

DOCUMENT CONTROL SHEET

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Seabird Data Summary
Equinor Seabed Survey
June 12, 2023, to June 18, 2023

Vessel: Horizon Arctic

Position: Cappahayden K-67 & Sitka O-02 Wellsites

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1.0 Introduction

Equinor Canada Ltd. (Equinor) contracted PAL Aerospace (PAL) Ice and Environmental Services (IES) to provide seabird and marine mammal monitoring services in support of operations for the Horizon Arctic in transit to and in the Cappahayden K-67 and Sitka O-02 wellsites, as seen in **Figure 1**. The Horizon Arctic departed St. John's, NL, on June 12, 2023, at 1700z. It arrived at the project area on June 13, 2023, at 1415z, remaining there until June 17, 2023, at 1229z.

The Horizon Arctic vessel (**Figure 2**) was staffed with two PAL Marine Mammal & Seabird Observers (MMSOs) from June 12, 2023, to June 18, 2023, providing coverage from dawn until dusk, while in transit to and from each wellsite and St. John's. In addition, the MMSOs conducted hourly seabird surveys each day and visual observations of marine mammals.

The PAL MMSOs were responsible for systematic searches for stranded seabirds in transit to and in the project area.

All data collected on the Horizon Arctic was delivered to and stored in a local database at PAL and used to compile this report. All times and dates are in Coordinated Universal Time (UTC) for environmental data comparison.

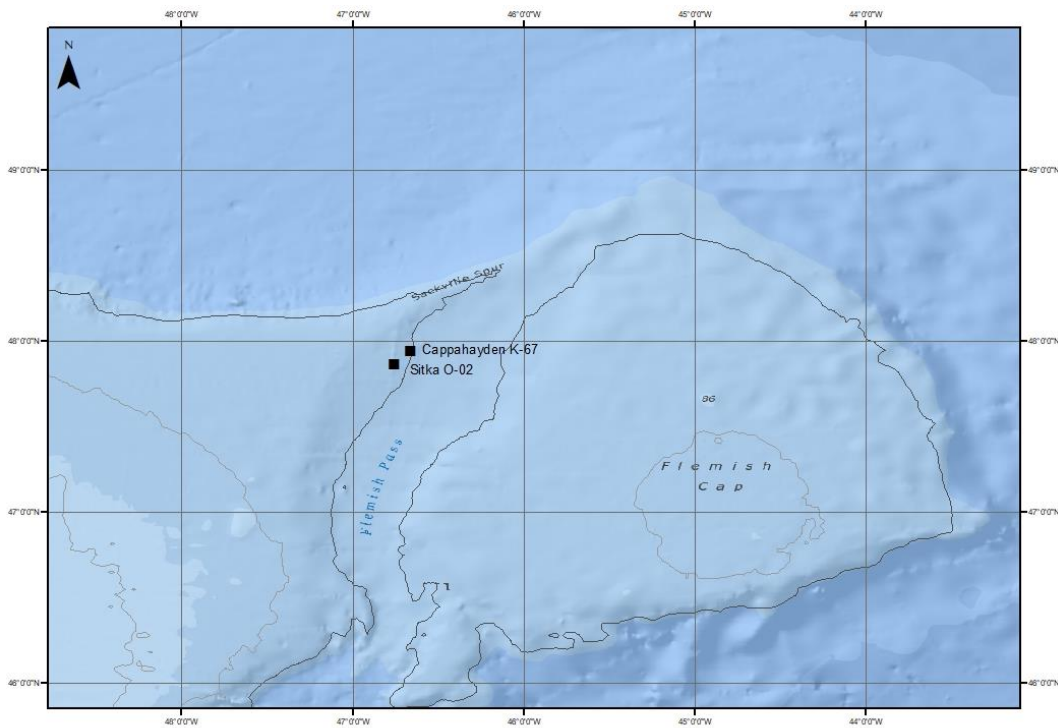


Figure 1: Seabed Survey Locations (Cappahayden K-67: 47°56.35'N, 046°39.56'W, Sitka O-02: 47°51.74'N, 046°45.41'W)



Figure 2: Horizon Arctic (Source: <https://www.vesselfinder.com/ship-photos/826250>)

2.0 Summary of Seabird Monitoring and Recovery

Equinor conducted a seabird monitoring program from June 12, 2023, to June 18, 2023, when the Horizon Arctic left for the Cappahayden K-67 and Sitka O-02 wellsites. Both stationary and moving seabird surveys were completed once the Horizon Arctic left St. John's, until dusk on June 17, 2023, at 2225z. Seabird strandings were completed each morning of the program, from June 12 until June 18, 2023.

MMSOs arrived onboard the Horizon Arctic on June 12, 2023. Moving surveys were taken from June 12 at 1715z until June 13, 2023, at 1407z. In addition, the onboard MMSO conducted stationary observations on the Horizon Arctic. These observations were completed per the Seabird Survey, Handling, and Observation Protocol (Equinor, 2022). Stationary seabird observations commenced at 1428z on June 13, 2023, until June 17, 2023, at 1127z. Moving surveys were conducted once again from 1229z to 2225z on June 17, 2023.

2.1 Surveys from Moving Platforms

Multiple moving platform surveys were conducted on the Horizon Arctic while in transit to the area of interest as well as in transit back to St. John's, NL.

When moving platform surveys were conducted, the MMSO was trained to carry out surveys looking forward on the vessel, scanning at a 90° angle from either the port or starboard side of the vessel, covering a 300-metre band (Figure 3).

