



Environmental Imaging Solutions

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

Monthly Report (Year 2): April II 2021

Equinor Wind US

APEM Ref: P00005432

Issued July 2021

Matthew Arundale, Simon Warford, Julia Robinson-Willmott, and Laura Jervis

Client: Scott Lundin

Address: Equinor Wind US
1 Lincoln Street
Boston
Massachusetts
02111

Project reference: P00005432

Date of issue: July 2021

Project Director: Gillian Sutherland

Project Manager: Laura Jervis

Key Contributors: Matthew Arundale, Simon Warford, Julia Robinson-Willmott
(Normandeau Associates)

APEM, Inc.
2603 NW 13th Street
#402
Gainesville
Florida
FL 32609

Tel: (352) 559-9155

Document number of the corporation: P15000019267

Revision and Amendment Register

| Version Number | Date | Section(s) | Page(s) | Summary of Changes | Approved by |
|----------------|------------|------------|---------|--------------------|-------------|
| 1.0 | 07/22/2021 | All | All | Creation | MA |
| 1.1 | 07/27/2021 | All | All | Internal Review | LJ |
| | | | | | |

Contents

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

List of Figures

| | |
|--|---|
| Figure 1 Survey design of Lease Area OCS-A 0520 plus 2 km / 4 km buffer | 3 |
| Figure 2 Distribution of all records from the April II 2021 survey of Lease Area OCS-A 0520 plus 2 km / 4 km irregular buffer | 6 |

List of Tables

| | |
|--|---|
| Table 1 Total number of individuals of birds recorded during the April II 2021 survey of the Lease Area OCS-A 0520 WEA plus 2 km / 4 km irregular buffer | 4 |
| Table 2 Total number of individuals of marine mammals recorded during the April II 2021 survey of the Lease Area OCS-A 0520 WEA plus 2 km / 4 km irregular buffer | 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 April 18th, 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 II 2021 survey are presented here.
- A total of 271 birds were recorded in the April II 2021 Survey Area. The most abundant group recorded was auks (n=201), followed by gulls (n=26), loons (n=22), waterfowl (n=12), and shearwaters (n=5) and gannets (n=5).
- A total of 28 birds (10%) were recorded in flight during the survey. These consisted of red-throated loon (n=8), northern gannet (n=5), herring gull (n=5), great black-backed gull (n=4), unidentified shearwater species (n=3), white-winged scoter (n=2), and laughing gull (n=1). There were 243 birds (90%) recorded as sitting.
- A total of ten marine mammals were recorded, consisting of harbor porpoise (n=7), common minke whale (n=1), unidentified whale species (n=1), and unidentified dolphin species (n=1).
- 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 II 2021 survey.

3. Summary of Survey

The survey was undertaken on April 18th, 2021 from 13:36 to 15:33 (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 18th, 2021, the cloud cover was recorded as 10-40% (few to scattered), visibility was greater than 10 km (6.2 miles), and no precipitation was recorded. Wind speed was recorded as 10 knots from a westerly direction. The outside air temperature at the survey altitude was recorded as 43-46°F. The sea state was 1 (calm / rippled), and the water turbidity was 0 (clear). The survey was conducted at an altitude of approximately 1,350 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.

