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Environmental Imaging Solutions

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

**Monthly Report (Year 2): April I 2021**

**Equinor Wind US**

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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 April 2<sup>nd</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 April I 2021 survey are presented here.
- A total of 572 birds were recorded in the April I 2021 Survey Area. The most abundant group recorded was auks (n=313), followed by waterfowl (n=172), loons (n=42), gulls (n=36), and gannets (n=9).
- A total of 70 birds (12%) were recorded in flight during the survey. These consisted of razorbill (n=18), red-throated loon (n=13), Bonaparte's gull (n=12), northern gannet (n=7), long-tailed duck (n=5), herring gull (n=5), great black-backed gull (n=3), unidentified small gull species (n=2), murre / razorbill (n=2), unidentified auk species (n=2), and common / thick-billed murre (n=1). There were 502 birds (88%) recorded as sitting.
- A total of two marine mammals were recorded, consisting of unidentified seal species (n=2).
- No turtles, large bony fish, sharks, or rays were recorded.
- No Listed species were recorded (Federally or Massachusetts State Listed as Threatened or Endangered).

## 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 April I 2021 survey.

## 3. Summary of Survey

The survey was undertaken on April 2<sup>nd</sup>, 2021 from 12:39 to 14:39 (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 April 2<sup>nd</sup>, 2021, the cloud cover was recorded as 20-50% (scattered), visibility was greater than 10 km (6.2 miles), and no precipitation was recorded. Wind speed was recorded as 15 knots from a northerly direction. The outside air temperature at the survey altitude was recorded as 29-31°F. The sea state was 1 (calm / rippled), and the water turbidity was 2 (moderately turbid). The survey was conducted at an altitude of approximately 1,350 ft at a speed of approximately 120 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.

