

## **Sea Duck Joint Venture Project Summary December 2021**

**Project Title** Estimating sea duck productivity in eastern North America using a photographic survey

**Principal Investigators:**

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**Partners:**

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**Project Description** (*issue being addressed, location, general methodology*):

Sea duck demography is difficult to study because their breeding and non-breeding range is challenging to access and/or work in. Recent population modeling (Koneff et al. 2017) has identified specific demographic parameters that are most sensitive to harvest, hence improving management and providing a sustainable recreational opportunity. Increased knowledge about annual productivity (i.e., juvenile:adult ratios) is thought to greatly improve estimates of harvest potential. Most biologists can identify and correctly assign sea ducks to an age class and sex based on plumage characteristics when a bird is in hand. However, capturing a representative number of birds to make this assessment is costly and difficult. A promising and cost effective alternative is using photos of sea ducks from winter to assign birds to the correct age and sex cohorts, by species. Age ratios (juveniles:adults) obtained from photos, can then be used to inform population models, identify factors that influence breeding success, and examine spatial distribution of age and sex classes.

We propose to collect, analyze, then use ground-based photographs of sea ducks to classify age and sex cohort in eastern North America for black scoter (*Melanitta americana*), surf scoter (*M. perspicillata*), white-winged scoter (*M. deglandi*), and long-tailed duck (*Clangula hyemalis*). Our goal is to produce annual productivity estimates for all four species at the eastern North America scale, focused on critical geographies of the Atlantic coast and the Great Lakes. We have conducted this survey in the Atlantic Flyway, along the Atlantic coast, the previous two years (winters of 2018/19 and 2019/20) but the survey has been limited with respect to availability of field staff time, access to high-quality camera equipment, and data processing time. Nonetheless, we have amassed enough photos and data points to summarize pilot data which has been presented in a report (see results of pilot; additional data upon request). We propose to expand the spatial extent of the survey, and data collection within the current extent, through the addition

of personnel resources. The addition of a dedicated project coordinator (MS student) will add capabilities to organize photo collection among a larger group of participants within current partner states and the addition of new states and provinces, particularly the Great Lakes area. We propose a two-year project that will be able to continue the time-series, expand spatial coverage, and analyze results of the entire time-series of sea duck productivity in eastern North America.

**Project Objectives:**

- 1) Identify additional collaborators from states and provinces to expand our work scope to additional areas including the Great Lakes region.
- 2) Provide suitable equipment for active participants.
- 3) Improve data management.
- 4) Analyze annual survey results and determine factors that may influence annual productivity for our focal species.

**Preliminary Results** (*accomplished since 9/30/21*):

**Project Status** (*e.g., did you accomplish objectives, encounter any obstacles, what are your future plans*):

Table 1. Photos taken of white-winged (WWSC), black (BLSC), surf (SUSC) scoters and long-tailed ducks (LTDU) by state partners as of 23 December 2021. These are number of photos, not number of individuals (most photos >1 individual). Some state partners have yet to upload their photos as such, this is a preliminary total.

State	WWSC	BLSC	SUSC	LTDU
Maine	45	44	23	2
Maryland	8	40	94	0
New Jersey	2	13	15	3
Massachusetts*	24	10	15	3
NY (Lake Ontario/Niagara River)*	10	0	0	8
<b>Total</b>	89	107	147	16

*\*indicates photos from J. Hewitt, MS student @ SUNY Brockport*

The following has been accomplished since 9/30/21:

- Jacob Hewitt’s progress as M.S. student
  - Distributed all camera equipment to partners
  - Coordinated all project logistics with partners including email instructions and reminders on project protocol and deadlines
  - Attended meeting in Watertown, NY and met project partners from New Hampshire and New Jersey

- Completed first (of four) academic semester in the Masters of Science program at SUNY Brockport
- Established graduate committee consisting of J. Straub (adviser), Rachel Schultz (SUNY-Brockport) and Anthony Roberts (*external*; USFWS)
- Collected photos from Lake Ontario and the Niagara River and a trip to Cape Cod, MA from November 6<sup>th</sup> – 8<sup>th</sup> (Table 1).
- Identified local birders from Rochester, NY that have usable photos of sea ducks in flight. These photos will enhance our overall sample size.
- Tony Roberts (Co-PI) has established a relationship with a contact with a captive flock of known-age WWSU and SUSC. This contact has taken photos of these birds (5 of each species) from September – December. We anticipate this information will *further* confirm the plumage age criteria we use in photos of wild birds.

The following will be accomplished by March 2022:

- As in previous years, we will be using the Zooniverse survey tool to process our sea duck photos and identify individuals to species/sex/age class.
- We will present a project status report at the winter 2022 Atlantic Flyway meeting 20-24 February.

**Project Funding Sources (US\$).** Complete only if funded by SDJV in FY21. This is used to document: 1) how SDJV-appropriated funds are matched, and 2) how much partner resources are going into sea duck work. You may include approximate dollar value of in-kind contributions in costs. Add rows as needed for additional partners.

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)
\$74,749					

**Total Expenditures by Category (SDJV plus all partner contributions; US\$).** Complete only if project was funded by SDJV in FY21; total dollar amounts should match those in previous table.

ACTIVITY	BREEDING	MOLTING	MIGRATION	WINTERING	TOTAL
<b>Banding</b> (include only if this was a major element of study)					
<b>Surveys</b> (include only if this was a major element of study)					

<b>Research</b>				<b>33,670.85</b>	<b>33,670.85</b>
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