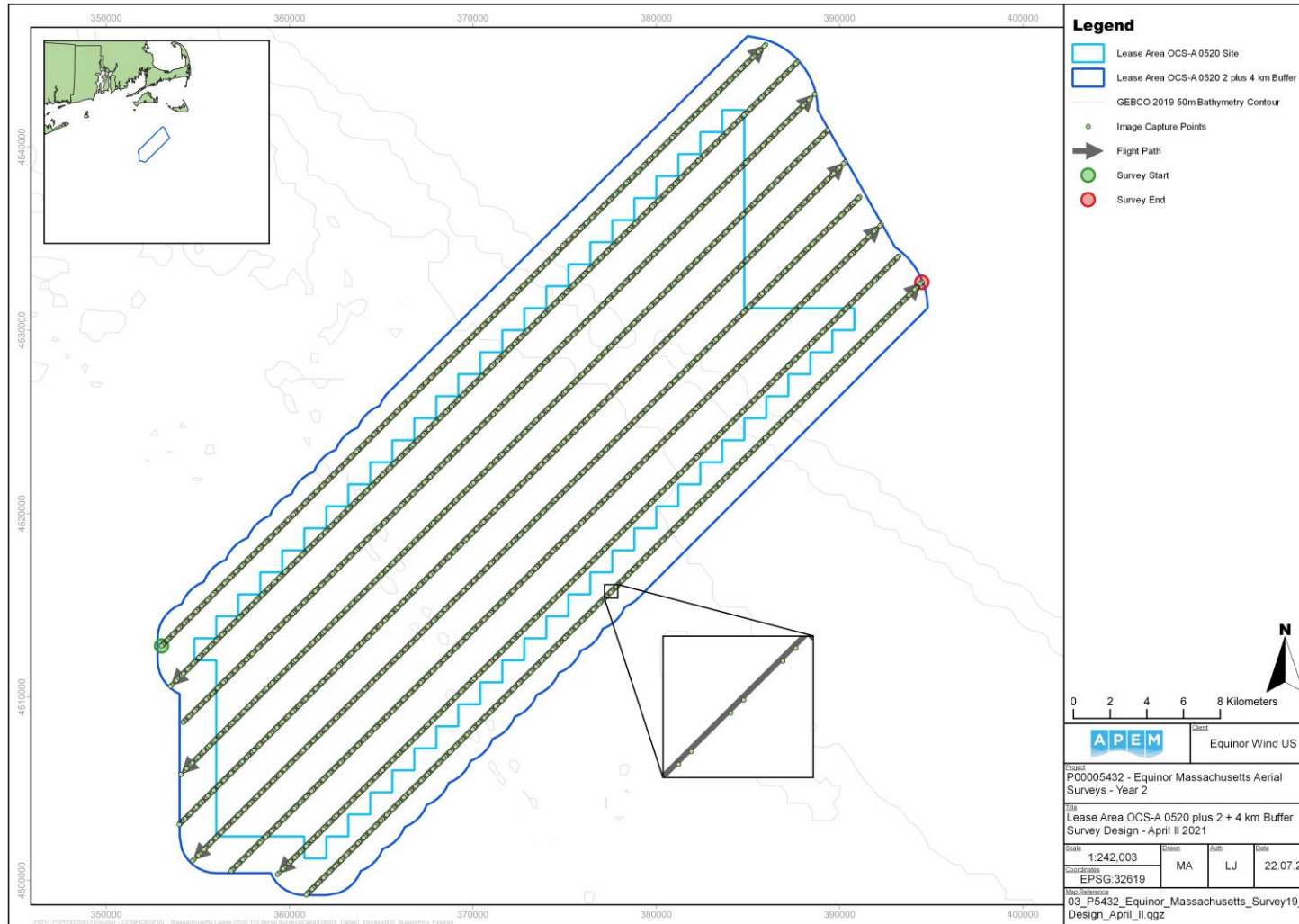


Figure 1 Survey design of Lease Area OCS-A 0520 plus 2 km / 4 km buffer

4. Abundance and Distribution

4.1 Species Abundance

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

| Group | Species | Flying | Sitting | Total |
|--------------------|-----------------------------|-----------|------------|-------------------|
| Waterfowl | White-winged Scoter | 2 | 0 | 2 |
| | Scoter species | 0 | 10 | 10 |
| Loon | Red-throated Loon | 8 | 10 | 18 |
| | Common Loon | 0 | 2 | 2 |
| | Loon species | 0 | 2 | 2 |
| Shearwater | Manx Shearwater | 0 | 2 | 2 |
| | Shearwater species | 3 | 0 | 3 |
| Gannet | Northern Gannet | 5 | 0 | 5 |
| Gull | Laughing Gull | 1 | 0 | 1 |
| | Great Black-backed Gull | 4 | 5 | 9 |
| | Herring Gull | 5 | 4 | 9 |
| | Lesser Black-backed Gull | 0 | 2 | 2 |
| | Large Gull species | 0 | 1 | 1 |
| | Gull species | 0 | 4 | 4 |
| Auk | Common / Thick-billed Murre | 0 | 12 | 12 |
| | Razorbill | 0 | 8 | 8 |
| | Murre / Razorbill | 0 | 171 | 171 |
| | Atlantic Puffin | 0 | 4 | 4 |
| | Auk species | 0 | 6 | 6 |
| Total Birds | | 28 | 243 | <u>271</u> |

