

**Sea Duck Joint Venture
Annual Project Summary
FY 2015 – (October 1, 2014 to Sept 30, 2015)**

Project Titles (including SDJV project tracking #):

PR 85: Barrow's Goldeneye Telemetry Study in British Columbia
and

PR143: Annual cycle connectivity, site fidelity, and habitat use of Pacific Surf, White-winged, and Black Scoters

Principal Investigator(s):

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Partners:

Canadian Wildlife Service, Environment Canada
Pacific Wildlife Foundation (PWF)

Project Description:

Complete population delineation for Pacific BAGO and Pacific scoters; Douglas Channel near Kitimat BC; capture birds in spring, implant PTTs, and track migration patterns for >1 year.

Objectives:

Fill a geographic gap between south BC and AK, complete population delineation for Pacific BAGO and Pacific scoters.

Preliminary Results

Environment Canada supplied 50 PTTs to be deployed in BAGO (30) and HADU (20) during this sea duck project. The SDJV was to supply 60 PTTs, with 20 PTTs to be deployed in each of 3 scoter species (SUSC, WWSC, and BLSC). However, preliminary survey data suggested that it would be difficult to capture enough scoters, especially WWSC and BLSC, so the number of scoter PTTs was reduced to 45 (15 per species). Captures occurred from 10-20 April 2014 at 2 primary sites: Hartley Bay at the mouth of Douglas Channel and near Kitimat at the head of the channel. We were successful at capturing and marking BAGO, HADU, and SUSC but WWSC and BLSC were absent from the area during the capture period. Therefore, the project resulted in the following deployments: 31 BAGO, 18 HADU, and 30 SUSC (given that WWSC and BLSC were absent a decision was made to mark 30 SUSC). The PTTs were programmed to signal for 3h every 3 days, allowing for Argos location data over at least 2 annual cycles.

Measurements of body mass and morphology were taken along with feather and blood samples for genetic and stable isotope analyses. In addition, liver biopsies (small 1g samples) were performed on BAGO to document P450 levels.

Approximately 1.5 years after deployment in Douglas Channel BC, of the 31 BAGO marked 12 are still alive and signaling at present, 6 birds have not signaled due to some unknown reason(s), and 13 birds have died. Of the 18 HADU marked, 7 are still alive and signaling at present, 9 birds have not signaled due to some unknown reason(s), and 2 birds have died. The SUSC experienced heavy losses in the first 2 weeks after capture, especially at Hartley Bay: 16 of 18 SUSC marked there died within 2 weeks whereas only 2 of 12 SUSC marked near Kitimat died during that same period; at present only 4 birds are still alive and signaling, 2 birds have not signaled due to some unknown reason(s), and altogether 24 birds have died (including the 18 birds in the first 2 weeks). Interestingly, all 3 sea duck species marked at Harley Bay had little or no subcutaneous fat whereas the opposite was true at Kitimat, and this correlates with the fact that Kitimat experienced a large herring spawn prior to the captures whereas Hartley Bay did not. So, it seems that there was a species X body condition interaction; i.e., both BAGO and HADU are hardy species as they were largely unaffected by capture, surgery and PTT implant effects whereas SUSC with low lipid levels were highly sensitive. This interaction is only correlative and speculative; more detailed research is needed, possibly with captive birds.

As expected, the marked BAGO, HADU and SUSC showed consistent migration patterns from wintering areas to breeding areas and from breeding areas to molting areas in both 2014 and 2015. BAGO migrated to the interior of British Columbia to breed and, as expected from other Pacific BAGO projects, the males migrated as far as northern Northwest Territories to molt (see below for Movebank tracking maps, Apr - Sep 2014). Some females also moved farther north to molt at the end of summer.

HADU migrated to either the Rocky Mountains or the Coastal Mountains to breed. Males returned to the coast to molt in August and females returned 1-2 months later. A few individuals moved as far south as Vancouver Island BC, suggesting that some spring migrants were marked during our April 2014 captures.

SUSC migrated to northern British Columbia, northern Alberta and the Northwest Territories to breed. Breeding and molting sites were distributed over the same large geographic area as discovered during previous marking projects on the Pacific Coast. Some

birds moved as far south as Oregon, again suggesting that a few spring migrants were marked during our April 2014 captures.

