

Project Title**SDJV Project #129****Pacific Coast Sea Duck Survey – Phase 2.****Principal Investigators:**

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Project Description:

The survey will combine extensive winter range coverage, a statistical sampling plan to quantify precision, and collect distributional information to develop and test hypotheses about impacts of coastal development and activities. The survey will cover important coastal sea duck habitats (e.g., nearshore marine and offshore), as well as provide valuable information on habitat-species relationships.

Methods and survey design will be developed in three phases. The first phase of summarizing and mapping past survey results was completed in 2010, along with a proposed design for the entire survey area.

The second phase is to determine the optimal survey design to define optimal sampling units, frequency, intensity, and platforms for the operational survey, to include methods to estimate precision for survey results. Costs and funding options for operational surveys will also be developed in the second phase. The proposed survey design is presented in Appendices 1 and

2. Testing of this design began in 2011, in Alaska, Washington, and Oregon. Priority is being placed on areas with little current information and where opportunities exist for partnering. For 2012-13, the project will focus on completion of surveys in British Columbia, and statistical analysis of results and survey design.

Project partners for the BC surveys (USFWS, CWS, WDFW, SDJV) met in July 2012 at the Pacific Flyway meetings in Spokane, WA to discuss interest and logistics of the survey. Following that meeting, WDFW and CWS evaluated extent of the survey and potential survey transect designs. Upper fjords along the BC coast were excluded from the survey due to known low concentrations of sea ducks in these areas, as well as safety concerns. The strips begin every 30 minutes of latitude, resulting in 1/3 coverage of remaining areas (see Appendix 2). This design is consistent with the past survey design developed for SE Alaska flown by USFWS in 2010, which worked well operationally. Although it would be preferable to survey more areas, the reduced coverage is due to the intricate and convoluted shorelines in southeast Alaska and British Columbia. It is more efficient to fly transects and shorelines together while in long inlets and complex bays, and this design reduces situations requiring the crew to fly over high terrain or around long inlets to reach isolated areas. Surveys in northern BC coastal areas and the outer coast of Vancouver Island will be coordinated by USFWS – R7, and surveys on the Strait of Georgia through the inside passage between Vancouver Island and the mainland will be coordinated by WDFW. WDFW survey costs would be covered by contract funds allocated for the project in 2011-12.

The third phase will initiate implementation of a comprehensive operational survey of wintering sea ducks along the Pacific Coast of the U.S. and Canada, to provide indices of abundance for Pacific Coast aggregations, relative winter distribution, and indications of regional trends in core areas by species. The survey area will encompass major wintering sites for target species and populations from the Alaska Peninsula to Baja, Mexico. The survey would lend itself to a five year rotation. Sub-sampling of aerial survey units will be accomplished by boat. The type of boat used may vary by region and availability. Additional personnel demands and operational costs are unknown at this point. The vast extent of the survey would necessitate coordination with agency personnel in many different locations.

Objectives:

This project addresses SDJV Implementation Plan priorities to monitor abundance and distribution of Pacific Coast sea ducks:

- At a sufficiently large geographic scale to permit detection of broad-scale changes in distribution or densities that may result from habitat changes, such as those induced by climate change,
- For manageable discrete population units that may be subject to different threats, and for which conservation actions could be taken and evaluated,
- Cost-effectively, while providing the greatest possible confidence in the survey results,
- Provide information to developers so that they can reduce or mitigate their effects on sea duck populations (e.g. new and expanded offshore wind, tidal, and oil energy development).

Preliminary Results – Phase 2:

2011-12 British Columbia Survey

As part of the new Pacific Coast Winter Sea Duck Survey, Sea Duck Joint Venture (SDJV) allocated \$28,000 for WDFW to survey British Columbia (BC) in 2011-12. BC is one of the main areas of emphasis in the current stage of survey development. WDFW received extensive assistance from André Breault of CWS to develop a preliminary survey design last fall, and work through logistics of the survey effort. Due to the geographic scope of the survey area and the funds available, it was decided to focus the 2011-12 effort on the Strait of Georgia, and then survey the northern and western coasts of Vancouver Island during winter 2012-13. The WDFW Puget Sound aerial survey vendor, Kenmore Air of Seattle, was responsible for arranging the necessary permits and approval from the Canadian government. Kenmore started working with Transport Canada (TC) in December 2011, and was assured that necessary authority was secured for the survey to begin in February.

