Sea Duck Joint Venture
Annual Project Summary for Endorsed Projects
FY 05 – (October 1, 2004 to Sept 30, 2005)
Reporting Deadline: September 30, 2005

Project Title:
Long-term Population Study of Harlequin Ducks in British Columbia

Principal Investigator(s) ***(name, affiliation, mailing and email address):***
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Partners (*anyone else providing some kind of support)*:

Project Description (*issue being addressed, location, general methodology)*:
Without knowledge of demographic processes it is impossible to identify causes of population change, the first prerequisite for effective management. For more than a decade, a large number of SFU and CWS researchers have been addressing demography of Harlequin Ducks, a species considered to be of continental conservation concern. By measuring survival, recruitment, and dispersal rates, we can understand the demographic mechanisms underlying population change. Further, we can use these data to consider environmental or human-caused factors related to variability in demographic attributes, which will be critical for formulating effective management strategies. Harlequin Ducks are the most suitable wintering Pacific coastal bird for such a demographic approach and provide a model for other sea duck populations.

Capture-Mark-Recapture methods have been used throughout the Strait of Georgia to estimate survival and dispersal of harlequin ducks. Band resighting at select areas has continued, although at a lower intensity in recent years. Findings from this work indicate that survival is reasonably high and sustainable, but recruitment is low, and does not appear to be adequate to sustain Strait of Georgia populations. Hence, we intend to focus on factors influencing recruitment for the next set of studies.

Objectives *(should identify how the project addresses SDJV priorities*):
(1) To calculate survival, recruitment and other life history parameters of Harlequin Ducks in the Strait of Georgia, in order to predict population trends and identify potential causes of population change. (2) To understand aspects of Harlequin Duck ecology, such as moult, pair formation, local movements, migration, and reproductive success, which are important for interpreting demographic data. (3) To use this approach as a model for understanding and managing sea duck populations.

Preliminary Results:
This has been a hugely successful project, resulting in numerous graduate degrees and peer-reviewed publications.

Project Status *(e.g., did you accomplish objectives, encounter any obstacles, do you have plans for the future?)*
As described above, future plans involve investigating factors that limit productivity on breeding streams and hence recruitment to Strait of Georgia populations. We are engaged in projects in the Coast Range of BC, as well as collaborations with other scientists in western North America addressing breeding stream survival of females. We also intend to continue some work on easily accessible molting/wintering areas (e.g., White Rock).

The resighting effort is much lower that in previous years as both the number and condition of bands are declining. Most of the questions for which these bands were deployed have been answered, with the exception of published survival estimates for the Strait of Georgia wintering birds.

Project Funding Sources (US$) (complete only if funded by a SDJV partner e.g., USFWS, CWS, DU, USGS, or Flyway rep; this is used to document how SDJV appropriated funds are matched): NOTE: currently unfunded

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)

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					
Communication					
Coordination					