

---

Environmental Imaging Solutions

**Ornithological and Marine Fauna Aerial Survey of Lease Area OCS-  
A 0512**

**Monthly Report: February 2018**

**Equinor**

**APEM Ref: P00002032**

**Issued May 2018**

**Client:** Equinor  
**Address:** 120 Long Ridge  
Stamford  
Connecticut  
CT 06902  
USA

**Project reference:** P00002032

**Date of issue:** May 2018

---

**Project Director:** Stuart Clough

**Project Manager:** Laura Jervis

**Key Contributors:** Roger Buisson, Simon Warford, Julia Robinson Willmott  
(Normandeau Associates), Abigail Goulding

---

APEM, Inc.  
2603 NW 13<sup>th</sup> Street  
#402  
Gainesville  
Florida  
FL 32609

Document number of the corporation: P15000019267

## Revision and Amendment Register

Version Number	Date	Section(s)	Page(s)	Summary of Changes	Approved by
1.0	05/01/2018	All	All	Creation	LJ
1.1	05/10/2018	All	All	Review prior to issue to client	RB
1.2	05/10/2018	All	All	Amendments following review	LJ
2.0	05/10/2018	All	All	Client review	MG

## Contents

1. Executive Summary .....	1
2. Introduction.....	2
3. Summary of Survey .....	2
4. Abundance and Distribution .....	3
4.1 Species Abundance.....	3
4.2 Spatial Distribution.....	4
5. Shipping Observations.....	6
6. General Conclusions .....	6
Appendix I Species List in Taxonomic Order .....	7

## List of Figures

Figure 1 Distribution of all records from the February 2018 survey of Lease Area OCS-A 0512 plus 4 km (2.5 mile) buffer.....	5
--	---

## List of Tables

Table 1 Total number of individuals of the bird species (in taxonomic order) recorded during the February 2018 survey of the Lease Area OCS-A 0512 plus 4 km buffer. 3	3
Table 2 Total number of individuals of the marine mammals and other fauna species (in taxonomic order) recorded during the February 2018 survey of the Lease Area OCS-A 0512 plus 4 km buffer.....	3

## 1. Executive Summary

- An aerial survey of Equinor's Lease Area OCS-A 0512 in the New York Bight was conducted on the 17<sup>th</sup> of February 2018 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 February 2018 survey are presented here.
- A total of 37 birds, two large bony fish, and one marine mammal were recorded in the Survey Area in February 2018. The most abundant group recorded was alcids (n=12), followed by loons (n=10), gulls (n=7), ducks (n=4), gannets (n=4), large bony fish (n=2), and mammals (n=1).
- No individuals listed as Endangered (Federally listed as Threatened or Endangered, and New York State listed as Endangered) were recorded.
- A total of 10 birds (27%) were recorded in flight during this survey. These consisted of long-tailed ducks (n=2), red-throated loon (n=1), northern gannet (n=2), Bonaparte's gull (n=1), herring gull (n=3), and great black-backed gull (n=1). There were 26 birds recorded as sitting (70%) and one bird recorded as diving (3%).
- A single marine mammal (a bottlenose dolphin), and two large bony fish, both ocean sunfish were recorded in February 2018.

## 2. Introduction

APEM and Normandeau were contracted by Equinor to provide monthly aerial digital survey data of the Lease Area OCS-A 0512 from November 2017 until October 2018.

The aims and objectives of the work required by Equinor were to assess the abundance and distribution of primarily birds present in the Lease Area OCS-A 0512, and also to gather information on other marine fauna such as marine mammals, sharks, rays, and turtles. These surveys will provide the baseline information required for conducting impact assessments and will meet the U.S. Bureau of Ocean Energy Management's (BOEM's) regulatory requirements for environmental review of Wind Energy Areas.

The Survey Area referred to herein comprise of the Lease Area OCS-A 0512 (its proposed turbine array footprint) plus a 4 km (2.5 mile) buffer surrounding it. The Survey Area data in this report represent the total number of birds, other marine fauna, and incidental occurrences recorded across all images (including those that may fall outside the proposed Lease Area OCS-A 0512 plus buffer region).

To meet the objectives of the project, 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 February 2018 survey.

## 3. Summary of Survey

The survey was undertaken on the 17<sup>th</sup> of February 2018. 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 aerial digital survey captured images along 28 lines spaced approximately 0.8 km across-track and 0.6 km along-track between image nodes within the Lease Area OCS-A 0512 plus 4 km buffer. Coverage was calculated to be approximately 10% generated from 1,550 image capture points.