As our survey crew was on their way to Kenmore in early February to depart for BC surveys, Kenmore got a call from TC and was told that they needed a NAFTA permit through FAA and TC to conduct surveys in Canada as a U.S. vendor. After getting word about this requirement, Kenmore decided to pull out of the BC survey effort. Andre Breault was immediately able to assist WDFW in locating a BC aerial survey vendor, Corilair out of Campbell River, BC as an alternative. Corilair has conducted waterfowl surveys in the Strait of Georgia in the past and has local knowledge of the area, but its hourly rates (\$800 USD) are significantly higher than Kenmore. André Breault offered to assist with funding the difference in costs between Kenmore and Corilair.

In spite of efforts that involved meeting and conducting test flights with Corilair around Campbell River, poor weather conditions in February prevented the WDFW crew from finding an acceptable survey window. As the survey was delayed into March, WDFW and CWS had new concerns about the winter distributions of sea ducks changing significantly in response to known herring spawn events around Vancouver Island. As a result of these concerns and discussions with Tim Bowman, the decision was made to delay the BC survey until the winter of 2012-13.

2011-12 Bristol Bay

28 February 2012

Tim Bowman (observer) and Bill Larned (Pilot/observer) prepared and flew the survey aircraft, Kodiak Amphibian N745, Anchorage to King Salmon, AK, arriving at 1630. Lodged at Alaska Peninsula/Becharof National Wildlife Refuge bunkhouse.

29 February 2012

The weather was good in upper Bristol Bay, but poor in the Cold Bay area, so we planned a survey flight to cover only upper Bristol Bay habitats. We refueled, set up for surveys, and took off at 1300. We flew 4 hours of surveys, covering portions of Kvichak and Nushagak Bays, and all ice-free portions of Ugashik and Egegik Lagoons. Sea ice covered approximately 90% of the Kvichak and outer Nushagak Bays, and 50% of Nushagak and Egegik Lagoons. Sea ice coverage in the Bristol Bay region was unusually extensive this year, and probably about at its heaviest during this survey. Survey conditions were excellent today due to the extensive ice cover, limiting the amount of open water to search, good lighting and unlimited visibility. We felt we covered most of the open water within the areas searched, so coverage was close to 100%.

30 February 02 March 2012

We were grounded in King Salmon this entire period due to inclement weather (High winds, heavy snow and low ceilings and visibility. We had the use of a military hanger, but had to shovel lots of snow from against the doors.

03 March 2012

The weather cleared up briefly, but had engine problems with the plane, so had to troubleshoot that via phone. This kept us on the ground 3/3 and 3/4.

