



Environmental Imaging Solutions

**Year 2 Digital Aerial Wildlife Survey of BOEM Lease Area OCS-A
520**

Monthly Report (Year 2): September II 2021

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1. Executive Summary

- A digital aerial wildlife survey of the Bureau of Ocean Energy Management (BOEM) Lease Area Outer Continental Shelf – Atlantic (OCS-A) 0520, off the Massachusetts coast was conducted on September 20th, 2021 using APEM Inc.'s high-resolution camera system to capture digital still imagery.
- Images collected have been analyzed by APEM Inc. (hereafter referred to as APEM) and quality assured by Normandeau Associates (hereafter referred to as Normandeau). Raw counts of all species and incidental observations recorded during the second September 2021 survey are presented here.
- A total of 16 birds were recorded in the second September 2021 Survey Area. The most abundant group recorded was gulls (n=11), followed by shearwaters (n=3), and auks (n=1) and unclassified birds (n=1).
- A total of ten birds (62%) were recorded in flight during the survey. These consisted of herring gull (n=4), great black-backed gull (n=3), and great shearwater (=3). There were 6 birds (38%) recorded as sitting.
- Three marine mammals were recorded during the survey, consisting of common dolphin (n=3) only.
- Five sharks were recorded during the survey, consisting of unidentified shark species (n=2), tiger shark (n=1), blue shark (n=1), and white shark (n=1).
- Twenty-four large bony fish were recorded during the survey, consisting of ocean sunfish (n=19), unidentified tuna species (n=4), and unidentified sunfish species (n=1).
- No turtles or rays were recorded.
- No ESA-Listed (Federally or Massachusetts State Listed) species were recorded.

2. Introduction

APEM and Normandeau were contracted by Equinor Wind US to provide combined spring through fall digital aerial wildlife surveys of the Massachusetts Lease Area OCS-A 0520. This will comprise the second year of surveys following the initial Year 1 surveys undertaken from March 2020 to November 2021. Surveys will be carried out on a monthly basis from March 2021 through October 2021, except for April, May, August, and September, when two surveys per month shall be carried out in order to coincide with potential use of the area by roseate tern (*Sterna dougallii*).

The aims and objectives of the work are to assess the abundance and distribution of birds, marine mammals, sharks, rays, and turtles present in the Lease Area OCS-A 0520 over the course of the spring to fall period. The surveys will provide the baseline information required for conducting impact assessments and are consistent with the survey guidelines for providing avian, marine mammal, and sea turtle information for renewable energy development on the OCS (BOEM 2017 and 2019).

The Survey Area referred to herein is comprised of the Lease Area OCS-A 0520, plus a 2 km (c. 1 NM) buffer surrounding it with an approximately 4 km (c. 2 NM) buffer towards the northeast end.

Images were captured using a grid-based survey design with a 1.5 cm ground sampling distance (GSD). Images were analyzed by APEM and quality assurance was undertaken by Normandeau. This report describes the results of the second September 2021 survey.

3. Summary of Survey

The survey was undertaken on September 20th, 2021 from 18:27 to 20:55 (UTC). Data collected were 1.5 cm GSD digital still images using a GPS-linked bespoke flight management system to ensure the tracks were flown with a high degree of accuracy.

The digital aerial survey captured images along nine lines spaced approximately 1.9 km across-track and 0.5 km along-track between image nodes within the survey area (**Figure 1**). Coverage of images analyzed was calculated to be approximately 10% of the survey area.

On September 20th, 2021, the cloud cover was recorded as 0-20% (clear – scattered), visibility was greater than 10 km (6.2 miles), and no precipitation was recorded. Wind speed was recorded as 10 knots from a north-easterly direction. The outside air temperature at the survey altitude was recorded as 61-63°F. The sea state was 1 (calm [rippled]), and the water turbidity was 0 (clear). The survey was conducted at an altitude of approximately 1,360 ft at a speed of approximately 150 knots.

No health and safety issues were reported during the survey.