On the 17<sup>th</sup> of February 2018, the cloud cover was recorded as 0 to 15% (completely clear to scattered), visibility was greater than 10 km (6.2 miles), and no precipitation was recorded. Winds of 15-20 knots blew from a north-easterly direction. The outside air temperature at the survey altitude was recorded as 29 to 30°F. The sea state was 2 to 3 (smooth to slight) and the water turbidity was 1 (slightly turbid).

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 of the data to check for missed animals in 10% of images recorded as empty and also quality assured 20% of the bird species identification undertaken by APEM (and 100% of Listed species). Normandeau identify 100% of the species of non-avian marine fauna including marine mammals, sharks, rays, turtles. Birds and marine fauna identified from the images were 'snagged' (i.e. located within the images) and categorised usually to species, but sometimes to the species grouping.

Data reported are raw counts of animals that have not yet been subject to extrapolation for population estimates. Design-based population estimates will be provided in the annual report following the completion of the October 2018 survey.

## 4. Abundance and Distribution

### 4.1 Species Abundance

A total of 37 birds (Table 1), one marine mammal, and two large bony fish (Table 2) were recorded in the Survey Area in February 2018. The most abundant group recorded was alcids (n=12), followed by loons (n=10), gulls (n=7), ducks (n=4), gannets (n=4), large bony fish (n=2) and mammals (n=1).

No Endangered<sup>1</sup> species were recorded during the survey.

**Table 1 Total number of individuals of the bird species (in taxonomic order) recorded during the February 2018 survey of the Lease Area OCS-A 0512 plus 4 km buffer.**

Group	Species	Flying	Sitting	Diving	Total
Duck	Long-tailed Duck	2	-	-	2
	Black scoter	-	2	-	2
Loon	Red-throated Loon	1	1	-	2
	Common Loon	-	8	-	8
Gannet	Northern Gannet	2	1	1	4
Alcid	Murre* / Razorbill	-	12	-	12
Gull	Bonaparte's Gull	1	-	-	1
	Herring Gull	3	-	-	3
	Great Black-backed Gull	1	1	-	2
	Unknown species – Small Gull	-	1	-	1
<b>Total Birds</b>		10	26	1	37

\*Note: Murre refers to either Common Murre or Thick-billed Murre.

**Table 2 Total number of individuals of the marine mammals and other fauna species (in taxonomic order) recorded during the February 2018 survey of the Lease Area OCS-A 0512 plus 4 km buffer.**

Group	Species	Surfacing	Submerged	Total
Marine Mammal	Bottlenose Dolphin	1	-	1
<b>Total Mammals</b>		1	-	1
Large Bony Fish	Ocean Sunfish	-	2	2
<b>Total Large Bony Fish</b>		-	2	2

