Sea Duck Joint Venture
Annual Project Summary
(Agreement F16AC00145)
FY 2016 – (October 1, 2015 to Sept 30, 2016)

Project Title (including SDJV project tracking #): POPULATION DELINEATION AND WINTER HABITAT ASSOCIATIONS OF LONG-TAILED DUCKS AND WHITE-WINGED SCOTERS WINTERING IN SOUTHERN NEW ENGLAND, SDJV Project #130

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Project Description (*issue being addressed, location, general methodology)*:
The Sea Duck Joint Venture (SDJV) has identified population delineation (linkages between key wintering areas, molt areas, breeding areas) as one of the top priorities. Southern New England is known to be a key wintering area for White-winged Scoters (hereafter WWSC) and Long-tailed Ducks (hereafter LTDU; Zipkin et al. 2012), yet prior research efforts have been unable to track enough individuals of each species that winter in southern New England to accurately delineate this population. Thus, supplementing existing satellite telemetry data sets for WWSC and LTDU is necessary to meet current population delineation objectives. We recently investigated winter resource use and movement patterns of Black Scoters (Loring et al. 2014) and Common Eider (Beuth 2013) in southern New England and proposed to use a similar modelling approach to characterize resource use and movement patterns of WWSC and LTDU during winter.

Winter habitat use of sea ducks in New England and elsewhere on the Atlantic and Pacific coasts is one of the key issues requiring further study due to the potential for offshore wind energy development. Given recent permitting of windfarms in New England, there is a pressing need to gain a clearer understanding of key winter habitats used by sea ducks (specifically WWSC and LTDU) in this region. The information gathered from this project could be used for marine spatial planning efforts in the region that would address key resource areas for sea ducks in the region to minimize potential threats posed by offshore wind energy developments. This additional work on WWSC and LTDU will provide a much more complete picture of the ecology and movements of the most common wintering sea duck species in this region where the development of offshore wind facilities is imminent.

Satellite-based Platform Transmitter Terminals (PTTs) were surgically implanted in the abdominal cavity of each duck by a qualified wildlife veterinarian, with sea duck surgery experience, following the technique described by Korschgen et al. (1996). All transmitters were wrapped in a sterile mesh material which adheres to the body wall and helps anchor the PTT within the bird. Radio-tagged birds were held in captivity for 1-2 hours post-surgery, monitored for health, and then released at the capture site.

Captures took place in Long Island Sound in March 2016 for both WWSC and LTDU. Follow-up WWSC deployments took place in Forestville, QC along the St. Lawrence River estuary during August 2016 (Figure 1).

Objectives *(should identify how the project addresses SDJV priorities*):
As part of the Sea Duck Joint Venture's Atlantic and Great Lakes Sea Duck Migration Study, our primary objectives were to:

1) Determine the population linkages among wintering, breeding, and molting areas for adult female WWSC and LTDU that winter in southern New England
2) Determine resource use and movement patterns of adult female WWSC and LTDU wintering in southern New England, compare aspects of their ecology with that of black scoter (BLSC) and common eider (COEI), and assess the associated risks to sea ducks of proposed offshore wind energy development.

Preliminary Results *(include maps, photos, figures/tables as appropriate):*
After initial capture efforts took place in Cape Cod Bay and Nantucket Sound in the fall/winter of 2015, we were left with 24 WWSC transmitters (2 Telonics, 22 Microwave) and 13 LTDU transmitters (GeoTrak) that needed to be deployed. All transmitters were proposed for deployment in Long Island Sound during March 2016 using floating mist net capture methods (Loring et al. 2014, Beuth 2013). Failure to deploy all transmitters during this capture session led to a supplemental effort on the Gulf of St. Lawrence Estuary in August 2016 where molting birds were captured using a submerged gill net technique (adapted from Breault and Cheng 1989).

