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Environmental Imaging Solutions

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

**Monthly Report (Year 2): May 1 2021**

**Equinor Wind US**

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## Contents

|   |   |
|---|---|
| <b>1. Executive Summary</b> .....                 | 1 |
| <b>2. Introduction</b> .....                      | 2 |
| <b>3. Summary of Survey</b> .....                 | 2 |
| <b>4. Abundance and Distribution</b> .....        | 4 |
| 4.1 Species Abundance .....                       | 4 |
| 4.2 Spatial Distribution .....                    | 5 |
| <b>5. Shipping Observations</b> .....             | 7 |
| Appendix I Species List .....                     | 8 |
| Appendix II Example 'Snags' from the Survey ..... | 9 |

## List of Figures

|   |   |
|---|---|
| <b>Figure 1 Survey design of Lease Area OCS-A 0520 plus 2 km / 4 km buffer</b> .....  | 3 |
| <b>Figure 2 Distribution of all records from the May I 2021 survey of Lease Area OCS-A 0520 plus 2 km / 4 km irregular buffer</b> ..... | 6 |

## List of Tables

|   |   |
|---|---|
| <b>Table 1 Total number of individuals of birds recorded during the May I 2021 survey of the Lease Area OCS-A 0520 WEA plus 2 km / 4 km irregular buffer</b> .....            | 4 |
| <b>Table 2 Total number of individuals of marine megafauna recorded during the May I 2021 survey of the Lease Area OCS-A 0520 WEA plus 2 km / 4 km irregular buffer</b> ..... | 5 |

## 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 May 9<sup>th</sup>, 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 May I 2021 survey are presented here.
- A total of 68 birds were recorded in the May I 2021 Survey Area. The most abundant group recorded was loons (n=34), followed by gulls (n=13), tern (n=13), fulmar (n=4) and auks (n=4).
- A total of 22 birds (32%) were recorded in flight during the survey. These consisted of 'commic' / Forster's tern (n=6), Roseate tern (n=4), northern fulmar (n=4), Sterna tern species (n=3), herring gull (n=2), great black-baked gull (n=1), red-throated loon (n=1) and common / thick-billed murre (n=1). There were 46 birds (68%) recorded as sitting.
- A total of five marine mammals were recorded, all recorded as marine mammal species (n=5).
- One fish species was recorded during the survey, this was recorded as fish species (n=1). No sharks, or rays were recorded.
- Four Roseate terns (n=4) were recorded during the May I survey.

## 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 May 1 2021 survey.

## 3. Summary of Survey

The survey was undertaken on May 9<sup>th</sup>, 2021 from 13:36 to 15:39 (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.