Table 2 Total number of individuals of marine mammals recorded during the April II 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 Minke Whale | 1 | 0 | 1 |
| | Whale species | 1 | 0 | 1 |
| | Dolphin species | 1 | 0 | 1 |
| | Harbor Porpoise | 6 | 1 | 7 |
| Total | | 9 | 1 | <u>10</u> |

4.2 Spatial Distribution

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

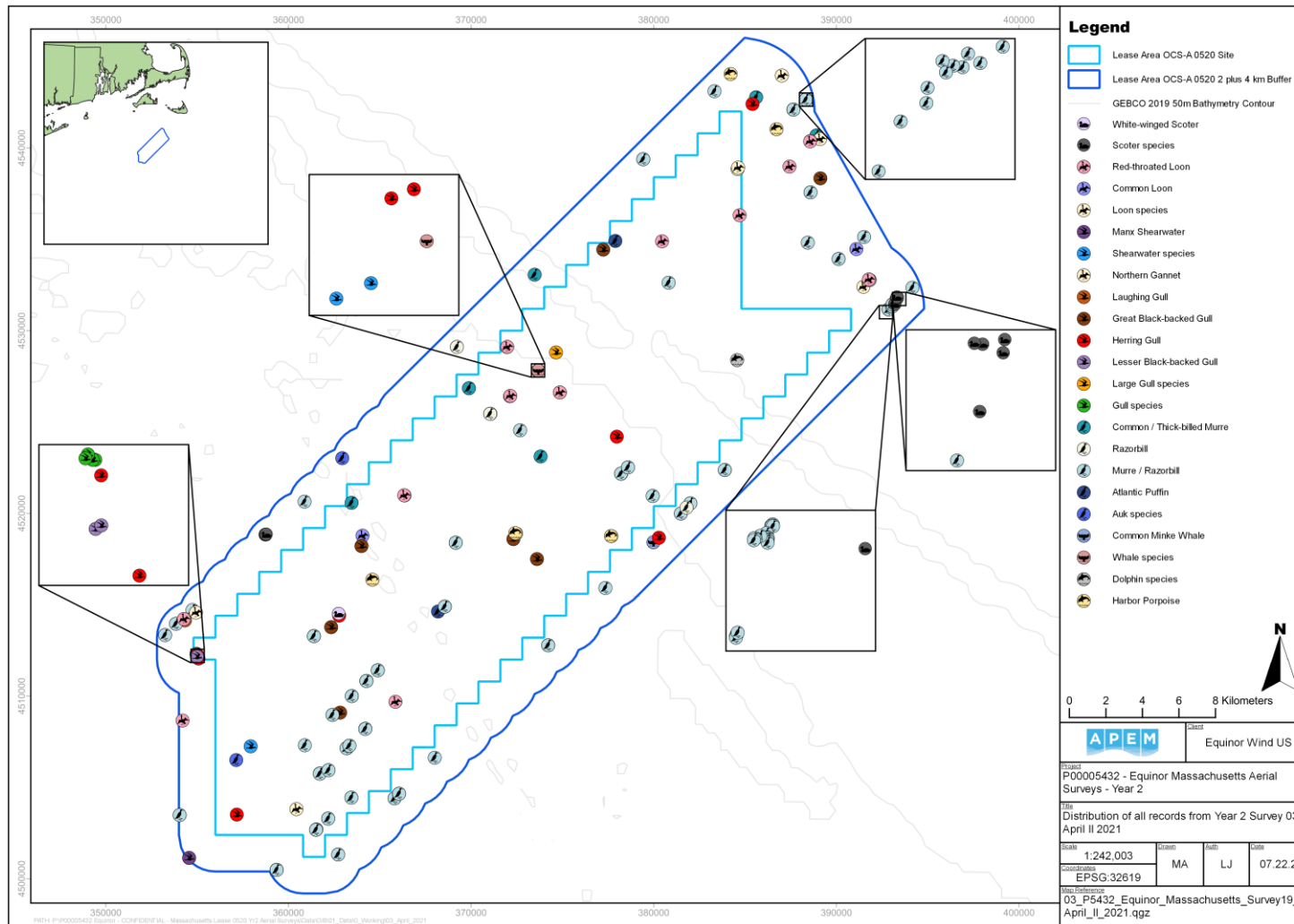


Figure 2 Distribution of all records from the April II 2021 survey of Lease Area OCS-A 0520 plus 2 km / 4 km irregular buffer

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

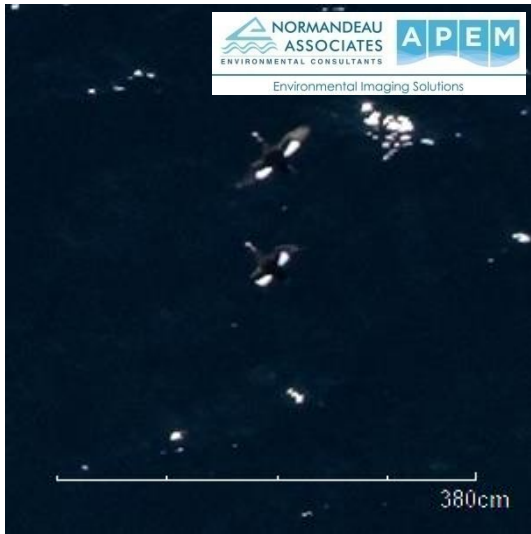
5. Shipping Observations

During the April 18th, 2021 survey, no vessels were recorded visually from the aircraft or in the imagery.