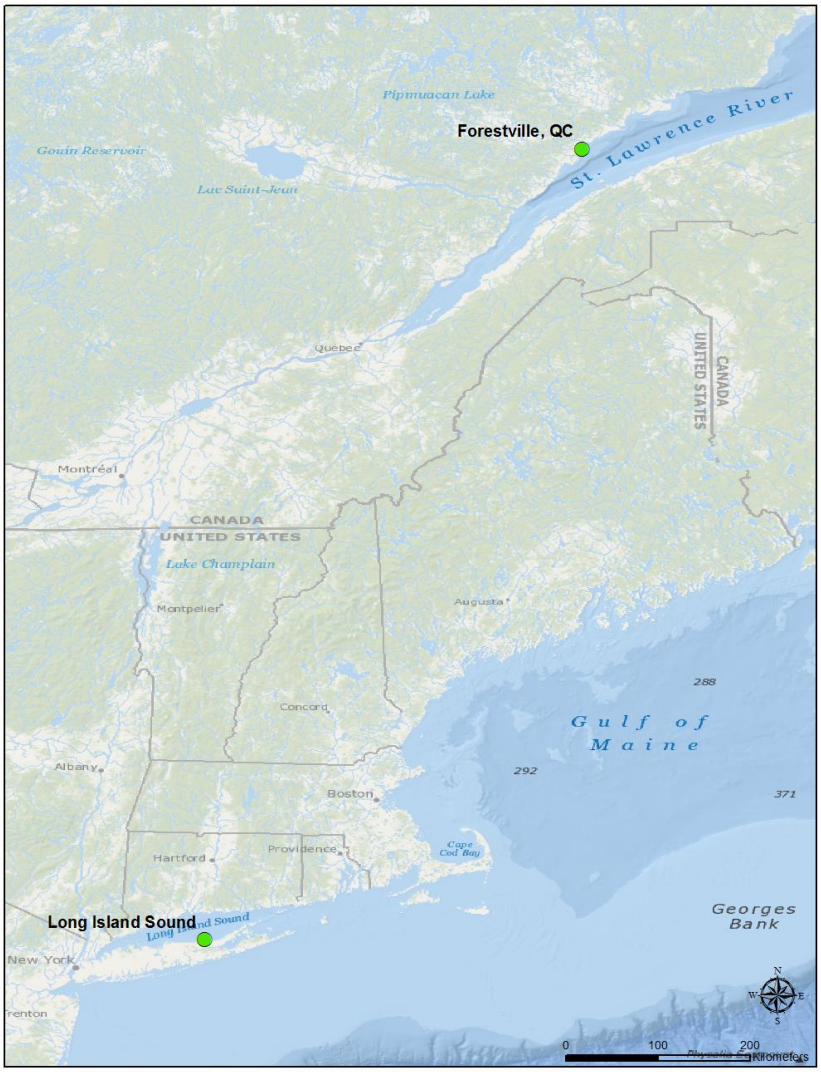

Figure 1. Capture locations of White-winged scoters and Long-tailed Ducks in March and August 2016

Capture efforts in Long Island Sound during March 2016 were only moderately successful due to inclement weather during the majority of the field session. Four WWSC transmitters were deployed during this effort, two of which are currently alive and providing data. One bird was confirmed dead on 20 August 2016, while the other stopped providing data on 2 August 2016 while at a suspected breeding location north of Great Slave Lake in the Northwest Territories, Canada. As most of this capture effort was dedicated to WWSC deployments, only one additional LTDU transmitter was deployed. While no mortality could be confirmed, this bird only provided data until 31 May 2016 after having migrated to the lower Hudson Bay islands.

Capture efforts in the Gulf of St. Lawrence estuary were highly successful. In total, 26 PTTs (including 7 Telonics transmitters inherited from crews in the Great Lakes) were deployed on female WWSC. There are currently 22 birds alive and providing data after two confirmed mortalities and two PTTs that have stopped transmitting (Table 1).

Table 1. Total number of PTTs deployed during Spring and Summer 2016 in adult female White-winged Scoters and Long-tailed Ducks in Long Island Sound and Forestville, QC.

Species	# Deployed	Currently Alive*	Confirmed Mortalities	PTT Failure (suspected)
WWSC	30	24	3	3
LTDU	1	0	0	1

*As of 23 September 2016

One of the surviving WWSC from Long Island Sound apparently did not breed, and migrated directly to a known molting location in the Gulf of St. Lawrence estuary after leaving southern New England. The other surviving bird migrated to a suspected breeding location in northeastern Manitoba. All birds captured on molting grounds in the Gulf of St. Lawrence estuary currently remain in close proximity to their capture location.

Figure 2. Spring migration routes and suspected breeding locations (X) of White-winged Scoters captured in Long Island Sound in March 2016. Lines do not necessarily represent direct flight paths

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

We were successful in reaching our objective in deploying a sufficient sample size of WWSC transmitters. Data collection and analyses are currently underway and no further WWSC capture attempts are planned at this time.

We were unsuccessful in deploying our allotted total of LTDU transmitters during the March 2016 capture effort. Only low densities of LTDU were located near suitable mist-netting locations, and poor weather kept capture crews off the water for the majority of the field duration. As such, any day that was suitable for trapping was dedicated to capturing WWSC, which were found in much higher densities.

In the future, we are planning to continue LTDU capture attempts during December 2016. These efforts will involve night-lighting in Nantucket Sound where we conducted successful capture sessions in the winter of 2015. We currently have 13 unused GeoTrak PTTs, and 10 new Telonics units that we still need to deploy. Additionally, in response to the poor transmitter performance we experienced with our previous batch of GeoTrak transmitters, the manufacturer has agreed to provide us with 6 new PTTs at no cost. Thus, we plan to deploy a total of 29 transmitters in adult female LTDU during December 2016.

Project Funding Sources (US$). Complete only if funded by SDJV in FY16; 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)
$119,699					SDJV
		$10,175			BRI
		$190,650			RI DEM
		$71,099			URI
			$16,265		CWS

Total Expenditures by Category (SDJV plus all partner contributions; US$). Complete only if project was funded by SDJV in FY16; total dollar amounts should match those in previous table.

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)					
Research		**$62,313**		**$345,575**	**$407,888**

Literature Cited

Beuth, J. 2013. Body composition, movement phenology and habitat use of Common Eiders along the Southern New England Coast. M.S. Thesis, University of Rhode Island, Kingston, RI.

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