

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

**Project Title:** Migration patterns, habitat use, and harvest characteristics of long-tailed ducks wintering on Lake Michigan.

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**Partners:** USFWS, SDJV; Long Point Waterfowl; Environment Canada; Wisconsin Waterfowl Association; Delta Waterfowl; Wisconsin Waterfowl Hunters' Conference; Bill Cook Chapter and Wisconsin State Division of the Izaak Walton League of America.

**Project Description:**

This project is expected to address information needs concerning population delineation, migration, and ecology of long-tailed ducks (LTDU) wintering in the Great Lakes. Long-tailed ducks marked on the Atlantic Coast and eastern Great Lakes regions have shown very little use of western Great Lakes; however, there is a sizable LTDU population that winters on Lake Michigan. We propose to capture and radio-mark 20 adult female LTDUs during November 2015 through April 2017, in anticipation of obtaining data from  $\geq 12$  adult females for one entire year. Over-water mist netting and night-lighting techniques are being employed to obtain the sample of birds for this project.

**Objective:**

The goal of the project is to determine temporal and spatial patterns of migration, breeding ground affiliations, and fidelity to wintering areas of long-tailed ducks wintering on Lake Michigan. Specific objectives are to:

1. Radio-mark an adequate number (estimated at 20) of adult female LTDUs wintering on Lake Michigan with PTTs to ensure that an effective sample of  $\geq 12$  survive and provide location data for at least one full year. Deploy additional transmitters, if necessary, to obtain a minimum of 12 PTTs that collect data for a minimum of one year.
2. Characterize movements and habitat use of radio-marked LTDUs.
3. Additional components of the study include evaluations of food habits and harvest characteristics of LTDUs wintering on Lake Michigan.

**Preliminary Results:**

We conducted capture from 9-17 November 2015 (3 night lighting attempts; 1 mist net set), 7-8 January 2016 (2 night lighting attempts), 11-22 March 2016 (10 night lighting attempts; 1 mist net set), and 25-29 April 2016 (3 night lighting attempts). Captures consisted of one hatch year

(HY) female white-winged scoter (*Melanitta fusca*) and seven LTDUs consisting of four after second year (ASY) males, one HY male, one ASY female, and one second year (SY) female. Several capture opportunities of male LTDUs were passed, because they were not the target sex. Both females were radio-marked and released. The ASY female died within one week of release (12 March 2016); carcass and transmitter were recovered. A necropsy was conducted and indicated that the bird had a high parasitic load and this was likely the primary factor leading to mortality. We are currently tracking the movements of the surviving radio-marked SY female (captured 28 April 2016), which last reported (20 Sep 2016) in near Matty Island, Nunavut, Canada.

Our LTDU capture success during FY16 fell well below that experienced during our spring 2015 pilot work (average capture rate of 2.8 LTDU per night over 5 capture nights). We attributed this reduced success to the following reasons: (1) inability to locate birds at night during the fall capture effort despite known presence during the day (spring 2015 and spring 2016 distributions indicate that LTDUs move 7-18 km south of the foraging grounds to roost, but in fall 2015 LTDUs flew north/northeast from foraging grounds near Two Rivers, WI, and were not located at night; (2) poor weather conditions during the scheduled November capture period (wind consistently produced waves  $\geq 2$  m during scheduled capture period in November and our vessel is safely operated in waves  $\leq 1.2$  m); and (3) an unusually warm winter due to El Niño limited ice cover in northern Lake Michigan, resulting in the dispersion and early migration of LTDUs from our primary study area near Two Rivers, WI.

Fewer LTDUs were observed in our primary study area during spring 2016 than during the pilot study in spring 2015. We attempted to locate LTDU elsewhere in Wisconsin waters, including the Door County peninsula, but were unable to locate any large concentrations. In April 2016, we contracted USFWS Region 3 pilot (Brian Lubinski) to fly a reconnaissance survey. This resulted in locating a sufficient number of LTDU near Manistique, MI, to mount a late spring capture effort and we were successful in capturing and radio-marking a SY female.

