
Environmental Imaging Solutions

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

Monthly Report: March 2018

Equinor

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Address: 120 Long Ridge
Stamford
Connecticut
CT 06902
USA

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Project Director: Stuart Clough

Project Manager: Laura Jervis

Key Contributors: Roger Buisson, Simon Warford, Julia Robinson Willmott
(Normandeau Associates), Bethany Goddard

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

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1. Executive Summary

- An aerial survey of Equinor's Lease Area OCS-A 0512 in the New York Bight was conducted on the 6th of March 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 March 2018 survey are presented here.
- A total of 308 birds and 12 marine mammals were recorded in the Survey Area in March 2018. The most abundant group recorded was alcids (n=213), followed by gulls (n=44), loons (n=38), mammals (n=12), ducks (n=11), gannets (n=1), and fulmars, (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 47 birds (15%) were recorded in flight during this survey. These consisted of white-winged scoters (n=4), red-throated loon (n=2), common loon (n=1), murre / razorbill (n=11), black-legged kittiwakes (n=12), Bonaparte's gull (n=7), and herring gull (n=10). There were 260 birds recorded as sitting (84%) and one bird recorded as diving (<1%).
- Marine mammals were recorded in March 2018 comprising of 10 harbour porpoise and two unknown marine mammal species.

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 March 2018 survey.

3. Summary of Survey

The survey was undertaken on the 6th of March 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 6th of March 2018, the cloud cover was recorded as 0 to 20% (completely clear to scattered), visibility was greater than 10 km (6.2 miles), and no precipitation was recorded. Winds of 6 knots blew from a north-easterly direction. The outside air temperature at the survey altitude was recorded as 33 to 37°F. The sea state was 1 to 2 (calm to smooth) 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 308 birds (Table 1) and 12 marine mammals (Table 2) were recorded in the Survey Area in March 2018. The most abundant group recorded was alcids (n=213), followed by gulls (n=44), loons (n=38), mammals (n=12), ducks (n=11), gannets (n=1), and fulmars, (n=1).

No Endangered¹ species were recorded during the survey.

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

Group	Species	Flying	Sitting	Diving	Total
Duck	White-winged Scoter	4	-	-	4
	Black Scoter	-	7	-	7
Loon	Red-throated Loon	2	1	-	3
	Common Loon	1	33	-	34
	Species Unknown - Loon	-	1	-	1
Fulmar	Northern Fulmar	-	1	-	1
Gannet	Northern Gannet	-	1	-	1
Alcid	Murre* / Razorbill	11	201	1	213
Gull	Black-legged Kittiwake	12	3	-	15
	Bonaparte's Gull	7	3	-	10
	Herring Gull	10	7	-	17
	Species Unknown – Small Gull	-	2	-	2
Total Birds		47	260	1	308

*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 March 2018 survey of the Lease Area OCS-A 0512 plus 4 km buffer.

Group	Species	Surfacing	Submerged	Total
Marine Mammal	Harbour Porpoise	2	8	10
	Species Unknown – Marine Mammal	-	2	2
Total Mammals		2	10	12

¹ 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.

