

**Sea Duck Joint Venture  
Annual Project Summary  
FY22 (October 1, 2021 – September 30, 2022)**

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

**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 last report on 21 December 2021):*

Table 1. Annual Atlantic Flyway photo survey sample sizes of classified individuals from the Oct. 15 - Dec. 15 photo survey window by species (BLSC = black scoter, LTDU = long-tailed duck, SUSC = surf scoter, WWSC = white-winged scoter).

	Species			
	BLSC	LTDU	SUSC	WWSC
2018*	214	53	55	81
2019	1155	42	321	33
2020	448	204	354	158
2021	1668	397	784	254

\* = Insufficient sample sizes within survey window in 2018, thus all classified photos were included

Table 2: Annual Atlantic Flyway photo survey sample sizes of classified individuals of all species from the Oct. 15 - Dec. 15 photo survey window by state. Bolded values denote totals from survey efforts that used new project camera equipment in 2021.

	State											Total
	CT	MA	MD	ME	NC	NH	NJ	NY	ON	RI	VA	
2018*	0	0	0	45	0	27	15	299	0	0	17	403
2019	0	2	192	220	605	0	311	215	1	0	5	1551
2020	56	0	74	189	66	66	144	202	0	57	110	964
2021	0	<b>191</b>	139	<b>398</b>	<b>760</b>	<b>103</b>	<b>555</b>	<b>171</b>	147	<b>464</b>	<b>175</b>	<b>3103</b>

\* = Insufficient sample sizes within survey window in 2018, thus all classified photos were included

Table 3: Atlantic Flyway photo survey annual juvenile proportion (% of population) estimates of each focal species with associated 95% credible intervals.

	Species			
	BLSC	LTDU	SUSC	WWSC
2018	0.140 (0.051-0.217)	0.473 (0.344-0.607)	0.164 (0.054-0.273)	*
2019	0.333 (0.221-0.440)	0.154 (0.081-0.256)	0.308 (0.213-0.455)	0.317 (0.206-0.452)
2020	0.230 (0.122-0.316)	0.206 (0.167-0.251)	0.207 (0.116-0.306)	0.313 (0.252-0.382)
2021	0.213 (0.145-0.269)	0.262 (0.222-0.305)	0.158 (0.093-0.214)	0.263 (0.221-0.262)

\* = Estimate currently unavailable

Table 4: Comparison of USFWS Parts Collection Survey (PCS) and photo survey Atlantic Flyway juvenile proportion (% of population) estimates of each focal species in 2021. Photo survey estimates include associated 95% credible intervals.

	Survey Methods	
	Photo	PCS
BLSC	0.213 (0.145-0.269)	0.329
LTDU	0.262 (0.222-0.305)	0.371
SUSC	0.158 (0.093-0.214)	0.254
WWSC	0.263 (0.221-0.262)	0.561

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

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