

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

Summary of Summer 2016 Digital Survey #1



NYSERDA



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Prepared for

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Overview

The first summer survey for the Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy has been completed for the New York Offshore Planning Area (OPA) and Wind Energy Area (WEA). Survey began on 26 July 2016 and finished 9 August 2016. The survey used the Shearwater II camera system at 1.5 cm GSD, and a Piper Aztec twin engine aircraft was used at the planned flight height of 1020 ft. The survey team was based out of MacArthur Airport in Long Island, NY for the duration of the survey.

Methods

Transect Orientation

Transects were flown according to Option 2 presented in the Summer 2016 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. This flight plan was adapted during the course of the survey to split the near shore area into a west and east area to aid in data collection.

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).

The WEA was surveyed using the grid pattern depicted in Figure 2.

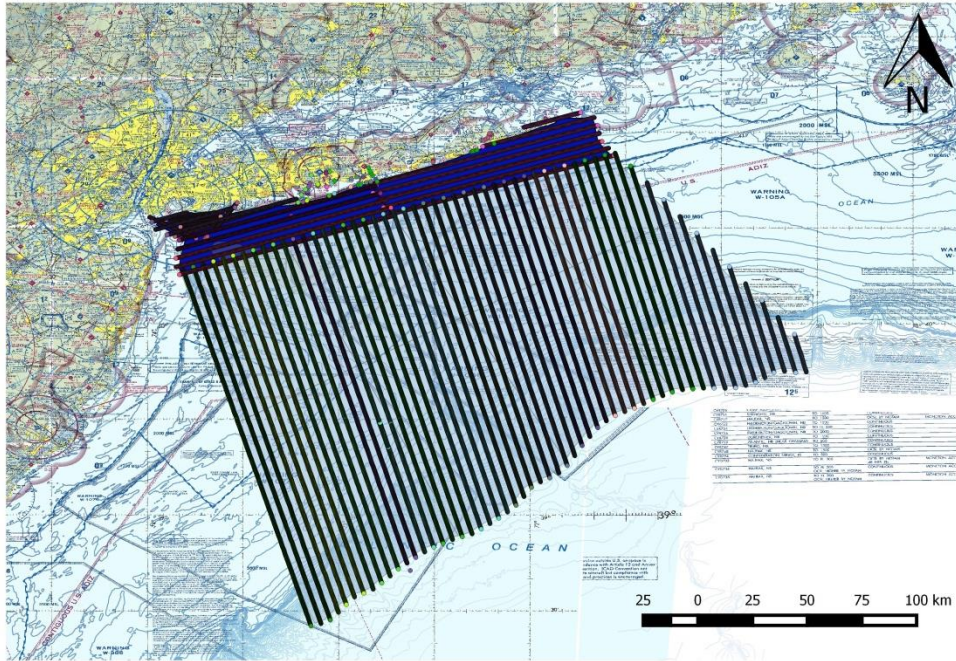


Figure 1: Flight plan used for the OPA.

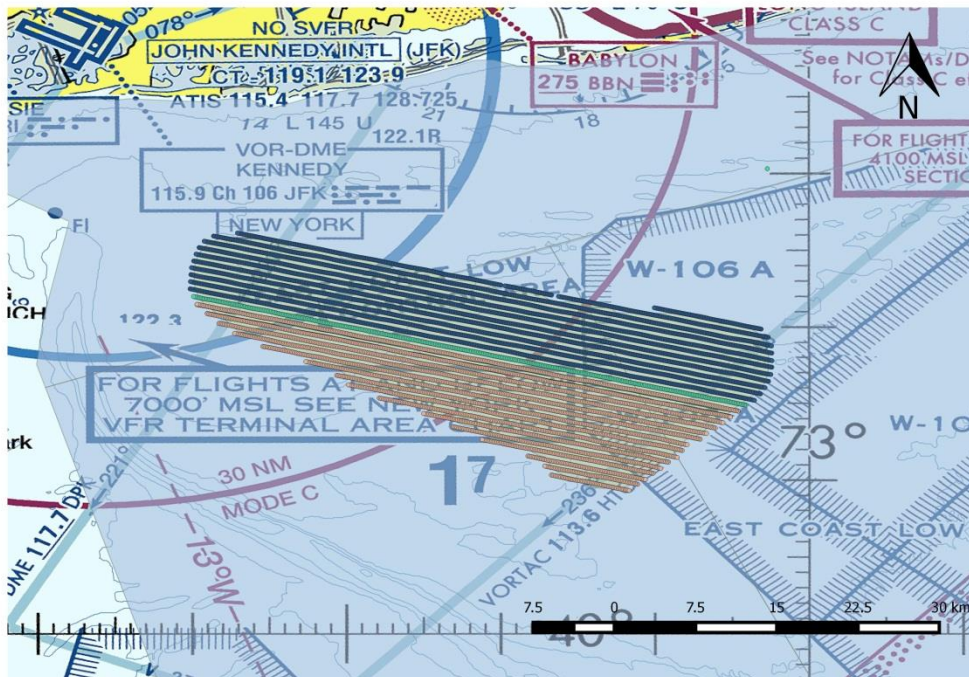


Figure 2: Flight plan used for the WEA.

Daily Schedule

The survey was undertaken by rotating two APEM camera technicians and pilot each day. The survey day was broken up into morning and afternoon. The survey crew generally began surveying around 7 AM and would break by noon and then would begin again mid-afternoon around 3 PM and finish by 7 PM. This gave the survey crew a break but also avoided the mid-day when glare/glint was most prevalent. Following each daily survey, sample imagery was evaluated to make sure it was of good quality for analysis. Data was backed up daily and prepared to be shipped for analysis.

Flight Altitude and GSD Resolution

The flight crew was unable to gain permission to enter the controlled airspace close to the coast (e.g. JFK) at the proposed flight altitude. This area was surveyed at a lower altitude (>500 ft) at a higher resolution (~0.75 cm GSD) to ensure data collection could take place. Additional lines were required to maintain coverage. The weather was generally good throughout the survey period. All other survey lines were completed at 1020 ft. and a resolution of 1.5 cm GSD.

Timing

The following breaks out what was completed on each day.

- July 26th, 2016 – 4 lines of the near shore east area were flown
- July 27th, 2016 – 3 lines of the near shore east and 4 lines of the near shore west areas, and 11 lines of the WEA were flown
- July 28th, 2016 – 16 lines of the WEA were flown completing the WEA survey
- July 29th, 2016 – 2 lines of the near shore west and 1 line of the OPA were flown, survey was called off due to weather conditions
- July 30th, 2016 – 2 lines of the OPA were flown, survey was called off due to weather conditions
- July 31st, 2016 – No survey took place due to weather conditions
- August 1st, 2016 – 2 lines of the OPA were flown, survey was called off due to weather conditions
- August 2nd, 2016 – 8 lines of the OPA were flown
- August 3rd, 2016 – 8 lines of the OPA were flown
- August 4th, 2016 - 8 lines of the OPA were flown
- August 5th, 2016 - 4 lines of the OPA were flown, survey was called off due to weather conditions
- August 6th, 2016 - No survey took place due to weather conditions
- August 7th, 2016 – 8 lines of the OPA and 3 lines of the near shore west area were flown
- August 8th, 2016 - 8 lines of the OPA were flown
- August 9th, 2016 - 10 lines of the OPA, 3 lines of the near shore west area, and 3 lines inside the JFK airport restricted zone were flown.

Results

There were approximately 360,000 images collected during the survey covering both the OPA and WEA areas, which will achieve over 7% image capture coverage for the OPA and 20% for the WEA. 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.