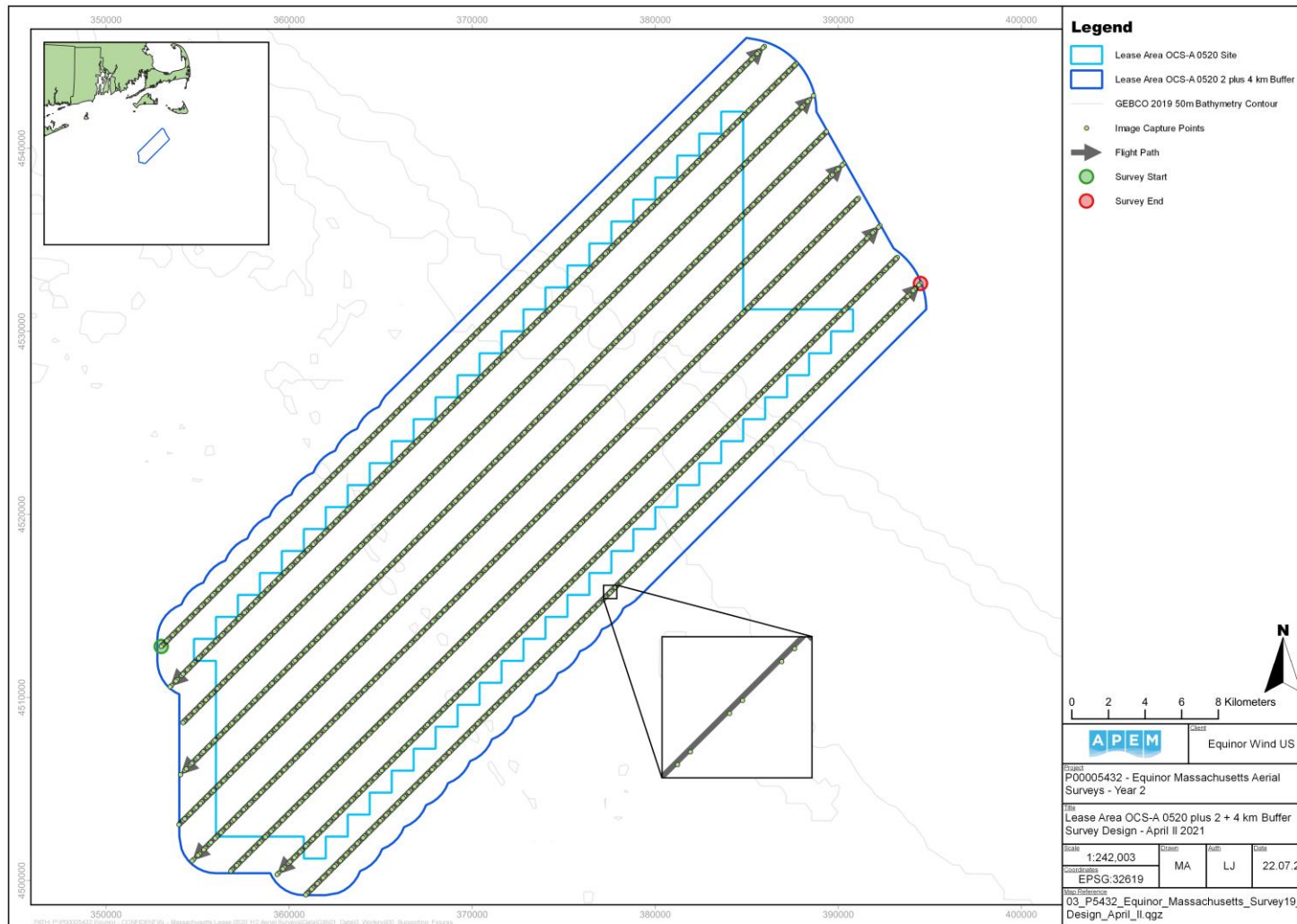
The digital aerial survey captured images along nine lines spaced approximately 1.9 km across-track and 0.5 km along-track between image nodes within the survey area (**Figure 1**). Coverage of images analyzed was calculated to be approximately 10% of the survey area.

On May 9<sup>th</sup>, 2021, the cloud cover was recorded as 5-40% (few to scattered), visibility was greater than 10 km (6.2 miles), and no precipitation was recorded. Wind speed was recorded as 15-20 knots from a south westerly to westerly direction. The outside air temperature at the survey altitude was recorded as 49-50°F. The sea state was 1-2 (calm / rippled - smooth), and the water turbidity was 1 (slightly turbid). 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 May I 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 May I 2021 survey of the Lease Area OCS-A 0520 WEA plus 2 km / 4 km irregular buffer**

| Group              | Species                                | Flying    | Sitting   | Total            |
|--------------------|--|-----------|-----------|------------------|
| Tern               | Roseate Tern                           | 4         | -         | <b>4</b>         |
|                    | 'Commic' / Forster's Tern <sup>1</sup> | 6         | -         | <b>6</b>         |
|                    | Sterna Tern species <sup>2</sup>       | 3         | -         | <b>3</b>         |
| Loon               | Red-throated Loon                      | 1         | 33        | <b>34</b>        |
| Gull               | Great Black-backed Gull                | 1         | 3         | <b>4</b>         |
|                    | Herring Gull                           | 2         | 6         | <b>8</b>         |
|                    | Small Gull species                     | -         | 1         | <b>1</b>         |
| Auk                | Common / Thick-billed Murre            | 1         | 3         | <b>4</b>         |
| Fulmar             | Northern Fulmar                        | 4         | -         | <b>4</b>         |
| <b>Total Birds</b> |  | <b>22</b> | <b>46</b> | <b><u>68</u></b> |

<sup>1</sup>Common tern / Artic tern (Sterna hirundo / Sterna paradisaea)

<sup>2</sup> Common tern / Artic tern / Roseate tern / Forster's tern (Sterna hirundo / Sterna paradisaea / Sterna dougallii / Sterna forsteri)

