Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy

Summary of Winter 2017-2018 Digital Survey #7

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APEM

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Overview

The second winter survey for the NYSERDA Offshore planning area (OPA) was started on the 18th of February and completed 1st March 2018. These surveys are designed to characterize the usage of the area by marine fauna to aid in the planning for offshore wind. The survey was undertaken by one APEM camera technician using the Shearwater 3 camera system, with an image resolution of 1.5cms. A Piper Aztec twin engine aircraft was used at the planned flight height of 1,360 ft. The survey team was based out of MacArthur Airport in Long Island, NY for the duration of the survey.

Methods

Transect Orientation

The same flight plan was used for the Winter 2017-2018 survey as used in the Fall 2017 survey and detailed in the Winter 2018 Flight plan (confidential document to NYSERDA) in which the nearshore area is surveyed along transects parallel to the shoreline and the offshore area is surveyed along transects perpendicular to the shoreline (Figure 1). Because there are a number of local airfields on Long Island, FAA imposes varying altitude restrictions that survey aircraft must obey. These are designated according to distance from the airfield. Flights parallel to the shoreline within the restricted zone ensure that the survey aircraft can maintain constant altitude over a complete transect, thus ensuring consistency in image resolution and areal coverage along transect.

FAA controlled altitude restrictions cease to be an issue several miles offshore. At this point transects were orientated perpendicular to the shoreline and consequently to the bathymetry, providing optimal orientation for expected clines in the distribution of target species (Figure 1).

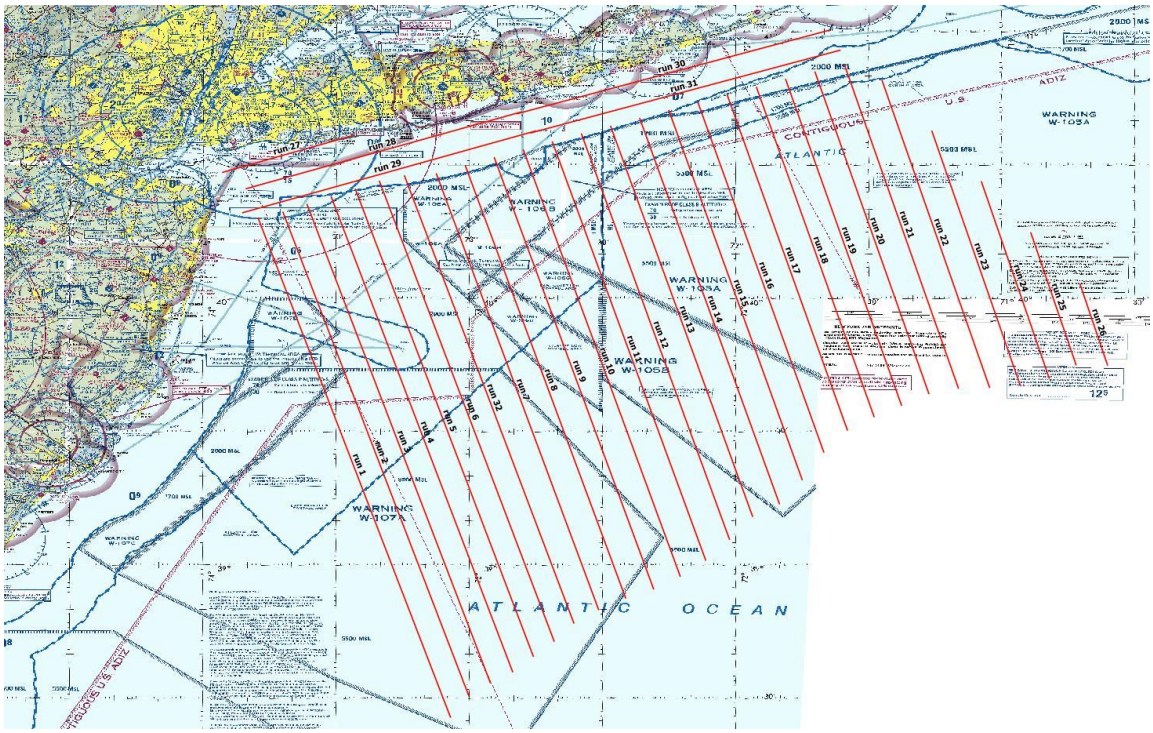

Figure 1. Transect lines flown for the OPA including nearshore and offshore areas

Daily Schedule

The survey was undertaken by one camera technician and pilot each day. The survey crew generally began surveying around 7 AM, depending on the weather the crew would either plan to conduct two short missions or one longer mission. Following each daily survey, sample imagery was evaluated to make sure it was of good quality for analysis. If data were deemed not high enough quality, the lines affected were re-flown. Data were backed up daily and prepared to be shipped for analysis.

Flight Altitude and GSD Resolution

The flight crew was able to gain permission to enter the controlled airspace close to the coast at the proposed flight altitude and therefore the whole survey was completed at a flight altitude of 1,360ft and resolution of 1.5cm GSD. The weather was generally poor throughout the survey period, with survey days interspersed with periods when it was not suitable to survey.

Timing

The following details the lines completed on each day where surveying took place

Date (2018)	Action
February 18th	4 lines of the OPA were flown
February 19th	4 lines of the OPA were flown
February 24th	4 lines of the OPA were flown
February 27th	10 lines of the OPA were flown

February 28th	8 lines of the OPA were flown
March 1st	1 line of the OPA was flown

Other dates not listed above were non-survey days due to weather or aircraft maintenance.

Results

There were approximately 400,000 images collected during the survey covering the OPA area, from which sufficient images will be extracted to achieve over 7% image capture coverage. Details on the footprint size and capture point of each image, along with the final coverage will be provided once data have been fully processed.