
Environmental Imaging Solutions

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

Monthly Report: April 2018

Equinor

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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 20th of April 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 April 2018 survey are presented here.
- A total of 262 birds were recorded in the Survey Area in April 2018. The most abundant group recorded was alcids (n=159), followed by gulls (n=32), cormorants (n=31), gannets (n=28), loons (n=11), and terns (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 70 birds (27%) were recorded in flight during this survey. These consisted of unknown cormorant species (n=31), Bonaparte's gull (n=14), northern gannets (n=10), murre / razorbill (n=8), herring gull (n=3), red-throated loon (n=2), great black-backed gull (n=1), common loon (n=1). There were 192 birds recorded as sitting (73%).
- No other marine fauna was recorded in April 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 April 2018 survey.

3. Summary of Survey

The survey was undertaken on the 20th of April 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 20th of April 2018, the cloud cover was recorded as 0 to 10% (clear), visibility was greater than 10 km (6.2 miles), and no precipitation was recorded. Winds of 20-25 knots blew from a northerly direction. The outside air temperature at the survey altitude was recorded as 32 to 44°F. The sea state was 2 to 4 (smooth-moderate) and the water turbidity was 1 to 2 (slight to moderately 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 262 birds (Table 1) were recorded in the Survey Area in April 2018. No marine mammals or other large marine fauna were recorded. The most abundant group recorded was alcids (n=159), followed by gulls (n=32), cormorants (n=31), gannets (n=28), loons (n=11), and terns (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 April 2018 survey of the Lease Area OCS-A 0512 plus 4 km buffer.

Group	Species	Flying	Sitting	Total
Loon	Red-throated Loon	2	2	4
	Common Loon	1	6	7
Gannet	Northern Gannet	10	18	28
Cormorant	Species Cormorant - Cormorant	31	-	31
Alcid	Murre* / Razorbill	8	151	159
Gull	Bonaparte's Gull	14	13	27
	Herring Gull	3	-	3
	Lesser Black-backed Gull	-	1	1
	Great Black-backed Gull	1	-	1
Tern	Species Unknown - Tern	-	1	1
Total Birds		70	192	262

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

¹ Federally listed as Threatened or Endangered, New York State listed as Endangered.

4.2 Spatial Distribution

Figure 1 shows the location of birds recorded throughout the Survey Area. No marine mammals or other large marine fauna were recorded.

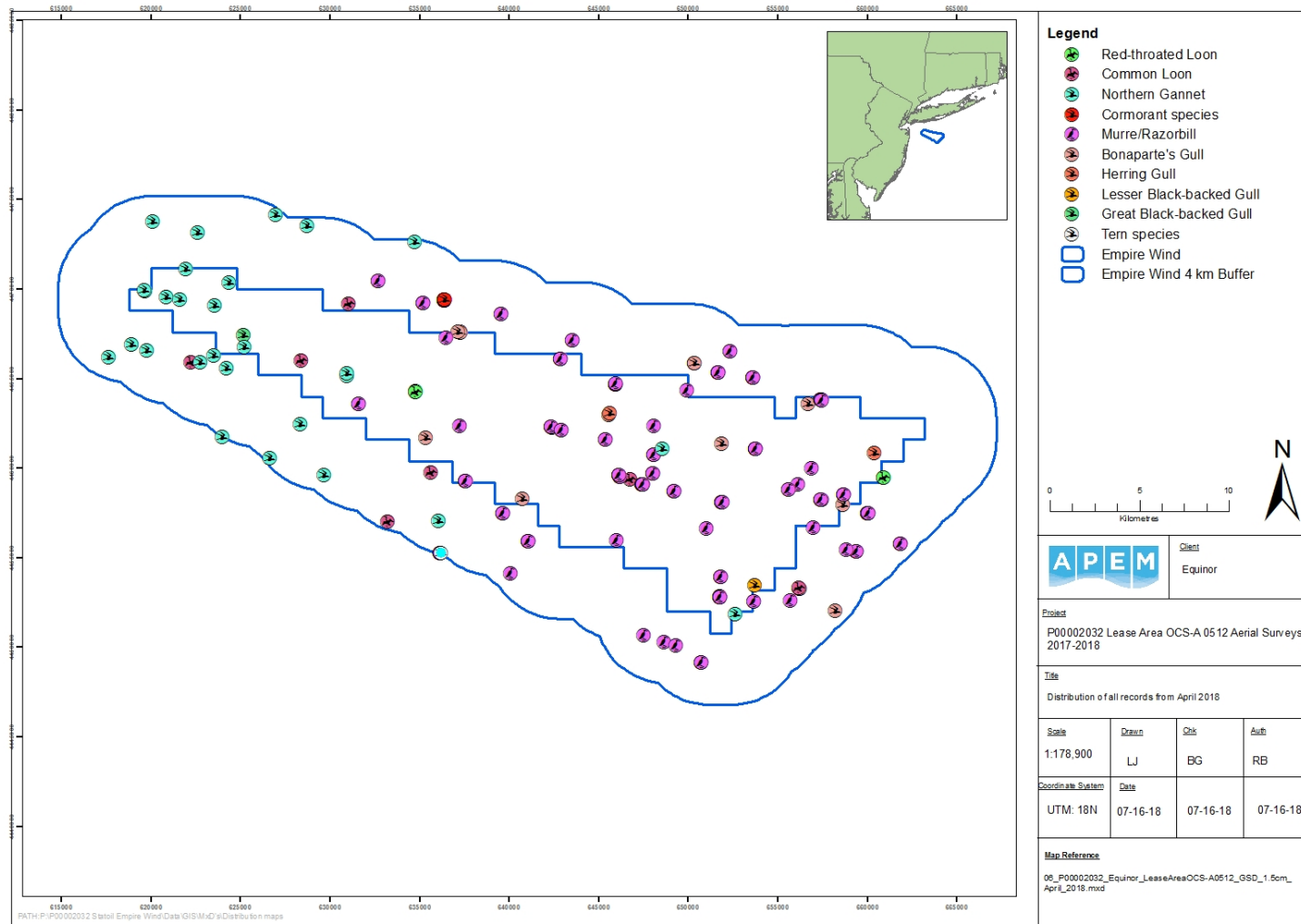


Figure 1 Distribution of all records from the April 2018 survey of Lease Area OCS-A 0512 plus 4 km (2.5 mile) buffer.

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 20th April 2018.

6. General Conclusions

A total of 262 birds were recorded in the Survey Area in April 2018. The most abundant group recorded was alcids (n=159), followed by gulls (n=32), cormorants (n=31), gannets (n=28), loons (n=11), and terns (n=1).

A total of 70 birds (27%) were recorded in flight during this survey. These consisted of unknown cormorant species (n=31), Bonaparte's gull (n=14), northern gannets (n=10), murre / razorbill (n=8), herring gull (n=3), red-throated loon (n=2), great black-backed gull (n=1), common loon (n=1). There were 192 birds recorded as sitting (73%).

No other marine fauna was recorded in April 2018.

Appendix I Species List in Taxonomic Order

Common Name	Scientific Name	Family	Class
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
Lesser Black-backed Gull	<i>Larus fuscus</i>	Laridae	Aves
Great Black-backed Gull	<i>Larus marinus</i>	Laridae	Aves