APEM analyzed the images to enumerate birds to species level, and to enumerate any other non-avian marine fauna. Normandeau provided quality assurance (QA) of the data to check for missed animals in 10% of images recorded as empty, and quality assured 20% of the bird species identification undertaken by APEM (and 100% of Listed species). Normandeau also identified 100% of the species of non-avian marine fauna including marine mammals, turtles, sharks, and rays. Birds and marine fauna identified from the images were 'snagged' (i.e., located within the images) and categorized to species when possible, otherwise to the species grouping.

Data reported are raw counts of animals that have not yet been subject to extrapolation for population estimates.

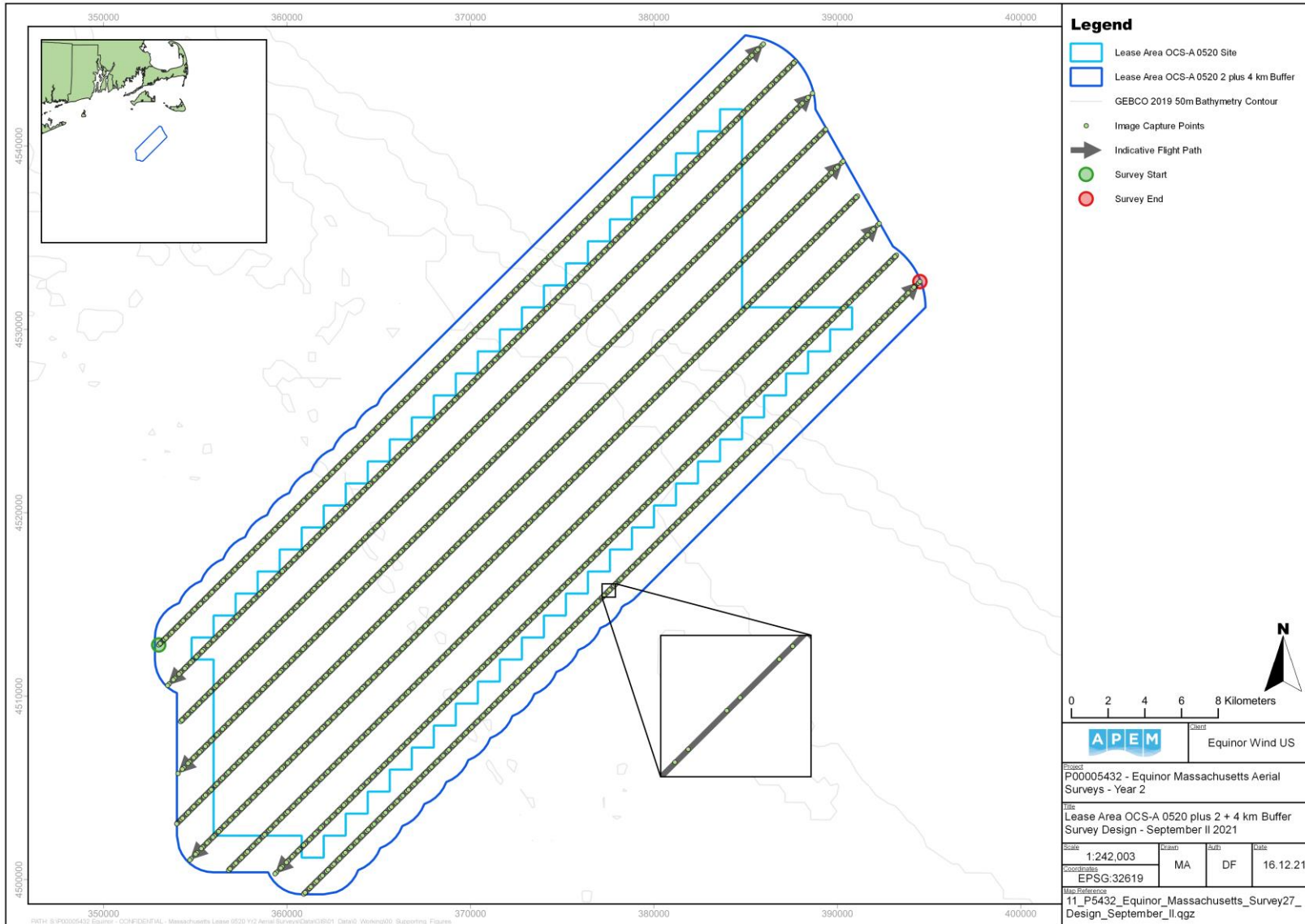


Figure 1 Survey design of Lease Area OCS-A 0520 plus 2 km / 4 km buffer

4. Abundance and Distribution

4.1 Species Abundance

The numbers of marine wildlife species recorded during the second September 2021 survey are presented in **Table 1** and **Table 2**. Species scientific names are provided in Appendix I. Example individuals recorded during the surveys are provided in Appendix II.

Table 1 Total number of individuals of birds recorded during the second September 2021 survey of the Lease Area OCS-A 0520 WEA plus 2 km / 4 km irregular buffer

