Arctic Ecosystem Research In Queen Maud Gulf Bird Sanctuary, Nunavut: A Summary

Principal Investigator:
Dr. Ray Alisauskas, Research Scientist

Technical Support:
Dana Kellett, Wildlife Technician

Science and Technology Branch, Environment Canada
115 Perimeter Road
Saskatoon, Saskatchewan S7N 0X4

An ongoing study of the population ecology of arctic nesting waterfowl, specifically lesser snow, Ross's, and cackling geese, king eiders and long-tailed ducks, has occurred annually in Queen Maud Gulf Bird Sanctuary since 1991. The primary field site is Karrak Lake, the site of one of the largest known lesser snow and Ross's goose nesting colonies in the Sanctuary, estimated at 1.1 million birds in 2009. Every year, the abundance of each of the above-mentioned species nesting in the area is estimated, as are metrics associated with population dynamics, such as clutch size, egg survival, nest survival, and adult survival. These metrics are invaluable for addressing management concerns of harvested species, both within Canada and internationally within North America. Further, factors thought to influence reproductive ecology, such as spring chronology, meteorological conditions, and small mammal abundance, are monitored in order to explain annual variation in productivity. Similar research on arctic fox is also conducted, as well as less-intensive studies on waterbirds such as herring and glaucous gulls, arctic terns, and red-throated loons. Observational data on grizzly bears, wolves, and wolverines is also recorded.

A research station, established in 1991, is located at the main field site at Karrak Lake (67º 14' 14" N and 100º 15' 33" W). It consists of five plywood buildings ranging in size from 8x12' to 20x20', and is occupied by 4-10 personnel annually during 10 May to 15 August, for approximately 550 person-days per year. As part of the successful application to the Arctic Infrastructure Fund (Project: Arctic Migratory Bird Research Network), we plan to construct a 12x16' cabin about 15 km north-west of Karrak Lake Research Station, at location 67º 21' 09" N and 100º 20' 59" W. Over time, the colony has grown substantially and the nesting distribution of birds has shifted to the north-west, and the Karrak Lake Research Station is now located at the colony periphery. Increasingly, many regions are becoming difficult to reach by foot, and the proposed cabin will facilitate easier access to much of the colony.

Access to the study area is by air, either fixed-wing (twin otter) or helicopter, depending on the time of year. Helicopters are used for surveys within the Sanctuary, and occasionally to deliver ground crews to remote areas of the colony. Snow machines are used early in the field season, prior to arrival of geese. Small boats fitted with 16 hp outboard motors and canoes are used to traverse Karrak Lake, as well as nearby Adventure Lake. The main mode of transportation, however, is on foot.

Water is used for domestic purposes only, and is generally less than 20 gallons per day. Greywater is disposed of by soil leaching, at least 100 m from the nearest high water mark. Most waste is incinerated. Organic waste and ash from incinerated waste is buried in pits, at least 100 m from the nearest high water mark. Glass, metal, and other non-combustible waste is shipped to Cambridge Bay, Nunavut for disposal.