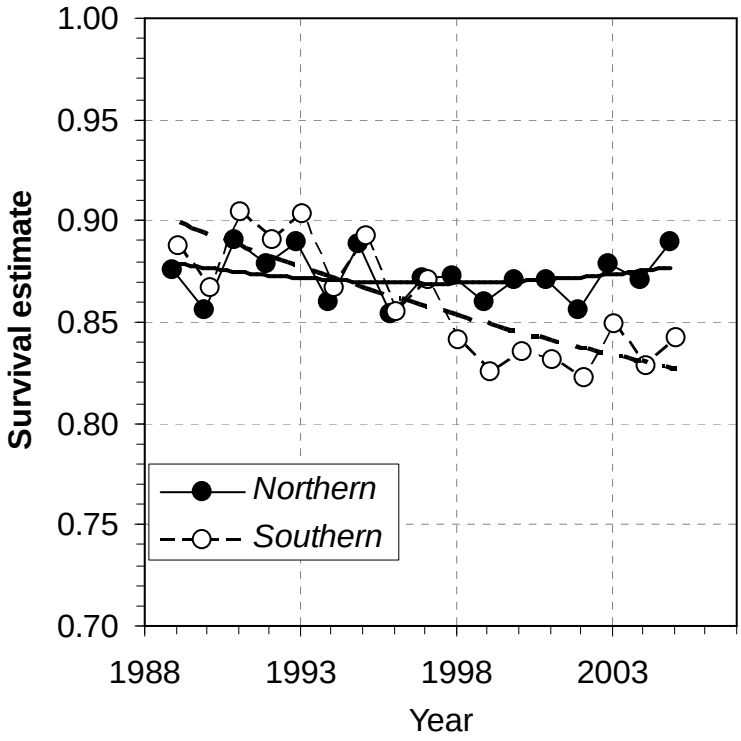
Overall, there does not appear to be any decline in the annual rate of population growth at Karrak Lake, despite continental efforts to reduce midcontinent snow goose populations with liberal hunting regulations. Conservation order efforts to control midcontinent lesser snow goose populations, which 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. However, despite the early spring, the overall population estimate of light geese at Karrak Lake in 2013 reached its lowest point since 2004.

During banding operations in Queen Maud Gulf Bird Sanctuary in 2013, 3,214 lesser snow, 8,982, Ross's, 19 Ross's-snow hybrids, ,1,761 white-fronted, and 233 cackling geese were captured and marked with legbands. As a result, over 230,000 geese have been marked in Queen Maud Gulf Bird Sanctuary during 1989-2013. 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 2013, 240 king eider and 26 long-tailed duck nests were monitored on the islands of Karrak and Adventure Lakes, and 72 and 3 female king eiders and long-tailed ducks, respectively, were captured on nests. Since 1995, 592 individual adult female king eiders have been captured on nests, many in several years. In addition, 88 and 22 king eider and long-tailed duck ducklings were marked at nests in 2013. 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

This research is currently or has been funded by Arctic Goose Joint Venture, California Department of Fish and Game, Central Flyway Council, Delta Waterfowl Foundation, Ducks Unlimited Canada, Environment Canada, Mississippi Flyway Council, Northern Ecosystems Initiative, Northern Scientific Training Program, Nunavut Wildlife Management Board, Polar Continental Shelf Project, Sea Duck Joint Venture, and University of Saskatchewan.