

Sea Duck Joint Venture
Annual Project Summary for Funded and Endorsed Projects
FY 04 – (October 1, 2003-Sept 30, 2004)

Project Title: No. 35: Wintering Ground Effects on Vital Rates of White-winged Scoters at Redberry Lake, Saskatchewan

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Partners: Institute for Wetlands and Waterfowl Research, Ducks Unlimited Canada, Canadian Wildlife Service, University of Saskatchewan, Sea Duck Joint Venture

Project Description: North American White-winged scoter populations have declined markedly in the prairie parklands and boreal forests of Canada in the last four decades. The causes for decline are uncertain, but likely involve a complexity of events occurring on both the wintering and breeding grounds. Cross-seasonal effects have the potential to limit reproductive success and local recruitment as well as reduce survival probability, making it crucial to link breeding and wintering areas to better understand the factors influencing population dynamics and to effectively address conservation issues. Naturally-occurring stable isotopes have been used successfully to delineate populations and link wintering and breeding areas of other avian species. We are in the process of developing methodology based on stable isotope analysis of ^{13}C and ^{15}N ratios in white-winged scoter head feathers to delineate Atlantic and Pacific wintering populations. This will enable us to link individuals nesting at Redberry Lake, Saskatchewan to respective wintering areas to examine potential differences in vital rates between Atlantic and Pacific wintering populations, and may provide insight into the decline. This site has the highest known density of breeding White-winged scoters and is considered a migrational divide as band recoveries from Redberry Lake have occurred on both the Atlantic and Pacific coasts. Nests are located on the islands in Redberry Lake and monitored every 7-10 days to determine fate and to band ducklings at hatch. Females are captured on the nest during mid-incubation during which time they are measured, nasal-marked, banded and sampled for blood and feathers.

Objectives:

- 1) Delineate wintering populations of White-winged scoters using stable isotope analysis of feathers collected from known wintering areas.
- 2) Examine population structure by determining the proportion from both wintering areas that nest at Redberry Lake.
- 3) Examine degree of winter site philopatry on the coarse scale of Atlantic versus Pacific coast using stable isotope analysis of feathers from recaptures in successive years.
- 4) Examine potential differences in adult female morphology, body condition, survival, clutch size, nest success, and blood contaminant loads in relation to winter origin.

Preliminary Results: Analyses of isotope levels of ^{13}C and ^{15}N in feathers from coastal wintering scoters show this technique is useful in delineating Atlantic and Pacific coast White-winged scoter populations and has provided the reference samples needed to stratify the Redberry Lake breeding population. We have found that this nesting population for 2002-2003 is composed of approximately 75% Pacific and 25% Atlantic coast wintering birds and that all females captured during both field seasons apparently returned to the same wintering coast as the previous year. During both years, nest initiation date was 3.7 days earlier for Pacific compared to Atlantic wintering scoters.

During the summer of 2004, a total of 136 White-winged scoter nests were found at Redberry Lake. We were able to plasticine-band 318 ducklings and nest-captured, measured, marked and sampled feathers and blood from 73 adult females. We re-sighted and recaptured 103 females that had been marked in previous years since the start of the project in 2000, and of this total, 60 females were re-sighted by nasal marker alone. Although first nesting attempts of White-winged scoters have been recorded at two years of age, we still have not detected an adult female marked as a duckling despite a large number banded (1877) during 2000-2004.

Project Status: Collection of winter samples is ongoing. Isotope analysis to determine winter origin of birds nesting at Redberry Lake for 2002 and 2003 has been completed, 2004 analysis is currently underway. Analysis of data to determine potential differences in adult female morphology, body condition, clutch size, nest success, and blood contaminants will begin once isotope analysis of breeding ground samples is completed. A master's thesis is projected to be completed by May 2005, and publication of journal articles to follow.



Project Funding Sources (US\$)

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)
\$2,499.00					
			\$2,000.00		Canadian Wildlife Service
				\$19,635.00	IWWR
				\$14,280.00	Ducks Unlimited Canada
				\$5,712.00	University of Saskatchewan

Total Expenditures by Category (US\$)

ACTIVITY	BREEDING	MOLTING	MIGRATION	WINTERING	TOTAL
Banding					
Surveys					
Research	\$43,666.00			\$460.00	\$44,126.00
Communication					
Coordination					