05 March 2012

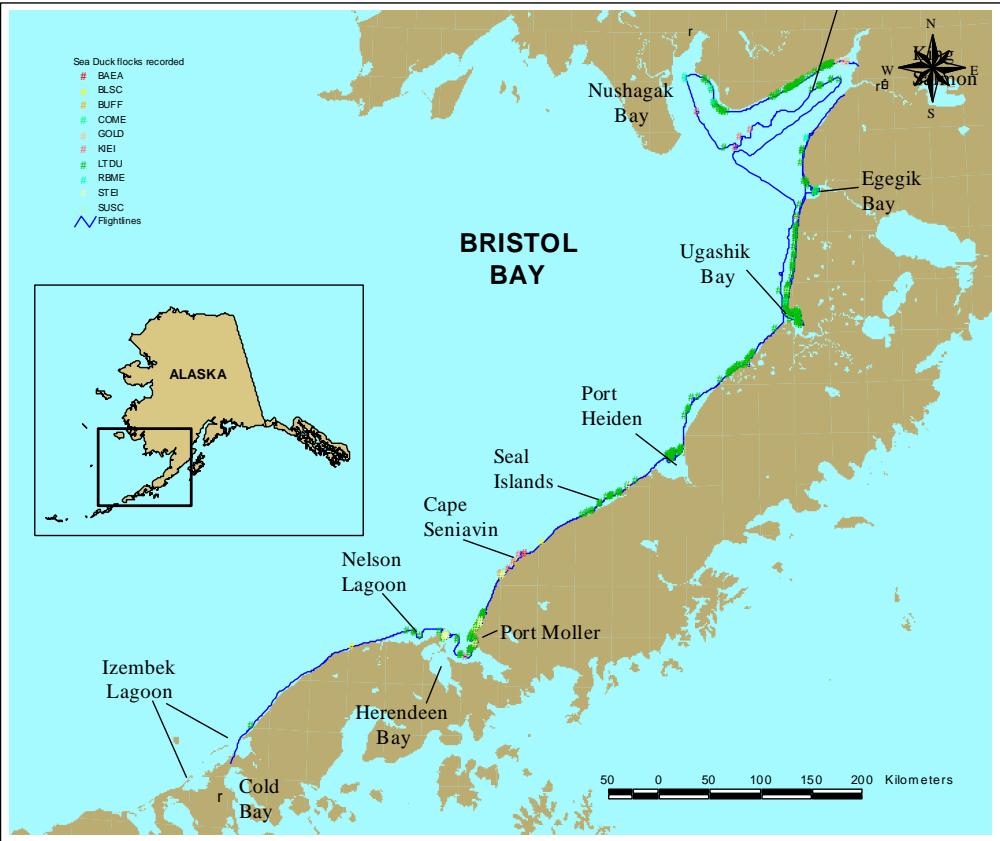
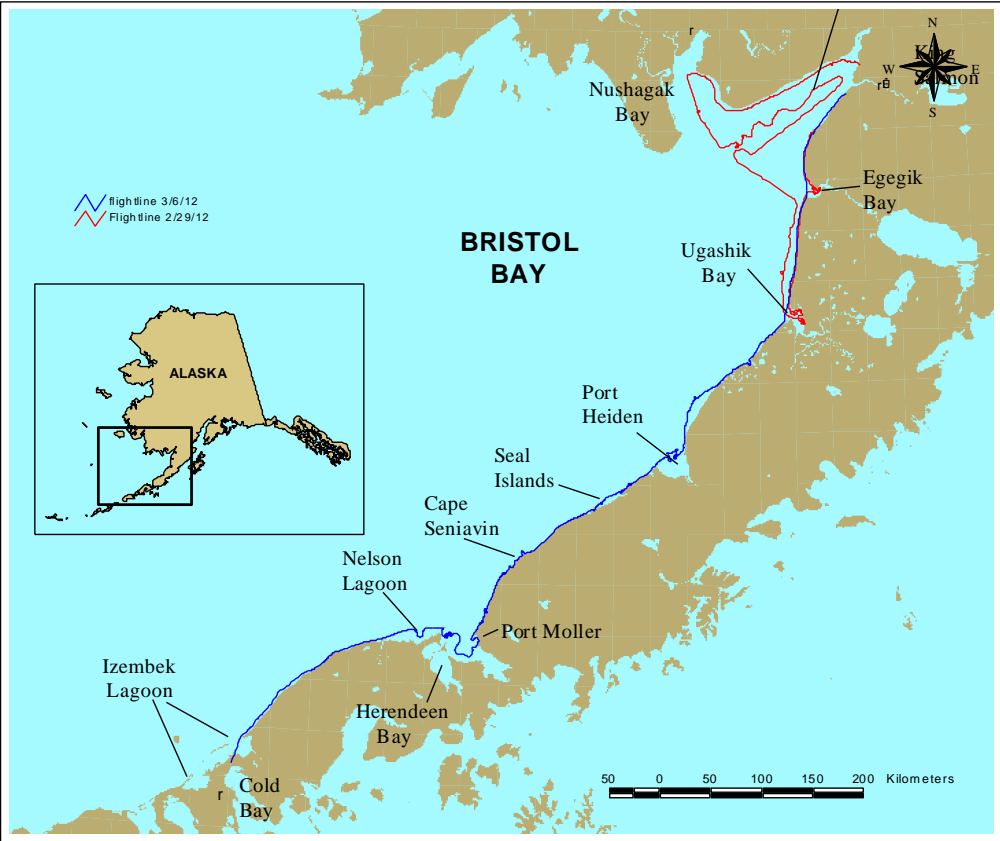
Resolved the engine problem, but the weather turned bad with wind, snow and rain, so held again overnight.