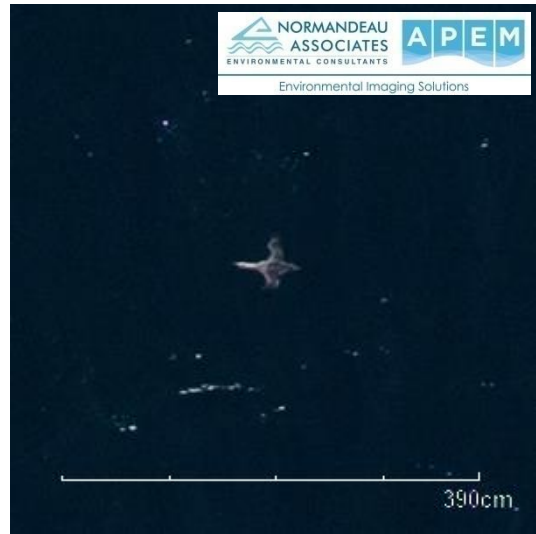
Appendix I Species List

| Common Name | Scientific Name | Family | Class |
|--------------------------|-----------------------------------|-----------------|----------|
| White-winged Scoter | <i>Melanitta deglandi</i> | Anatidae | Aves |
| Red-throated Loon | <i>Gavia stellata</i> | Gaviidae | Aves |
| Common Loon | <i>Gavia immer</i> | Gaviidae | Aves |
| Manx Shearwater | <i>Puffinus puffinus</i> | Procellariidae | Aves |
| Northern Gannet | <i>Morus bassanus</i> | Sulidae | Aves |
| Laughing Gull | <i>Leucophaeus atricilla</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 |
| Common Minke Whale | <i>Balaenoptera acutorostrata</i> | Balaenopteridae | Mammalia |
| Harbor Porpoise | <i>Phocoena phocoena</i> | Phocoenidae | Mammalia |