| Group | Species | Flying | Sitting | Total |
|--------------------|---------------------------|-----------|----------|------------------|
| Gull | Great Black-backed Gull | 3 | 0 | 3 |
| | Herring Gull | 4 | 3 | 7 |
| | Large Gull species | 0 | 1 | 1 |
| Auk | Murre / Razorbill | 0 | 1 | 1 |
| Shearwater | Great Shearwater | 3 | 0 | 3 |
| Unclassified Bird | Unidentified Bird species | 0 | 1 | 1 |
| Total Birds | | 10 | 6 | <u>16</u> |

Table 2 Total number of individuals of marine megafauna recorded during the second September 2021 survey of the Lease Area OCS-A 0520 WEA plus 2 km / 4 km irregular buffer

| Group | Species | Submerged | Surfacing | Total |
|-------------------------------|-----------------|-----------|-----------|------------------|
| Marine Mammal | Common Dolphin | 2 | 1 | 3 |
| Large Bony Fish | Ocean Sunfish | 19 | 0 | 19 |
| | Sunfish species | 1 | 0 | 1 |
| | Tuna species | 4 | 0 | 4 |
| Shark | Tiger Shark | 1 | 0 | 1 |
| | Blue Shark | 1 | 0 | 1 |
| | White Shark | 1 | 0 | 1 |
| | Shark species | 2 | 0 | 2 |
| Total Marine Megafauna | | 31 | 1 | <u>32</u> |

4.2 Spatial Distribution

Figure 2 shows the location of all species recorded throughout the Survey Area.