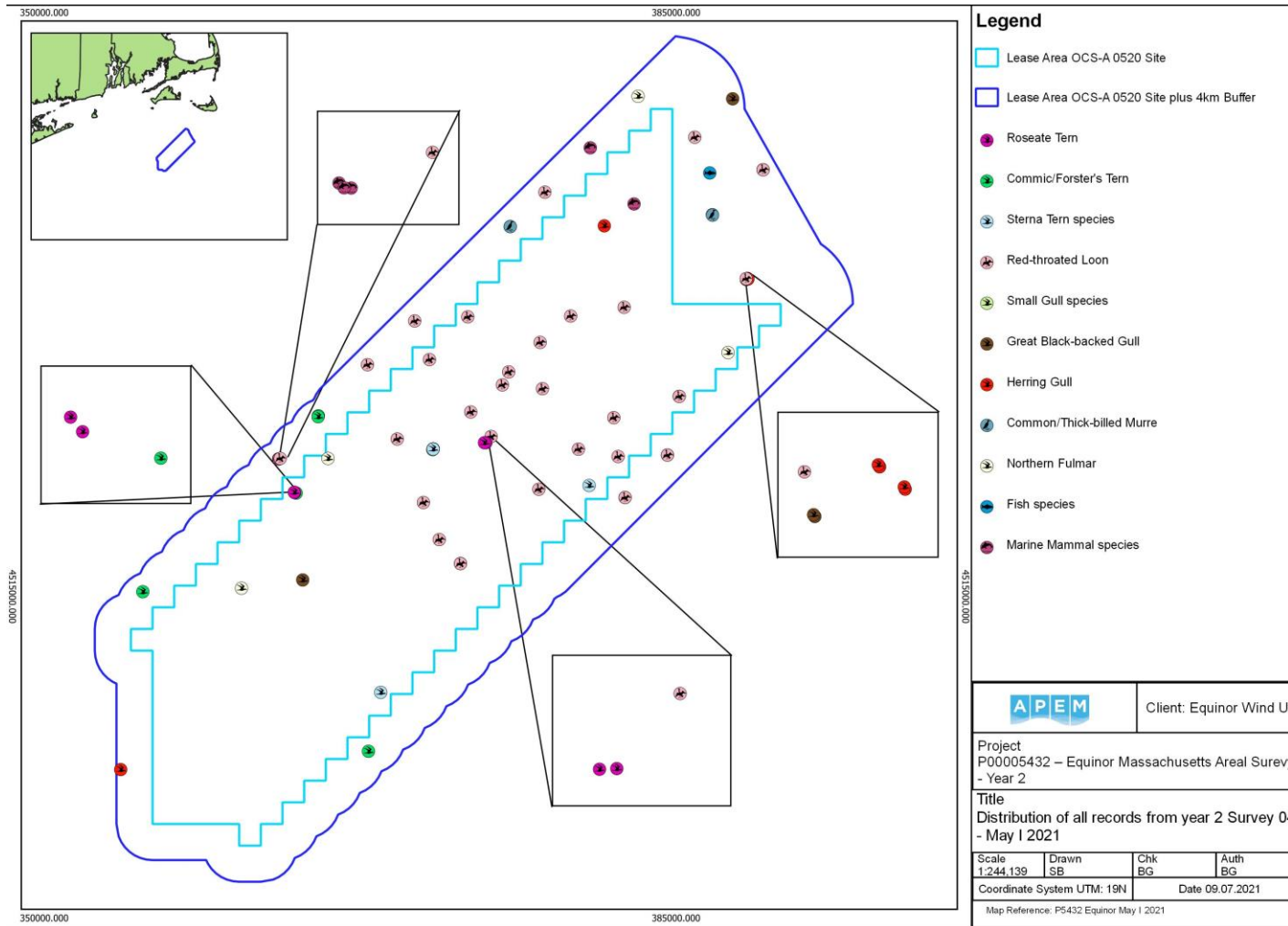


**Table 2 Total number of individuals of marine megafauna recorded during the May I 2021 survey of the Lease Area OCS-A 0520 WEA plus 2 km / 4 km irregular buffer**

| Group         | Species               | Submerged | Surfacing | Total    |
|---------------|-----------------------|-----------|-----------|----------|
| Marine Mammal | Marine Mammal species | 4         | 1         | 5        |
| Fish          | Fish species          | 1         | -         | 1        |
| <b>Total</b>  |                       | <b>5</b>  | <b>1</b>  | <b>6</b> |

