Sea Duck Joint Venture
Annual Project Summary for Endorsed Projects
FY 02 – (October 1, 2001 to Sept 30, 2002)

Project Title: No. 3: Population Demography of Surf Scoters Wintering in the Strait of Georgia, British Columbia

Principal Investigator(s) :
Sean Boyd, Canadian Wildlife Service, Pacific and Yukon Region, 5421 Robertson Rd., Delta, BC V4K 3N2; sean.boyd@ec.gc.ca
Dan Esler, Centre for Wildlife Ecology, Simon Fraser University, 5421 Robertson Rd., Delta, BC V4K 3N2; desler@sfu.ca
Sam Iverson, Centre for Wildlife Ecology, Simon Fraser University, 5421 Robertson Rd., Delta, BC V4K 3N2; sai@sfu.ca

Partners:
None

Project Description:
Pacific Surf Scoter populations appear to be declining, based on surveys on breeding grounds in Alaska. Without knowledge of survival, recruitment, and dispersal rates it is impossible to identify demographic causes of population changes, the first prerequisite for effective management. We intend to document important demographic attributes of Surf Scoter aggregations wintering in the Strait of Georgia, British Columbia, consider implications for regional population processes, and evaluate effects of local human impacts on population demography.

This project includes research designed to understand recruitment in Surf Scoters, and plans for surveys of recruitment and abundance at sites throughout the Strait of Georgia. The management value of this work will be enhanced through collaboration with ongoing CWS studies of contaminants in Surf Scoters and Surf Scoter interactions with shellfish mariculture.

Objectives:
(1) Build on findings of Surf Scoter recruitment studies (see below) to document recruitment at local and regional scales. (2) Estimate other demographic attributes (e.g., survival in association with ongoing studies of scoter – aquaculture interactions). (3) Coordinate with ongoing CWS studies of Surf Scoter contaminant exposure and shellfish aquaculture, to consider demographic effects of these local impacts.

Preliminary Results:
We evaluated the utility of age ratios, estimated from direct counts made on wintering areas, as an index of recruitment. Over three years of study (2000-2002), a male age ratio of 10.2% (range = 6.0-13.5%) first year males / total males was estimated in the Strait of Georgia, British Columbia. Survival rates as high as 90% are unlikely, suggesting low

recruitment may be a cause for conservation concern. The extent of annual variability in recruitment rates can only be assessed using long-term studies; therefore we recommend the incorporation of winter age ratio estimation by conservation managers in population monitoring schemes.

Ratio-based estimates are subject to bias if sex and age classes are not sampled evenly; therefore, several potential sources of error were assessed in this study. Using captured specimens, plumage appearance was found to be concordant with known age-related features (bursal depth and tail feather notching) in 91% of samples (n = 99), suggesting that reliable determinations can be made in field observations (see attached photo). Seasonal timing was also an important consideration for obtaining representative counts, with mid-winter (January-February) being the preferred time period because populations are stable and plumage differences between classes are distinct. We found that first year male Surf Scoters did not segregate from adults by forming subadult flocks or foraging in different habitats. However, sexual habitat segregation was evident, with an excess of males being found in sandy substrate habitats and females in rocky habitats. Foraging data suggest that habitat specialization rather than male dominance behavior underlies the segregation of the sexes.

Project Status

Through Sam Iverson's thesis, the background work has been done to allow estimation of recruitment via observations of Surf Scoter males during mid-winter. We intend to employ these methods in surveys throughout the Strait of Georgia, although we currently do not have funding for this work.

Project Funding Sources (US$) NOTE: this project is unfunded.