We are confident that several of the issues from 2016 can be mitigated to improve our chances of capturing and radio-marking our target number of LTDU in FY17. Specifically, we will:

- (1) increase the amount of time spent on or near Lake Michigan during fall to document daytime LTDU distribution and abundance, determine flight patterns, and locate nighttime distributions of LTDUs to inform capture sessions;
- (2) incorporate aerial reconnaissance to determine daytime and nighttime LTDU flock locations in multiple locations around Lake Michigan. Thermal imaging proved useful in locating nighttime LTDU concentrations during our April 2016 capture effort, and 2015 flights provided insight for the pilot study in Spring 2015;
- (3) expand capture efforts into Michigan waters of Lake Michigan and also expand the network of volunteer observers to document LTDU numbers in secondary study areas;

(4) radio-mark a sample of “Judas” birds (5), likely males, to help document and understand daily movement patterns of LTDUs and locate nighttime concentrations. This is a plausible option, given that there are typically ample opportunities to capture males, and there exists a ready source of PTTs nearing their lifespan; and

(5) continue to identify opportunities for LTDU capture via mist-netting technique. Night-lighting has been more effective for us given the conditions usually faced on Lake Michigan. However, mist-netting is another tool that we will pursue once adequate concentrations are located and weather conditions are suitable.

**Project Status:**

We were unsuccessful in capturing and radio-marking 20 adult female LTDUs during the 2015/16 capture period but received support to conduct the study in 2016/17. We feel confident that we can mitigate the capture issues from the 2015/16 capture effort, and obtain the target of radio-marking 20 adult female LTDUs. Additional funding sources (i.e., grants and scholarships) will also be sought to supplement project funds and increase the aerial reconnaissance effort.

Other components of the project (i.e., food habits and harvest characteristics) are also being developed. A hunter harvest survey was produced (accepted by the SIU Human Subjects committee on 22 December 2015) that will be distributed during fall 2016 to document sea duck harvest on Lake Michigan. Food habitats will be assessed from LTDUs harvested during the 2015 and 2016 hunting seasons. Fecal DNA from LTDUs captured in 2015 is being assayed to determine if DNA techniques can be utilized as a method to determine diet in LTDUs. We plan to compare the results of the esophageal and DNA techniques.

We plan to capture and radio-mark 19 adult female LTDUs, and up to 5 males to act as “Judas” birds, during October 2016 through April 2017. Hunter surveys and carcass collection will occur from October through December 2016.