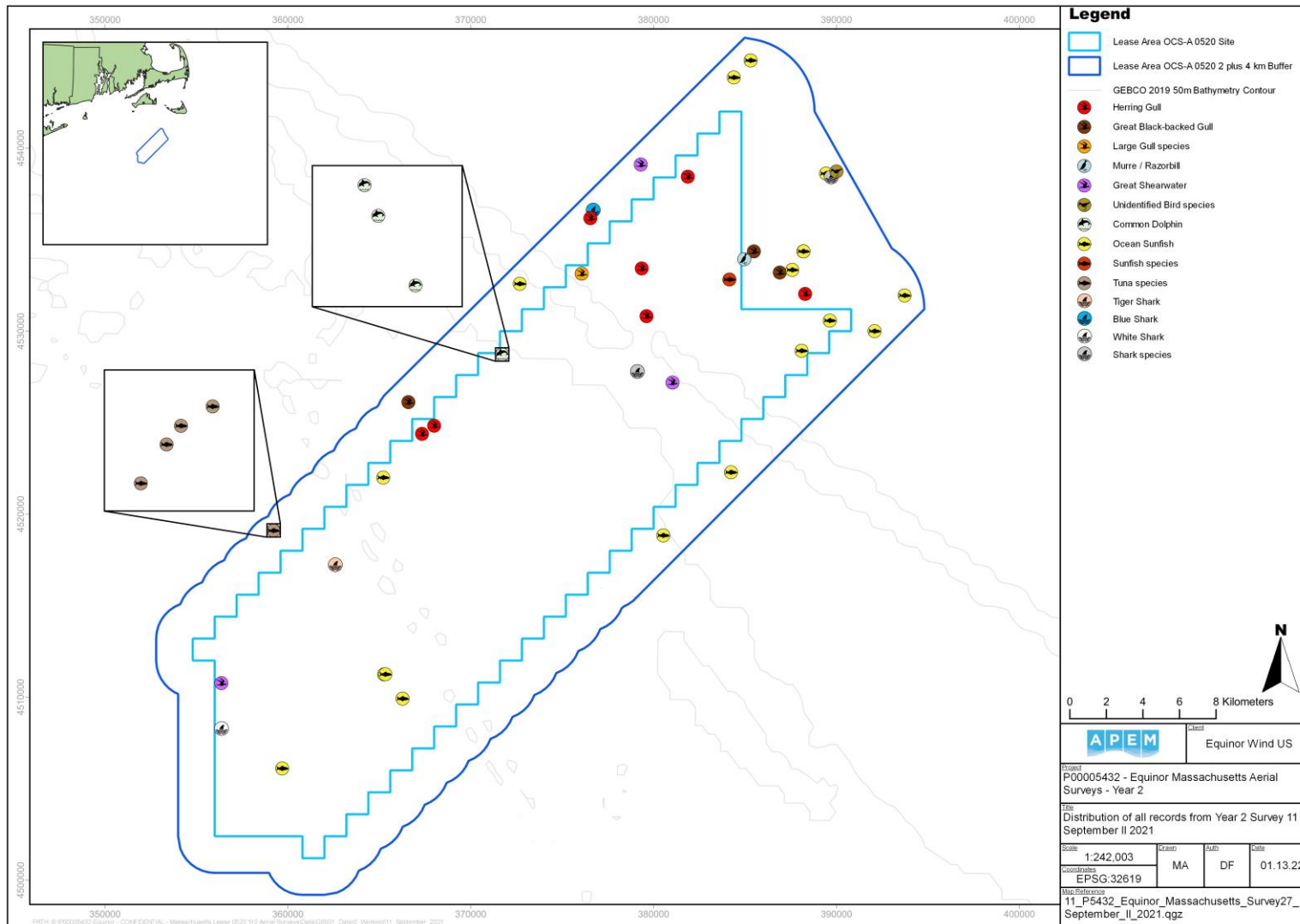


Figure 2 Distribution of all records from the second September 2021 survey of Lease Area OCS-A 0520 plus 2 km / 4 km irregular buffer

Note: Individuals may appear to overlap if they are in close proximity to each other.

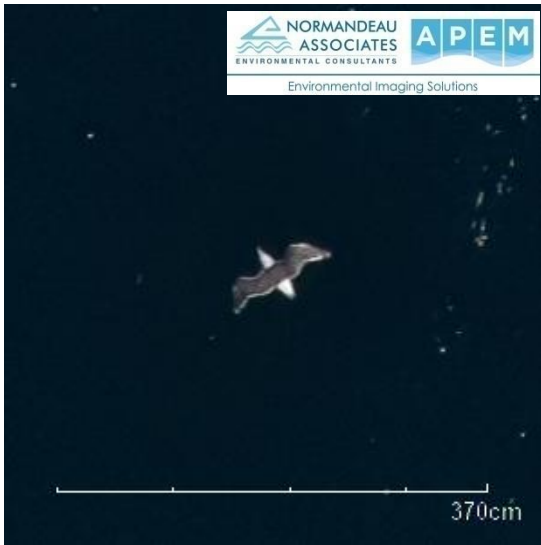
5. Shipping Observations

During the September 20th, 2021 survey, one vessel identified as a survey or supply vessel was recorded visually from the aircraft. No vessels were recorded in the imagery.