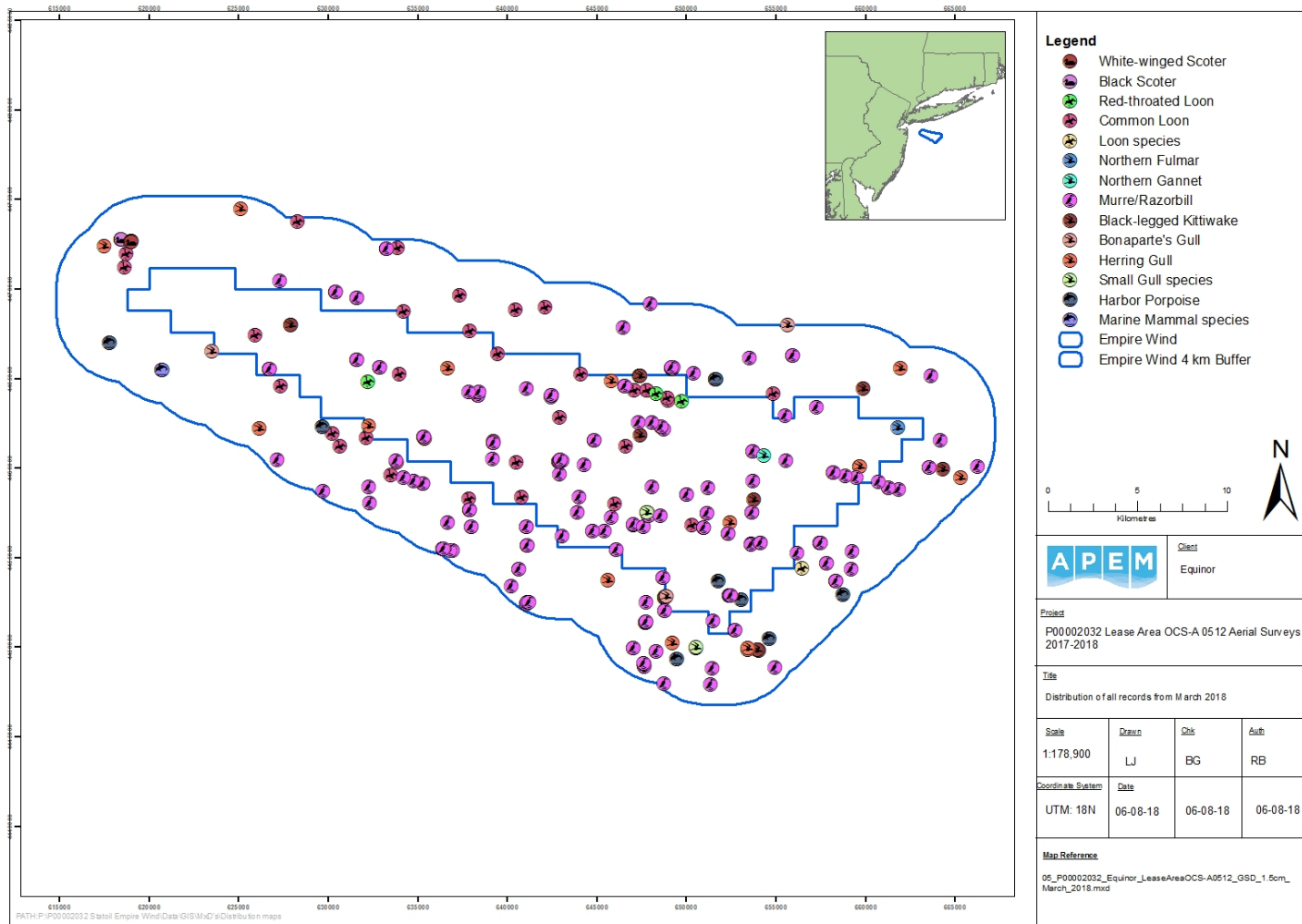


Figure 1 Distribution of all records from the March 2018 survey of Lease Area OCS-A 0512 plus 4 km (2.5 mile) buffer.

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

5. Shipping Observations

No vessels were recorded visually or in the imagery on the 6th March 2018.

6. General Conclusions

A total of 308 birds and 12 marine mammals were recorded in the Survey Area in March 2018. The most abundant group recorded was alcids (n=213), followed by gulls (n=44), loons (n=38), mammals (n=12), ducks (n=11), gannets (n=1), and fulmars (n=1).

A total of 47 birds (15%) were recorded in flight during this survey. These consisted of white-winged scoters (n=4), red-throated loon (n=2), common loon (n=1), murre / razorbill (n=11), black-legged kittiwakes (n=12), Bonaparte's gull (n=7), and herring gull (n=10). There were 260 birds recorded as sitting (84%) and one bird recorded as diving (<1%).

Marine mammals were recorded in March 2018 comprising of 10 harbour porpoise and two unknown marine mammal species.

Appendix I Species List in Taxonomic Order

Common Name	Scientific Name	Family	Class
White-winged Scoter	<i>Melanitta fusca</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 Fulmar	<i>Fulmarus glacialis</i>	Procellariidae	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
Black-legged Kittiwake	<i>Rissa tridactyla</i>	Laridae	Aves
Herring Gull	<i>Larus argentatus</i>	Laridae	Aves
Harbour Porpoise	<i>Phocoena phocoena</i>	Mammalia	Phocoenidae