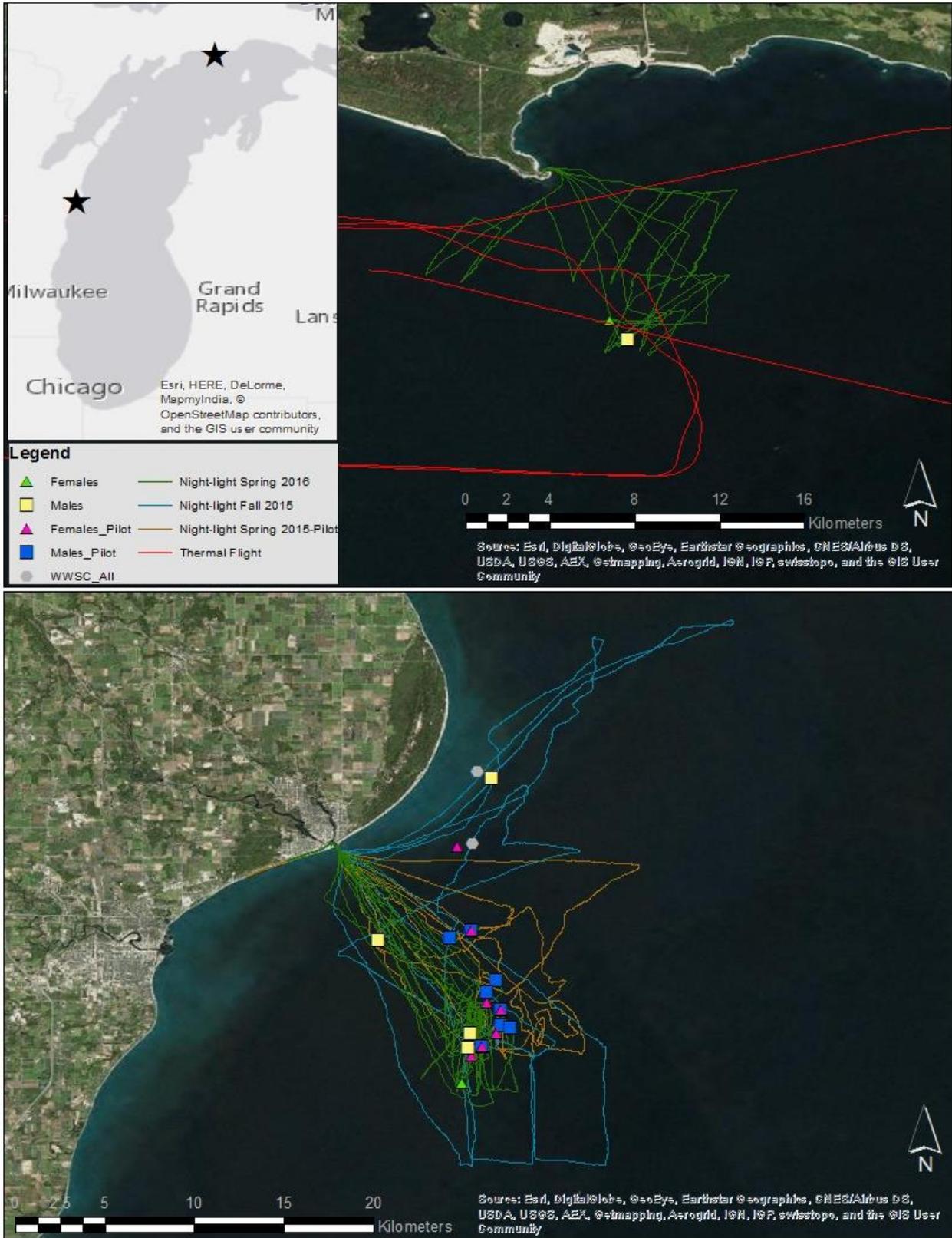


Figure 1. Maps of two Lake Michigan study areas, depicting capture locations of all LTDUs (pilot and current study), with night-lighting tracks, and route of thermal flight.

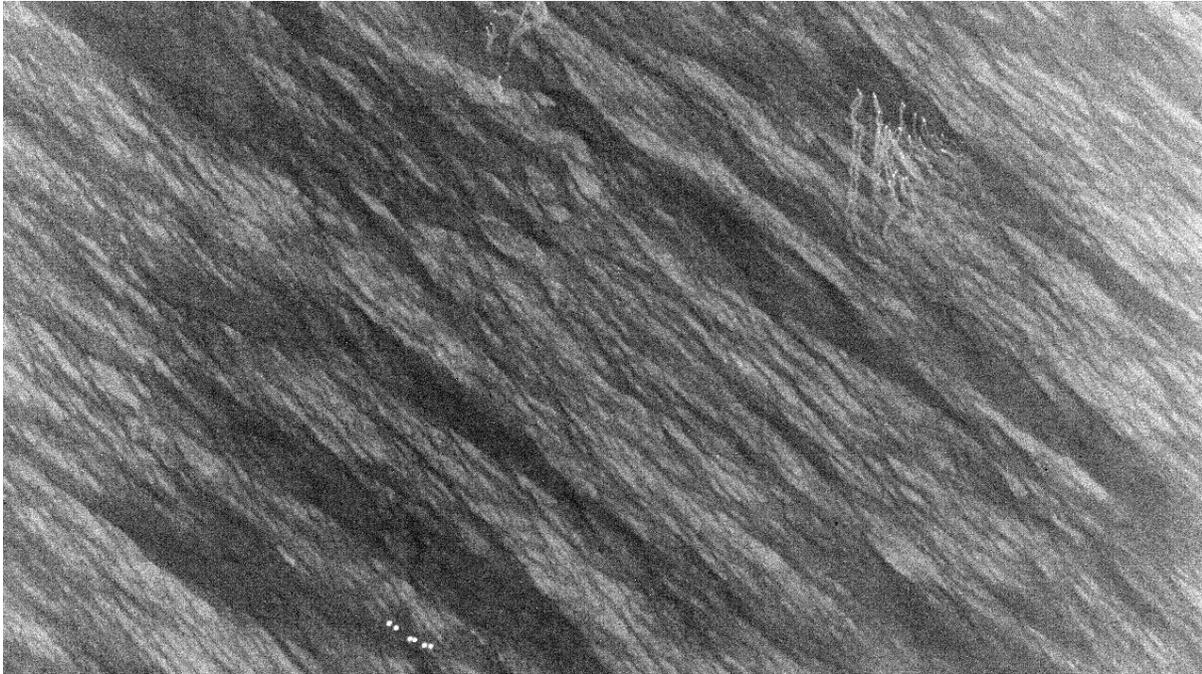


Figure 2. Thermal image depicting waterbirds in flight (lower middle) and birds on the water (upper right), Lake Michigan, spring 2016.

