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

Summary of Fall 2018 Survey #10

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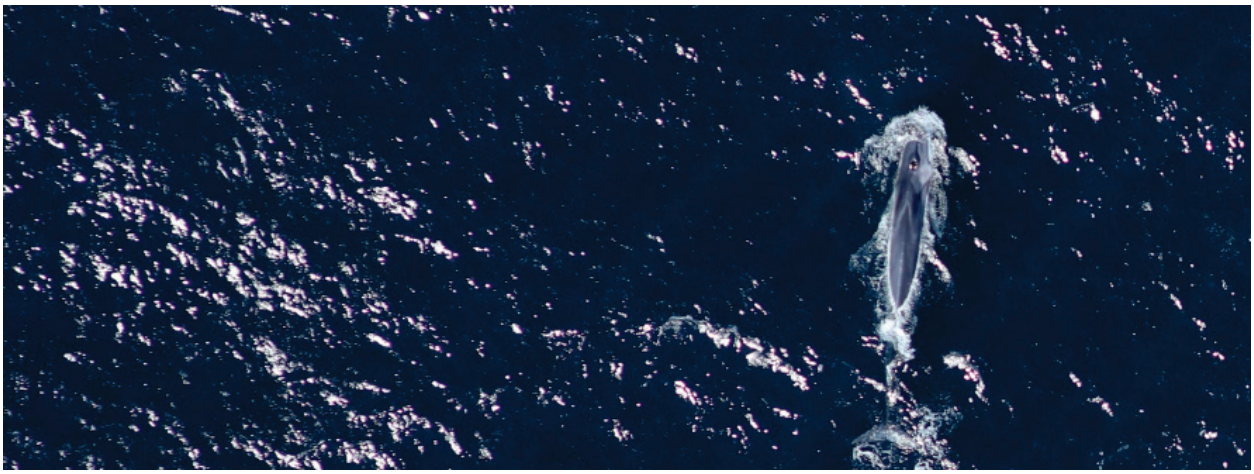

Overview

The third fall survey for the NYSERDA Offshore planning area (OPA) was started on the 12th of November. 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 an average flight height of 1,320 ft due to low level cloud. The survey team was based out of MacArthur Airport in Long Island, NY for the duration of the survey.

Methods

Transect Orientation

APEM utilized the same flight plan as used for the Spring 2018 survey as detailed in the Spring 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).

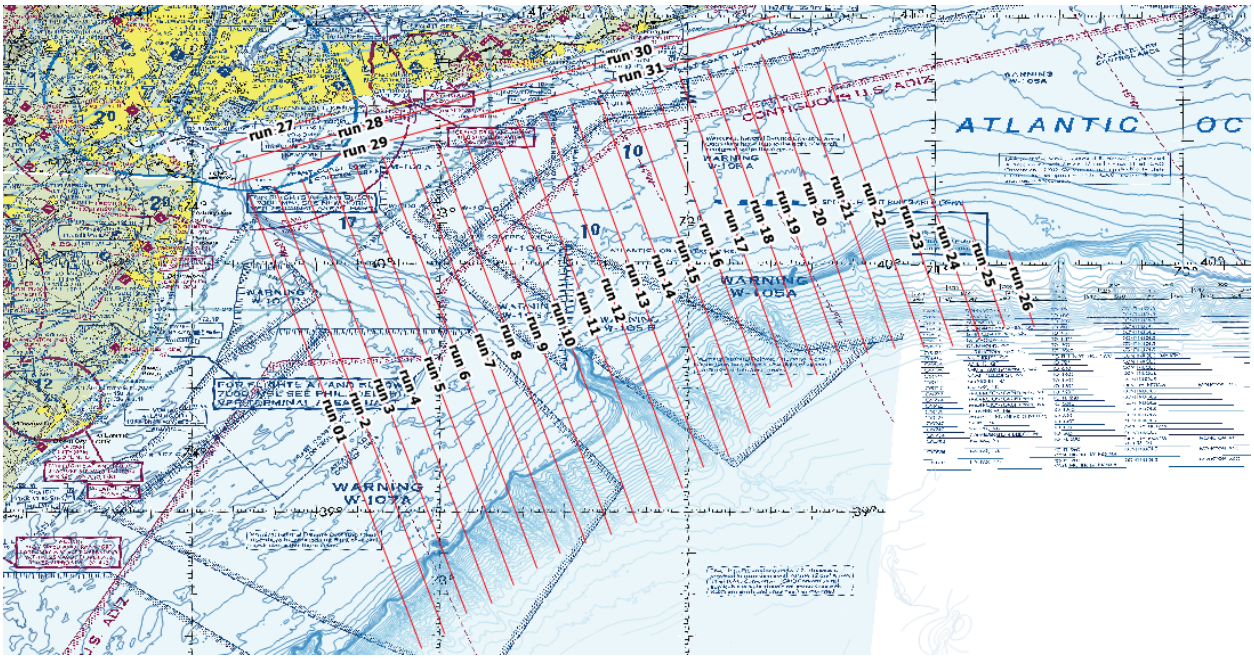

Figure 1. Transect lines flown for the OPA including nearshore and offshore areas

Daily Schedule

The survey was undertaken by one APEM 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, however due to low level cloud the altitude had to be adjusted during the survey and therefore the whole survey was completed at an average flight altitude of 1,320ft and an average resolution of 1.5cm GSD. The weather was generally poor throughout the survey period with long periods of low cloud cover, 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
November 11th	1 partial line of the OPA were flown
November 14th	2 lines of the OPA were flown
November 15th	2 lines of the OPA were flown
November 18th	2 lines of the OPA were flown
November 19th	2 lines of the OPA were flown

November 21st	2 lines and 2 partial lines of the OPA were flown
November 23rd	4 partial lines of the OPA were flown
November 30th	2 partial lines of the OPA were flown
December 1st	2 partial lines of the OPA were flown
December 3rd	6 partial lines of the OPA were flown
December 6th	6 lines of the OPA were flown
December 7th	9 lines of the OPA were 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 for the OPA. 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.