

**Sea Duck Joint Venture
Annual Project Summary For Endorsed Projects
FY 2004 (October 1, 2003 – September 30, 2004)**

Project Title: No. 42: Comparative Reproductive Strategies Between Long-tailed Ducks and King Eiders at Karrak Lake, Nunavut: use of energy reserves during the nesting season.

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Partners: Sea Duck Joint Venture, Canadian Wildlife Service, Northern Scientific Training Program (Department of Northern and Indian Affairs, Government of Canada), Polar Continental Shelf Project (Natural Resources, Government of Canada), University of Saskatchewan

Project Description: During the last four decades populations of North American Long-tailed ducks and King Eiders have been declining. Reasons for these declines are uncertain, but may be attributed to a number of factors on both wintering and breeding grounds. We are investigating life history strategies of Long-tailed Ducks and King Eiders on a shared breeding ground in the central Canadian Arctic, where long term research has been conducted on King Eiders and Long-tailed Ducks since 1995 and 1998 respectively. This project began in June 2004, and used remote temperature sensors placed in nests to provide information about incubation constancy for both species. Stable isotope techniques will be used to investigate the role, reliance and allocation of nutrient reserves in the nesting strategies of Long-tailed Ducks and King Eiders as well as wintering locations of breeding Long-tailed Ducks at Karrak Lake (this has been done for King Eiders). Islands in the Karrak Lake system are searched for nests and nest checks are conducted every 7 – 10 days to determine nest fate, egg attrition and hatch date.

Females are captured during mid to late incubation and are measured, banded, weighed and feathers of Long-tailed Ducks are collected.

Objectives: The primary objectives of this project are to 1) quantify incubation recess frequencies taken by Long-tailed Ducks and King Eiders, 2) measure and compare mass loss of female Long-tailed Ducks and King Eiders during incubation, 3) measure the allocation of endogenous and exogenous energy reserves in eggs laid by Long-tailed Ducks and King Eiders and 4) to determine wintering areas of individual Long-tailed Ducks breeding at Karrak Lake, Nunavut and study possible movements among winter populations.



Long-tailed Ducklings

Preliminary Results: Nest searching for Long-tailed Ducks (LTDU) and King Eiders (KIEI) at Karrak Lake in the Queen Maud Gulf Bird Sanctuary, Nunavut Canada was conducted from mid-June to mid-July 2004. Nest searching focused on islands in Karrak Lake as they are known to have high nesting densities of both King Eiders and Long-tailed Ducks. Over 200 nests of Long-tailed and King Eiders were found and monitored during the 2004 season in both lake systems. Remote temperature probes (Hobo XT, Onset Computer Corporation) were placed in 25 of both Long-tailed Duck and King Eider nests to record recess frequency, duration and timing taken by incubating females.

Sixty eggs of both Long-tailed Ducks and King Eiders were collected early in the breeding season for stable isotope analyses of egg components. Of those 60 eggs, 30 were collected from nests on neighboring Simpson Lake, and the other 30 eggs were salvaged from abandoned and failed nests. I hope to gain inferences of endogenous versus exogenous nutrient resource contributions to egg production of both King Eiders and Long-tailed Ducks through stable isotope analysis techniques.

Incubating females of both species were caught using mist nets between day 12 and final days of incubation/hatching (23 days KIEI; 26 days LTDU). Ninety-eight breeding females were caught this past summer with several recaptures. Two hundred and 22 ducklings were also banded this field season. Mark-recapture of Karrak Lake Long-tailed Duck and King Eider populations (females and ducklings) began in 1998 and 1995 respectively.

Feathers from adult female Long-tailed Ducks, were collected during the 2003 and 2004 breeding seasons from breeding females at Karrak Lake. Feathers from harvested Long-tailed Ducks and other sea duck research projects throughout North America were also collected fall and winter 2003 – 2004 on known wintering areas. Stable isotope analyses of collected feathers will be used to assign Long-tailed Ducks breeding at Karrak Lake to

respective wintering areas and may provide insight into site philopatry, as has been done successfully for King Eiders at Karrak Lake.

Project Status: Long-tailed duck feather collection is on-going for winter 2004-2005. Analysis of incubation frequency data and weight loss is currently underway. Stable isotope analysis of both eggs and feathers will take place in the next year once preliminary analyses have been completed.

SDJV (USFWS Contribution)	Other U.S. federal contributions	U.S. non-federal contributions	Canadian federal contributions	Canadian non-federal contributions	Source of funding agency or organization
\$12,720					
			\$3,275		Northern Scientific Training Program
			\$3000		Canadian Wildlife Service
			\$7278		Polar Continental Shelf Project

Total expenditures by Category (\$US).

ACTIVITY	BREEDING	MOLTING	MIGRATION	WINTERING	TOTAL
Banding					
Surveys					
Research	\$26,273				\$26,273
Communication					
Coordination					