## 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 May 1 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.

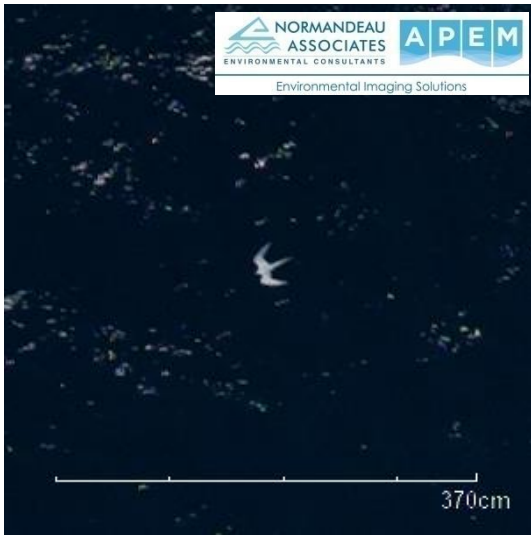
## 5. Shipping Observations

During the May 9<sup>th</sup>, 2021 survey, no vessels were recorded visually from the aircraft or in the imagery.

## Appendix I Species List

| Common Name             | Scientific Name            | Family         | Class |
|-------------------------|----------------------------|----------------|-------|
| Roseate Tern            | <i>Sterna dougallii</i>    | Laridae        | Aves  |
| Common Tern             | <i>Sterna hirundo</i>      | Laridae        | Aves  |
| Arctic Tern             | <i>Sterna paradisaea</i>   | Laridae        | Aves  |
| Red-throated Loon       | <i>Gavia stellata</i>      | Gaviidae       | Aves  |
| Great Black-backed Gull | <i>Larus marinus</i>       | Laridae        | Aves  |
| Herring Gull            | <i>Larus smithsonianus</i> | Laridae        | Aves  |
| Thick-billed Murre      | <i>Uria lomvia</i>         | Alcidae        | Aves  |
| Common Murre            | <i>Uria aalge</i>          | Alcidae        | Aves  |
| Northern Fulmar         | <i>Fulmarus glacialis</i>  | Procellariidae | Aves  |

## Appendix II Example 'Snags' from the Survey



**a. Roseate Tern**



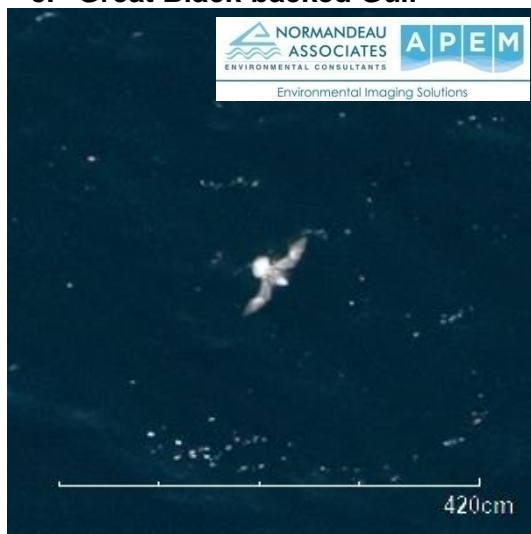
**b. Red-throated Loon**



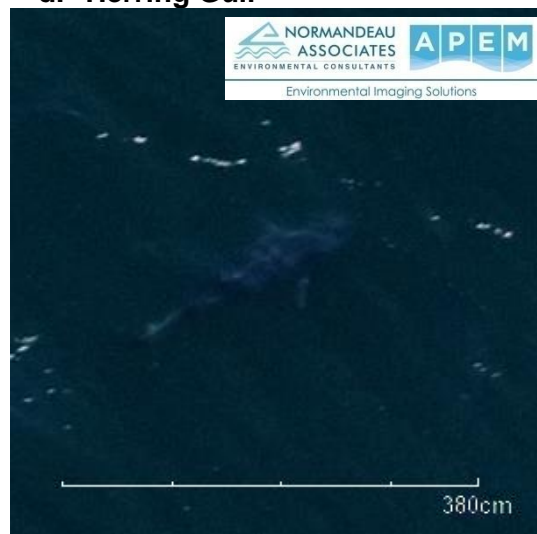
**c. Great Black-backed Gull**



**d. Herring Gull**



**e. Northern Fulmar**



**f. Fish Species**