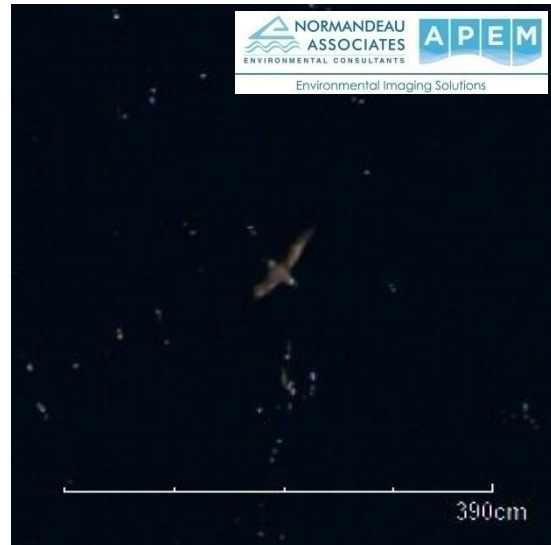
Appendix I Species List

| Common Name | Scientific Name | Family | Class |
|-------------------------|-------------------------------|----------------|----------------|
| Great Black-backed Gull | <i>Larus marinus</i> | Laridae | Aves |
| Herring Gull | <i>Larus argentatus</i> | Laridae | Aves |
| Common Murre | <i>Uria aalge</i> | Alcidae | Aves |
| Razorbill | <i>Alca torda</i> | Alcidae | Aves |
| Great Shearwater | <i>Ardenna gravis</i> | Procellariidae | Aves |
| Common Dolphin | <i>Delphinus delphis</i> | Delphinidae | Mammalia |
| Ocean Sunfish | <i>Mola mola</i> | Molidae | Actinopterygii |
| Tiger Shark | <i>Galeocerdo cuvier</i> | Carcharhinidae | Chondrichthyes |
| Blue Shark | <i>Prionace glauca</i> | Carcharhinidae | Chondrichthyes |
| White Shark | <i>Carcharodon carcharias</i> | Lamnidae | Chondrichthyes |

Appendix II Example 'Snags' from the Survey



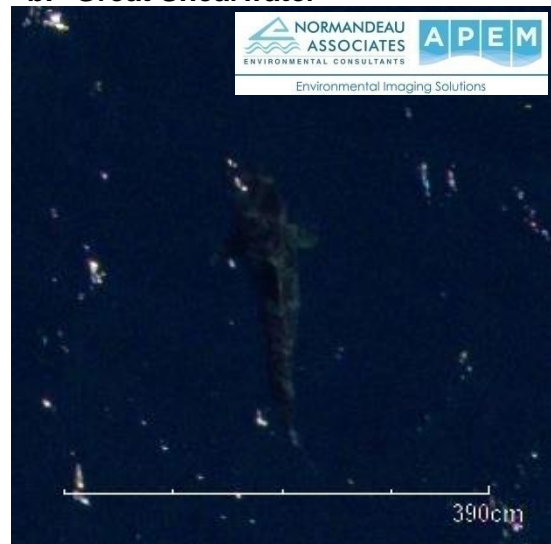
a. Great Black-backed Gull



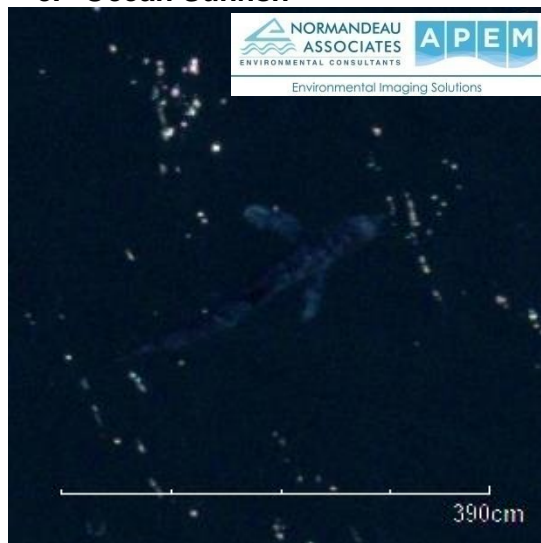
b. Great Shearwater



c. Ocean Sunfish



d. Tiger Shark



e. Blue Shark



f. White Shark