06 March 2012

The weather cleared after fog in the morning, and we left at 1400 and surveyed from Ugashik Bay (where we left off on 2/29) to Izembek Lagoon (4 flight hours). 15-20 knot headwinds limited the amount we could survey, but because of the extensive ice cover we felt we covered nearly 100% of the potentially occupied habitat. We overnighted at Izembek Refuge bunkhouse, as the weather closed in again. Heavy snow and strong winds piled snowdrifts around the plane, and we had to enlist help from the refuge to secure it in tiedowns. We stayed one more day (3/7), as the storm continued unabated. We then left the plane in Cold Bay and flew back to Anchorage via airlines. We had wanted to complete more of the area around Cold Bay, and part of the Pacific coast of the Alaska Peninsula, but the weather forecast was for continued storms, and both crewmembers had other commitments.

We felt that the survey could have produced very different results in years with more normal ice cover and weather. This area is known for its frequent storms, but the winter of 2011-12 was worse than normal. Based on limited observations from earlier years, the numbers of sea ducks revealed during this partial survey were probably lower for most species than average. We used about 15 total flight hours including ferry time from Anchorage. A more complete survey including the Pacific side would require at least 30 hours.

See maps attached showing flight tracks, sea duck flock distribution by species, and table of results.



Survey Segment	BLSC	SUSC	LTDU	KIEI	STEI	GOLD	BUFF	COME	RBME	Total all spp	%ice cover
Bristol Bay north shoreline			995			17			3	1,015	90
Bristol Bay mid-channel											
Nushagak and Kvichak			103	13,533					6	13,642	90
Bristol Bay mid-channel											
Deep-water			110							110	90
Egegik Bay			85					190		275	50
Shoreline Egegik-Ugashik		2	2,174	10		5			1	2,192	80
Ugashik Bay			1,144			1	1	15		1,161	50
Shoreline Port Heiden-Seal Is.			110						10	120	90
Port Heiden			13,247	225						13,472	80
Seal Islands			277	1	35					313	95
Shoreline Seal Is. - Cape Seniavin	15		13							28	50
Shoreline Cape Seniavin - Pt Moller	19		665	482	193					1,359	50
Port Moller	50			894	2,910	5	6			3,865	60
Nelson Lagoon			3,534	150						3,684	95
Shoreline Nelson Lagoon- Izembek	10		4							14	20
Total each spp	94	2	22,461	15,295	3,138	28	7	205	20	41,250	

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 (name of agency or organization)
\$11,000					SDJV
	8000				Pacific Coast JV
	6200				USFWS Region 7 MBM
	800				Alaska Peninsula NWR
	400				Izembek NWR
		3500			Washington Dept Fish and Wildlife
		2400			Alaska Dept Fish and Game

Total Expenditures by Category (SDJV plus all partner contributions; US\$).

ACTIVITY	BREEDING	MOLTING	MIGRATION	WINTERING	TOTAL
Banding (include only if this was a major element of study)					
Surveys (include only if this was a major element of study)				\$32,300	\$32,300
Research					