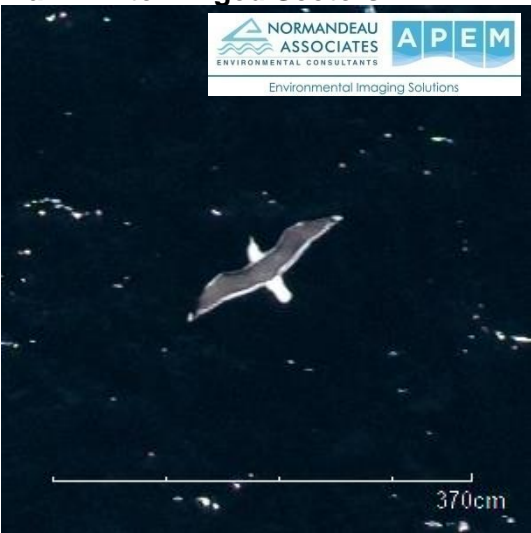
Appendix II Example 'Snags' from the Survey



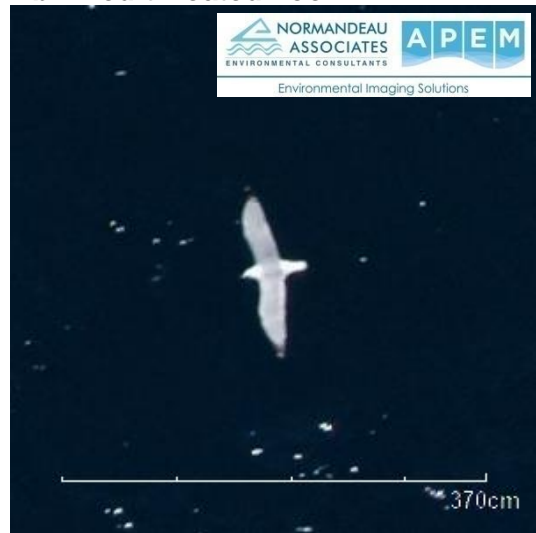
a. White-winged Scoters



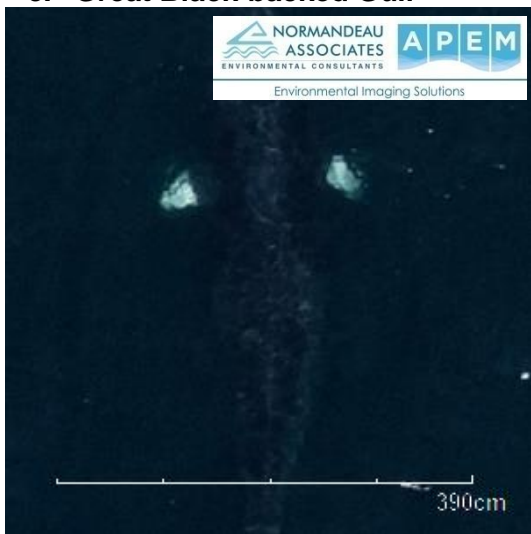
b. Red-throated Loon



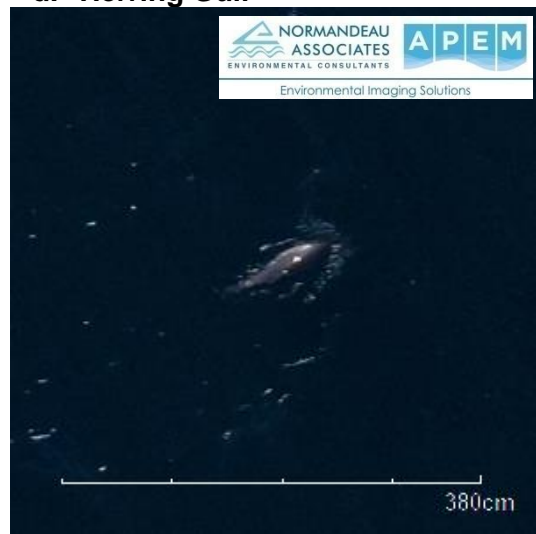
c. Great Black-backed Gull



d. Herring Gull



e. Common Minke Whale



f. Harbor Porpoise