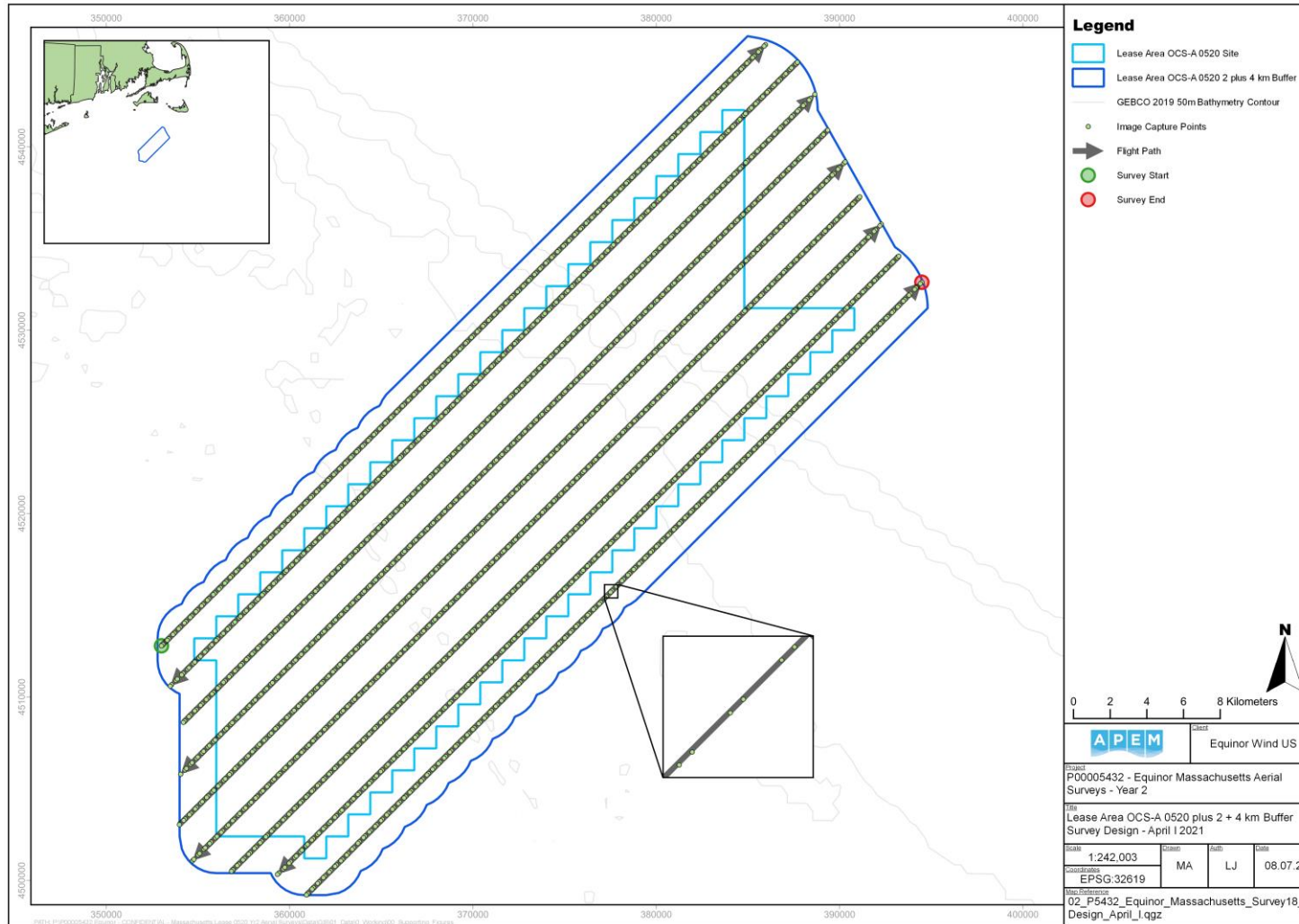


Figure 1 Survey design of Lease Area OCS-A 0520 plus 2 km / 4 km buffer

## 4. Abundance and Distribution

### 4.1 Species Abundance

The numbers of marine wildlife species recorded during the April 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 April I 2021 survey of the Lease Area OCS-A 0520 WEA plus 2 km / 4 km irregular buffer**

Group	Species	Flying	Sitting	Total
Waterfowl	Long-tailed Duck	5	158	<b>163</b>
	Scoter species	0	9	<b>9</b>
Loon	Red-throated Loon	13	29	<b>42</b>
Gannet	Northern Gannet	7	2	<b>9</b>
Gull	Bonaparte's Gull	12	0	<b>12</b>
	Small Gull species	2	1	<b>3</b>
	Great Black-backed Gull	3	5	<b>8</b>
	Herring Gull	5	4	<b>9</b>
	Lesser Black-backed Gull	0	1	<b>1</b>
	Large Gull species	0	3	<b>3</b>
Auk	Common / Thick-billed Murre	1	5	<b>6</b>
	Razorbill	18	71	<b>89</b>
	Murre / Razorbill	2	154	<b>156</b>
	Atlantic Puffin	0	42	<b>42</b>
	Auk species	2	18	<b>20</b>
<b>Total Birds</b>		<b>70</b>	<b>502</b>	<b><u>572</u></b>