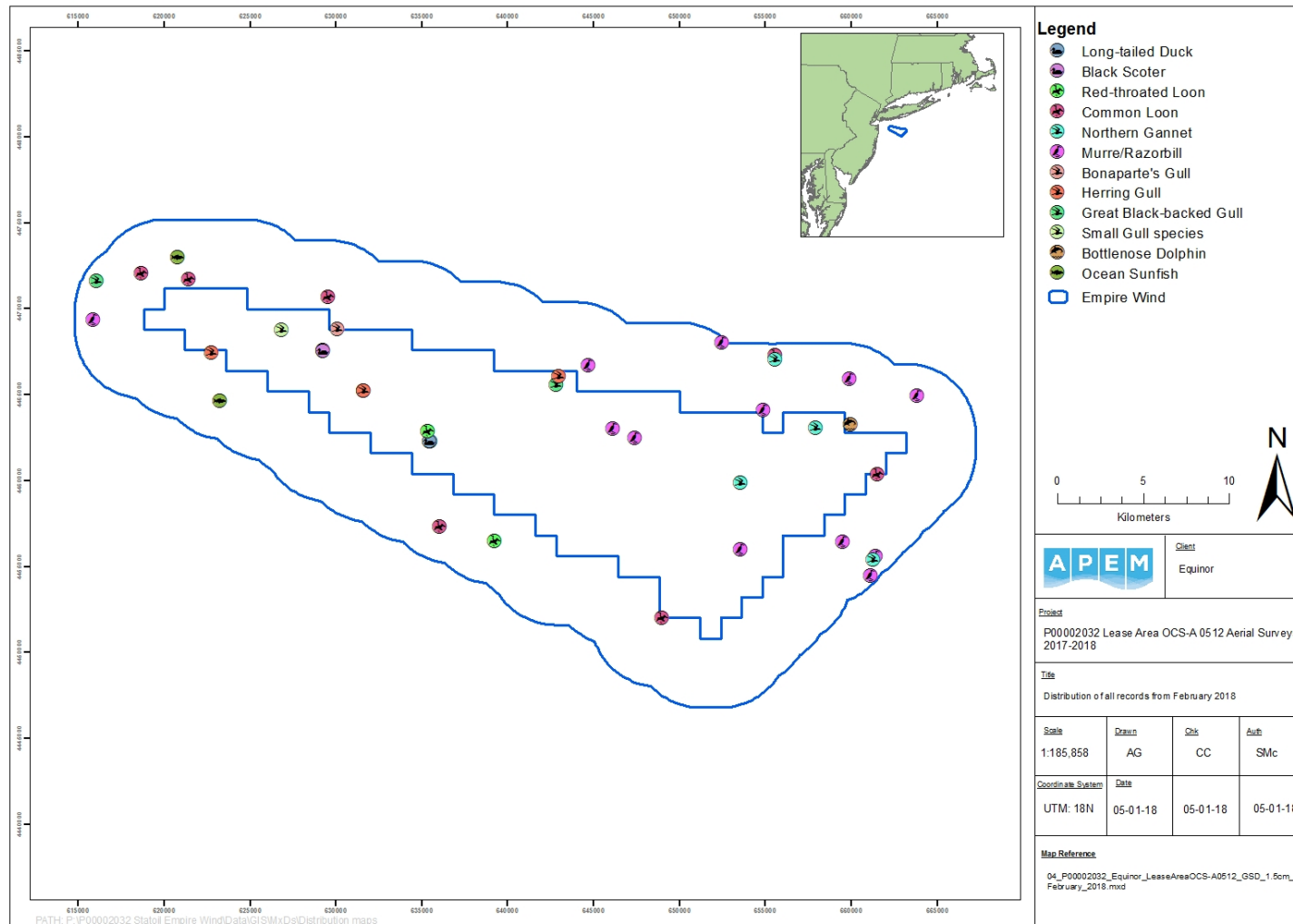
<sup>1</sup> Federally listed as Threatened or Endangered, New York State listed as Endangered.

---

## 4.2 Spatial Distribution

Figure 1 shows the location of birds, marine mammals and other fauna species recorded throughout the Survey Area.





**Figure 1** Distribution of all records from the February 2018 survey of Lease Area OCS-A 0512 plus 4 km (2.5 mile) buffer.

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

---

## 5. Shipping Observations

Five tankers (with an easterly bearing) were observed visually from the aircraft on the 17<sup>th</sup> February 2018.

No vessels were recorded in the imagery.

## 6. General Conclusions

A total of 37 birds, two large bony fish, and one marine mammal were recorded in the Survey Area in February 2018. The most abundant group recorded was alcids (n=12), followed by loons (n=10), gulls (n=7), ducks (n=4), gannets (n=4), large bony fish (n=2), and mammals (n=1).

A total of 10 birds (27%) were recorded in flight during this survey. These consisted of long-tailed ducks (n=2), red-throated loon (n=1), northern gannet (n=2), Bonaparte's gull (n=1), herring gull (n=3), and great black-backed gull (n=1). There were 26 birds recorded as sitting (70%) and one bird recorded as diving (3%).

A single marine mammal (a bottlenose dolphin), and two large bony fish, both ocean sunfish were recorded in February 2018.

## Appendix I Species List in Taxonomic Order

Common Name	Scientific Name	Family	Class
Long-tailed Duck	<i>Clangula hyemalis</i>	Anatidae	Aves
Black scoter	<i>Melanitta americana</i>	Anatidae	Aves
Red-throated Loon	<i>Gavia stellata</i>	Gaviidae	Aves
Common Loon	<i>Gavia immer</i>	Gaviidae	Aves
Northern Gannet	<i>Morus bassanus</i>	Sulidae	Aves
Common Murre	<i>Uria aalge</i>	Alcidae	Aves
Thick-billed Murre	<i>Uria lomvia</i>	Alcidae	Aves
Razorbill	<i>Alca torda</i>	Alcidae	Aves
Bonaparte's Gull	<i>Chroicocephalus philadelphia</i>	Laridae	Aves
Herring Gull	<i>Larus argentatus</i>	Laridae	Aves
Great Black-backed Gull	<i>Larus marinus</i>	Laridae	Aves
Bottlenose Dolphin	<i>Tursiops truncatus</i>	Delphinidae	Mammalia
Ocean sunfish	<i>Mola mola</i>	Molidae	Actinopterygii