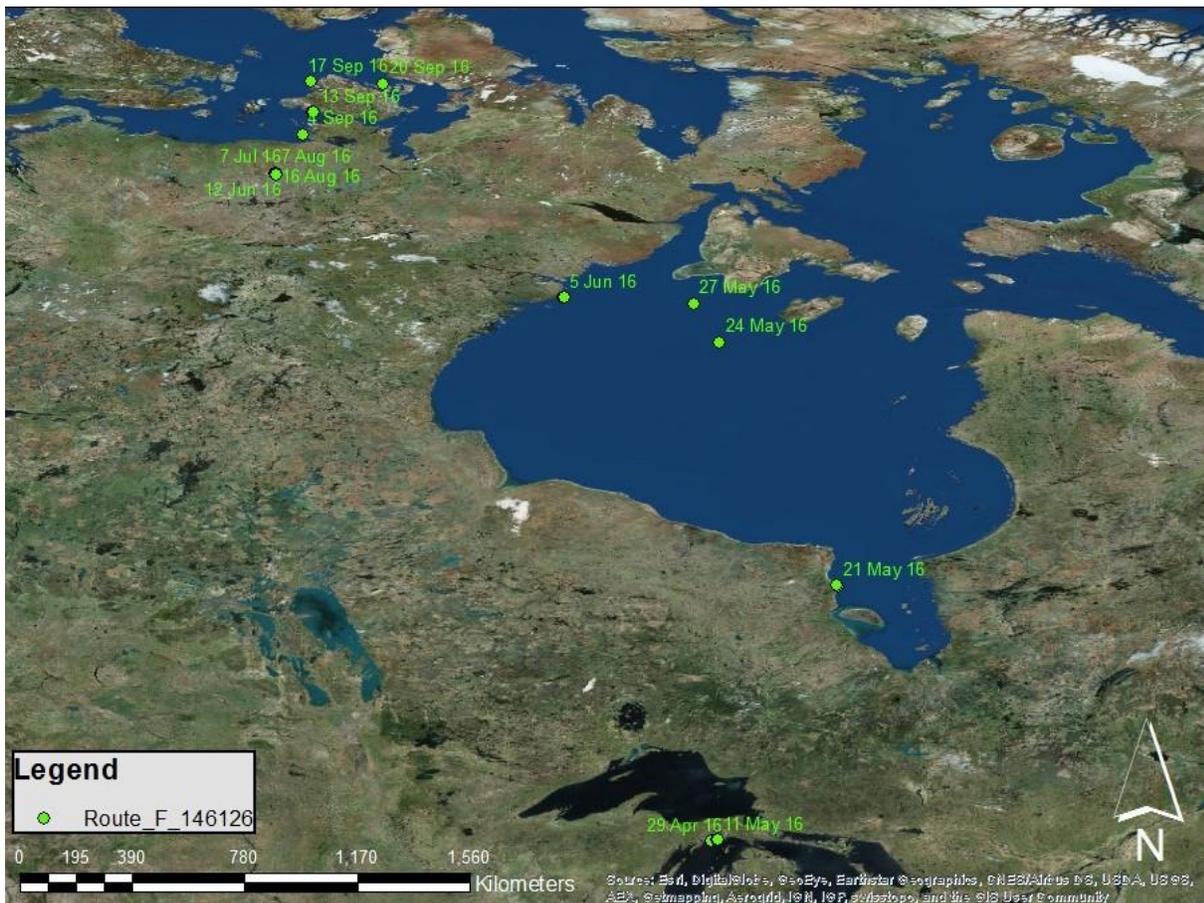


Figure 3. Movements of female long-tailed duck PTT No. 146126 from Lake Michigan to breeding grounds.