

Sea Duck Joint Venture
Annual Project Summary for Endorsed Projects
FY 2003 – (October 1, 2002 to September 30, 2003)

Project Title: Project #20- Breeding Ecology of Scoters Nesting in the Lower Mackenzie River Watershed, NWT.

Principal Investigator(s): Stuart Slattery, Ducks Unlimited Canada, Institute for Wetland and Waterfowl Research, Box 1160, Stonewall, Manitoba, R0C 2Z0.
s_slattery@ducks.ca

Partners: Sea Duck Joint Venture/USFWS, Ducks Unlimited Canada, Gwich'in Renewable Resource Board

Project Description: The continental population of scoters (all three species combined) has declined by over 58% since 1978, from about 1.75 million to about 700,000 birds. We cannot reliably predict where limitations on these taxa have occurred or where they might be most responsive to management because we lack basic data on population dynamics. However, retrospective analyses examining correlations between declining scaup and scoter populations suggest that these birds share limit factors in the NWT. We are using a combination of aerial surveys, mark-recapture techniques (including radio-marking prenesting females), nest searching, and brood observations to estimate demographic parameters of scoters nesting in the Lower Mackenzie River watershed. This region is within the NWT, where over 65% of the scoter breeding population historically occurred, and declines approach 70% over the past 24 years. The project also is a sister study to our scaup breeding ecology work at the same site and will permit comparisons of demographic rates without confounding effects of spatial and temporal variation between studies.

Objectives: The primary objective of this study is to address a high priority SDJV information need by estimating vital rates associated with breeding in white-winged scoters, particularly breeding propensity, clutch size, nest success, breeding season survival of adult females, and duckling survival. Such information will help us develop population models to identify what rate(s) constraints may be acting on, develop more advanced hypotheses about limiting factors, and assess sensitivity of population trajectory to changes in different vital rates to evaluate potential targets for management actions. Another objective is to test effects of mock satellite transmitters on survival of scoters when deployed in the breeding season. This objective was intended to benefit the scoter marking program in Alaska. Finally, through this project we are developing collaborations to examine contaminant loads, reproductive energetics, and population delineation of white-winged scoters.

Preliminary Results: We captured 90 scoters during the prebreeding and nest initiation periods (89 WWSC and 1 male SUSC), and deployed 33 radio transmitters on white-winged scoters (27 subcutaneous and 6 mock satellite units, both with external antennas) about 80 km south of Inuvik, NT. Subcutaneous transmitters were deployed on females,

while the mock style were deployed in lone males. Birds were tracked daily, tracking periods rotated throughout the day, and monitoring continued until 20 August. No radio-marked birds died during this study, and all were present on the study area for at least 2 weeks post marking. One male showed somewhat unusual local movement patterns, suggesting a possible radio affect, although he was still alive 9 weeks after marking.

Three females were confirmed nesting between 135 – 610 m from water. In addition 2 more nests were found from unmarked females. None of these nests hatched, which is consistent with low nest success observed for scaup (15% Mayfield-Green, $n = 114$ nests) and our observation of few scoter broods on the study area ($n = 36$ broods, vs. 60 broods observed in 2002 but with half the effort of 2003). All other females were on the study area during the nest initiation period (9 – 23 June, based on back dating ages of unmarked white-winged scoter broods, $n = 36$), with no indication of a nesting attempt. All females were thought to be paired at capture and 74% had physical characteristics suggesting a possible breeding attempt (loose cloaca, soft pubic bones, oviducal egg). Over 70% were seen paired after capture. As well, >70% of females collected during the prenesting period (see below) were in rapid follicular growth, suggesting that the majority of paired females present on the study areas were likely breeders. Therefore it is unknown whether this apparent lack of nesting effort was a handling or marker effect, or resulted from nesting attempt we could not detect due to high nest predation early in the laying or incubation period.

In addition to telemetry work, we examined wetland nutrients, invertebrate densities, and pair and brood use across 31 sites to assess factors affecting bird use, and assisted collection of scaup and scoter females as part of a comparative study of reproductive energetics and contaminants (collaboration with CWS). We also collected feather samples (an eventual DUC project) and blood samples (collaboration with USGS AK Science Centre) for isotopic and genetic analyses to assist delineating populations of white-winged scoters, and collected lipid biopsy samples for assessing marine vs. fresh water sources of reproductive lipids in scoters (collaboration with CWS/Simon Fraser University).

In addition to the scientific component of this study, SDJV funding has indirectly permitted Ducks Unlimited Canada to develop a communications component to raise public awareness of the scoter (and scaup) decline through print, radio, and television media. Between August 16 and September 21, 2003, this project's research and associated retrospective analyses were featured in or on the Globe and Mail, Toronto Sun, Ottawa Citizen, Winnipeg Sun, Medicine Hat News, Calgary Sun, Vancouver Sun, Victoria Times-Colonist, CBC Radio North, CBC Radio Saskatchewan, CBC Radio Manitoba, CBC Television Winnipeg's Canada Now, and CBC Television National's News World and Sunday Report. The cumulative audience for these features exceeds 2.46 million people. Although we are still estimating the advertising equivalency of this media reach, early calculations suggests that it exceeds \$30,000 USD. This public awareness component came with no direct costs to the project other than those associated with conducting the research that generated media interest, effectively increasing the

leveraging capacity of SDJV funds. We have also just submitted the story to DU Inc. as an idea for their US media contacts.

Project Status: Although we still plan to continue our study of comparative breeding ecology in scaup and scoters, we are interested in the implications of the low apparent nesting effort in our birds (25% (2002) and 11% (2003)), and the impact of those rates on our ability to obtain other demographic rates. These nesting rates were similar to those observed for radio-marked black scoters (0%, subcutaneous transmitters, Flint pers. comm.) and white-winged scoters (15% (2002) and 20%, plus another 8% without nests but killed in the bush (2003), anchor and suture transmitters, Safine and Lindberg, pers. comm.) in Alaska. As well, Flint observed <10% Mayfield nest success for nests of unmarked Black Scoters. Although the low nest success rates observed in Alaska and the NWT are consistent with high predation rates, sample sizes are low and most nests would have had to fail during egg laying or the this first few days of incubation to obtain the results we observed, which seems unlikely. Such a pattern does not seem to be consistent with the pattern of nest failure relative to nest age in scaup during 2003, although the biological meaning of this difference unclear. As well, scoters appeared to have had high nest success in 2002, based on brood densities, yet we still had a low apparent nesting effort in that year. We plan to address these inconsistencies by adding an experimental component to begin separating researcher-induced effects from natural patterns.

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)
\$30,000					USFWS/SDJV
				\$65,846 ^a	DU Canada

^a Includes prorated salary of the PI.

Total Expenditures by Category (US\$) (complete only if project is funded by a SDJV partner e.g., USFWS, CWS, DU, USGS, or Flyway rep; dollar amounts should include all partner contributions):

ACTIVITY	BREEDING	MOLTING	MIGRATION	WINTERING	TOTAL
Banding					
Surveys					
Research	\$95,846				\$95,846
Communication					
Coordination					