

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

Project Title: SDJV Project# 145: Wing tissue collection for sea ducks for stable isotope and genetic analyses

Principal Investigator(s) Sarah Sonsthagen (USGS Alaska Science Center, Molecular Genetics Lab)

Tim Bowman (wing collections: Pacific, Central, and Mississippi flyways - U.S.)

Chris Dwyer (wing collections: Atlantic flyway - U.S.)

Scott Gilliland (wing collections: Canada)

Partners: USFWS, CWS, numerous state and federal biologists from all 4 flyways

Project Description: The SDJV has made significant investment in filling gaps in our knowledge of in delineation of North American populations of sea ducks, both in the Pacific Flyway, central arctic Canada, and through the Atlantic and Great Lakes Sea Duck Migration Study. Obtaining adequate and representative samples via satellite telemetry for some species has been difficult. For example, White-winged Scoters and Long-tailed Ducks have proven difficult to capture and mark on Atlantic wintering areas. Through the Atlantic and Great Lakes Sea Duck Migration Study and previous studies, researchers have been successful in catching Long-tailed Ducks at the primary wintering areas around Cape Cod & Nantucket, Chesapeake Bay and in Lake Ontario. However, Long-tailed Ducks have a very wide distribution in the Northwest Atlantic and Great Lakes, wintering from South Carolina north to Baffin Island and Greenland. We propose to archive tissues collected from wings from harvested sea ducks sent in by hunters to the Species Composition Surveys in Canada and the USA, and possibly tissue samples from birds taken in Greenland over the next 2-4 years. Stable isotopic and/or genetic analyses of these samples may provide an alternative to satellite telemetry for assessing population delineation for these species. Isotopic analyses of wing feather samples from hatch-year birds can reveal where they were hatched and raised, and for adults, where they underwent wing molt.

Samples would be obtained from three flyways in the U.S. and Canada (Atlantic, Mississippi, and Pacific). All sea duck wings submitted to the species composition survey in Canada and the US will be either retained or processed at wing bees. Scott Gilliland will coordinate the Canadian collections, and Chris Dwyer & Tim Bowman the US collections. The following information will be maintained for each wing: date shot, location shot, species, age and sex.

A 100 mg sample of muscle will be preserved in tissue preservation buffer or ethanol and frozen, and 2-3 primary feathers stored in paper envelopes. At the end of the season, all samples will be shipped to the USGS Alaska Science Center for storage and subsequent analyses.

We are targeting 30 hatch-year birds, 30 adult females and 30 adult males, totaling 90 samples for each species in each of three broad geographic regions – eastern represented by the Atlantic flyway, central represented by the Central and Mississippi flyways, and western represented by the Pacific flyway.

Objective: Create a tissue archive for sea ducks that may be used for population delineation

Project Status: For the 2014-2015 hunting season, a total of 1242 feather samples were obtained from the four U.S. flyway wing bees (see table below). Those samples were processed by USFWS and USGS staff in Alaska. Feather samples were subdivided into samples for genetics (feather rachi) and stable isotopes (remaining feather sample). All data for those samples are currently being entered into a database and data checked for accuracy. Samples from Canada are currently being held in CWS office, Sackville, NB and will be shipped to U.S. once permits are secured. Feather collections were done at no cost to SDJV, other than purchase of sampling materials and supplies, and costs for a USFWS technician to process samples and enter data were minimal.

Preliminary Summary of feather samples collected in U.S. wingbees, 2014-2015 hunting season																									
Species	Atlantic							AF Total	Alaska							AK Total	Central							CF Total	
	Adult		Total	Immature			I Total		Adult		A Total	Immature			I Total		Adult		Total	Immature			I Total		
	F	M		F	M	U			F	M		F	M	U			F	M		F	M	U			
BAGO	0	0	0	0	1	0	1	1	2	19	21	7	7	0	14	35	0	0	0	0	0	0	0	0	0
BLSC	12	28	40	0	0	20	20	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
BUFF	29	33	62	11	16	0	27	89	0	0	0	2	0	0	2	2	21	35	56	14	12	0	26	82	
COEI	0	6	6	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COGO	17	27	44	19	9	0	28	72	1	1	2	3	1	0	4	6	6	14	20	10	5	0	15	35	
COME	10	12	22	13	12	0	25	47	0	0	0	1	4	0	5	5	4	0	4	3	1	0	4	8	
HARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOME	1	1	2	0	0	0	0	2	0	0	0	0	0	0	0	0	6	13	19	0	0	24	24	43	
LTDU	8	32	40	0	0	20	20	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RBME	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	2	0	3	3	0	0	1	1	4	
SUSC	12	38	50	0	0	17	17	67	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
WWSC	1	19	20	0	0	9	9	29	2	2	4	0	0	0	0	4	0	0	0	0	0	1	1	1	
Grand Tot	90	196	286	43	38	66	147	433	5	23	28	14	12	0	26	54	37	65	102	27	18	28	73	175	

Species	Mississippi							MF Total	Pacific							PF Total	Grand Total								
	Adult		A Total	Immature			I Total		Adult		A Total	Immature			I Total										
	F	M		F	M	U			F	M		F	M	U											
BAGO	0	0	0	0	0	0	0	0	9	4	13	11	8	0	19	32	68								
BLSC	0	0	0	0	0	5	5	5	0	0	0	0	0	0	0	0	0	66							
BUFF	7	22	29	22	9	0	31	60	32	33	65	16	16	0	32	57	330								
COEI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6								
COGO	17	25	42	15	17	0	32	74	28	32	60	17	13	0	30	90	277								
COME	3	6	9	7	3	1	11	20	13	12	25	18	13	0	31	56	136								
HARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
HOME	0	0	0	0	0	6	6	6	2	8	10	0	0	23	23	33	84								
LTDU	0	1	1	0	0	4	4	5	0	0	0	0	0	0	0	0	65								
RBME	6	2	8	0	0	12	12	20	1	1	2	0	1	0	1	3	29								
SUSC	0	0	0	0	0	11	11	11	5	18	23	0	0	21	21	44	123								
WWSC	0	0	0	0	0	14	14	14	1	3	4	0	0	6	6	10	58								
Grand Tot	33	56	89	44	29	53	126	215	91	111	202	62	51	50	163	360	1242								

As proposed, additional samples will be needed from many species to achieve sample sizes for age and sex classes. We propose to repeat the process at wing bees in 2016.