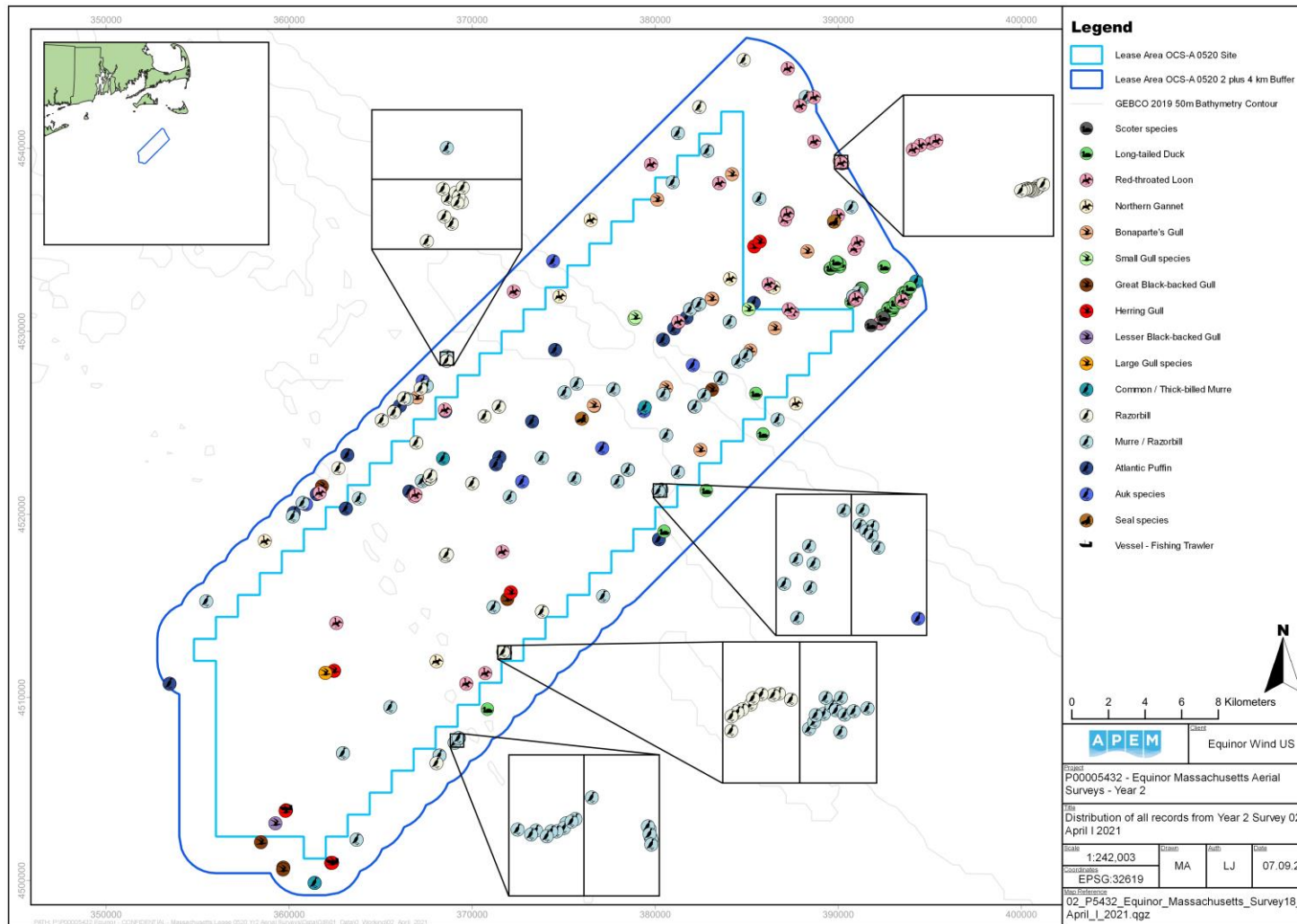
**Table 2 Total number of individuals of marine mammals recorded during the April I 2021 survey of the Lease Area OCS-A 0520 WEA plus 2 km / 4 km irregular buffer**

Group	Species	Submerged	Surfacing	Total
Marine Mammal	Seal species	2	0	<b>2</b>
<b>Total</b>		<b>2</b>	<b>0</b>	<b><u>2</u></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 April I 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 April 2<sup>nd</sup>, 2021 survey, two vessels were recorded in the imagery, both identified as commercial trawlers. Three vessels were observed visually from the aircraft, identified as a survey vessel and two fishing vessels.

