Project title: Annual cycle connectivity, inter- and intra-annual site fidelity, and habitat use of Barrow's Goldeneye wintering in Prince William Sound, Alaska (SDJV Project # 114; Year 1 of 3)

Principal Investigators:

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Project Description:

This project helps fill some of the more important information needs for BAGO in the latest SDJV Strategic Plan, namely population delineation, population dynamics and population ecology. We marked individuals with satellite transmitters to quantify several important demographic attributes, including seasonal connectivity, site fidelity and dispersal rates.

Connectivity among annual cycle stages, rates of site fidelity at all stages, and the geographic scale of dispersal are largely unknown for Pacific Barrow's Goldeneye (BAGO). This precludes managers and researchers from identifying demographically discrete units for population management, and for understanding the scale of inference from field studies. Further, habitats and specific sites that may be particularly important for BAGO are difficult to identify, as this species is not well covered by surveys for most of its annual cycle and most of its range. This project takes advantage of a relatively large number of satellite transmitters (PTTs) provided by USFWS to study the annual cycle and ecology of BAGOs wintering in Prince William Sound AK. It complements similar studies on BAGOs in BC (SDJV Project # 85) and Alberta (SDJV Project # 18).

Objectives:

- What are the rates, and geographic scale, of inter-annual site fidelity by PWS adult males and females at various stages of the annual cycle (i.e., winter, breeding, molt)?
- Do birds from the same wintering site occur in discrete areas during breeding season, or are they widely dispersed?
- How do the answers to 1 and 2 above combine to indicate demographically distinct management units?
- Are there important habitats or specific sites that are used by a large proportion of marked birds, which would indicate their value for conservation?

Preliminary results:

BAGOs were captured in March 2009 in Prince William Sound AK using floating mist nets and decoys. Microwave PTTs were implanted by a trained DVM into 30 birds (10 females and 20 males). Measurements of body mass and morphology were taken along with liver biopsies (for

contaminant analyses) and feather samples (for stable isotope analyses). The PTTs were programmed with a duty cycle of 2 h ON and 4 days OFF to generate Argos location data over 2-3 annual cycles. Unfortunately, 20 of the 30 birds died within 2 weeks of the surgeries for unknown reason(s) or the radio signals were lost. The weather conditions were particularly harsh during our trip, which may have contributed to mortalities. We observed several instances in which PTT-marked birds were hauled out on a beach alone in the hours and days following surgery. This is abnormal behavior and may have led to increased predation, or may have indicated that the birds were suffering thermoregulatory problems. We did not observe these behaviors, nor high mortality, in BAGOs marked during winter in British Columbia. To date, the remaining 5 males and 5 females are producing excellent signals and showing some interesting distributions, with the females breeding in central interior Alaska and the males molting at Old Crow Flats in the Yukon. Argos data are being downloaded periodically and temporary map updates circulated. Once most PTTs have stopped transmitting, we will develop more sophisticated, detailed maps using GIS. The data from this work will be combined with those from studies in British Columbia and Alberta to provide a range-wide consideration of the objectives listed above.

Project status:

Aside from the mortalities, we are accomplishing our goal of marking BAGOs at one of the northern-most wintering sites for BAGO in N.A. These data will add to our understanding of range-wide affiliations and connectivity for this species. We do not plan to mark any more BAGOs in PWS in the near future. We are allowing the PTTs to transmit however, so that some of them can be recovered and refurbished for other SDJV projects.

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)
$15,950[1]	$72,500[2]				SDJV/USFWS
			$7,500		Environment Canada
				$30,500	SFU

[1] – SDJV funding contribution

[2] – 30x PTTs provided by USFWS, Prince William Sound

ACTIVITY	BREEDING	MOLTING	MIGRATION	WINTERING	TOTAL
Banding					
Surveys					
Research	$25,000	$25,000	$1,450	$75,000	$126,450
Communication					
Coordination					