## Appendix I Species List

Common Name	Scientific Name	Family	Class
Long-tailed Duck	<i>Clangula hyemalis</i>	Anatidae	Aves
Red-throated Loon	<i>Gavia stellata</i>	Gaviidae	Aves
Northern Gannet	<i>Morus bassanus</i>	Sulidae	Aves
Bonaparte's Gull	<i>Chroicocephalus philadelphia</i>	Laridae	Aves
Great Black-backed Gull	<i>Larus marinus</i>	Laridae	Aves
Herring Gull	<i>Larus smithsonianus</i>	Laridae	Aves
Lesser Black-backed Gull	<i>Larus fuscus</i>	Laridae	Aves
Thick-billed Murre	<i>Uria lomvia</i>	Alcidae	Aves
Common Murre	<i>Uria aalge</i>	Alcidae	Aves
Razorbill	<i>Alca torda</i>	Alcidae	Aves
Atlantic Puffin	<i>Fratercula arctica</i>	Alcidae	Aves

## Appendix II Example 'Snags' from the Survey



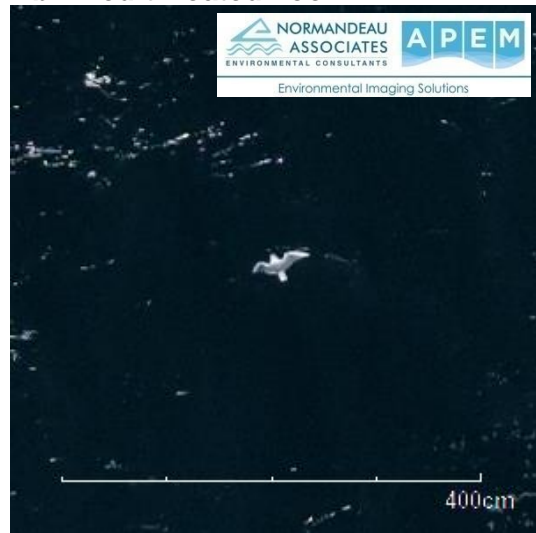
**a. Long-tailed Ducks**



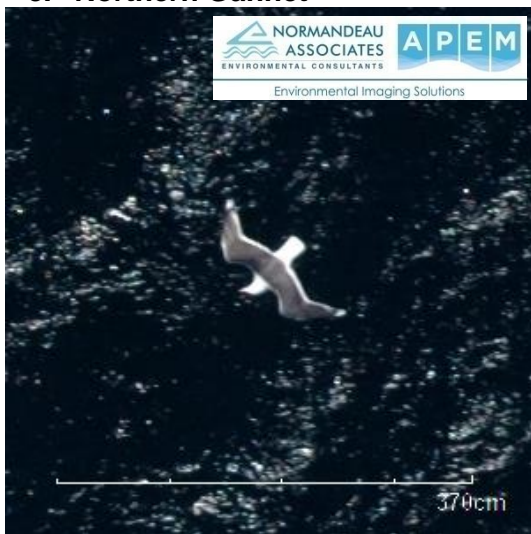
**b. Red-throated Loon**



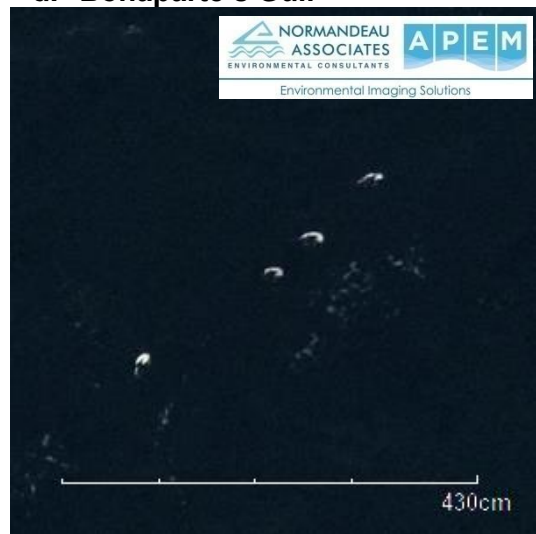
**c. Northern Gannet**



**d. Bonaparte's Gull**



**e. Great Black-backed Gull**



**f. Razorbills**