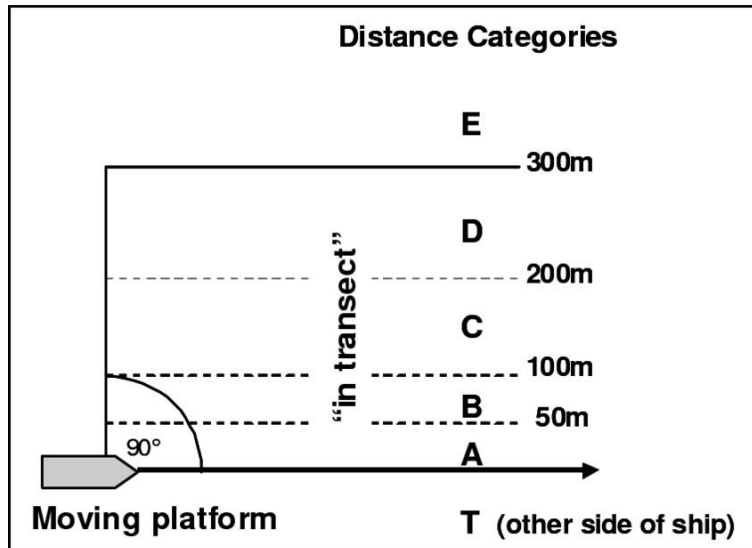


Figure 3: Survey Method using a 90° Scan. Source: Seabird Survey, Handling, and Observation Protocol. Equinor Canada Ltd. Newfoundland

MMSOs complete scanning using the naked eye. Binoculars are used to confirm species and other details (i.e., moult, age, and carrying fish). However, when large concentrations of birds occur in the survey area, and birds fly away as the vessel approaches, binoculars will be used to count individuals.

The MMSO would also scan ahead regularly to increase the likelihood of detecting birds prone to diving as the vessel approached.

2.2 Surveys from Stationary Platforms

MMSOs onboard the offshore platform, while it was on location, conducted observations using instantaneous counts, or snapshots, of birds within a 300m radius semi-circle area off the port side of the helideck that is scanned at regular intervals throughout the day. These surveys lasted only a few seconds.

MMSOs conducted observations over 12-hour shifts, beginning at dawn each day and finishing at dusk. Any observation during the shift would be recorded and logged digitally in the provided Canadian Wildlife Services (CWS) Access database.

The surveys were conducted outdoors whenever possible, as close to the MODU's edge as permitted. In addition, MMSOs scanned from the same location each time to increase the comparability among scans.

Surveys are conducted by scanning a 180° arc, prioritizing birds within a 300m semi-circle (Figure 4).

The semi-circle is divided into five zones:

- A: 0 - 50m
- B: 50 - 100m
- C: 100 - 200m
- D: 200 - 300m
- E: >300m

The MMSO visually swept the area once per scan, from one side to the other. All birds on the water and in flight were systematically recorded at this time. In addition, the distance of birds from the observer was estimated and recorded for all birds. Binoculars and spotting scopes were utilized to confirm species identification and other details.

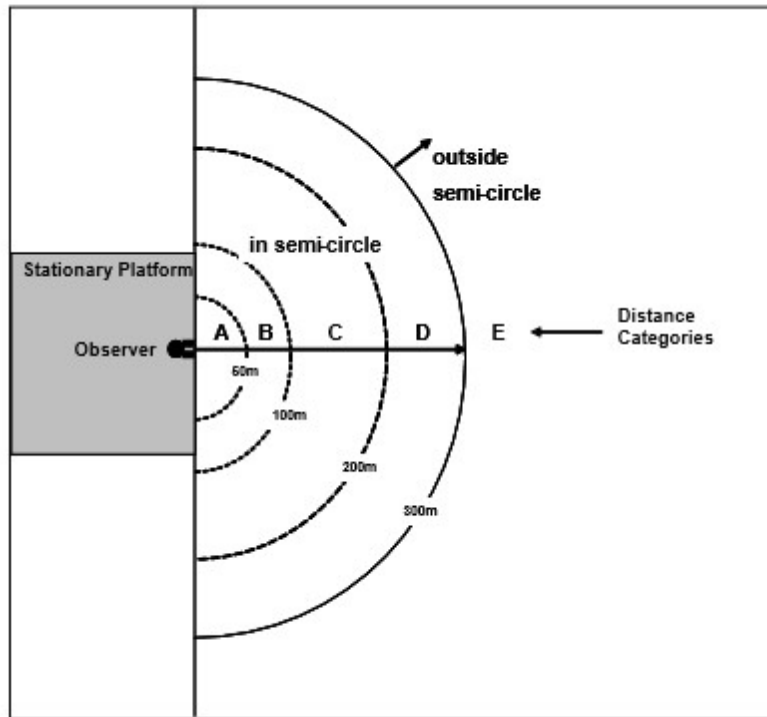


Figure 4: 180° Survey from a Stationary Platform. Source: Seabird Survey, Handling, and Observation Protocol. Equinor Canada Ltd. Newfoundland

The same area was surveyed once every hour during daylight hours, regardless of if birds were present or not while in the area of interest. When the entire width of the 300-metre semi-circle was not visible, the observer indicated the limit of visibility on the datasheet. When no birds were detected during a scan, the MMSO recorded the whole observation, leaving any bird information blank. Any gaps between observations would be due to the requirement of helicopter observations, crew changes, onboard operation (i.e. drills), or when the weather was too bad to complete the observation (i.e. no visibility due to fog.)

2.3 Stranded Seabird Search Procedures

The PAL MMSO checked the decks for stranded and dead birds at least once daily. All crew members were also requested to alert the MMSO if stranded birds were found. The MMSO conducts daily inspections to search for potentially stranded birds, utilizing the pattern identified in Figure 5. The area covers 250 metres on the main deck and A-Deck, 94 metres on B-Deck, 46 metres on the C-Deck, 68 metres on D-Deck, 72 metres on E-Deck, 38 metres on the Bridge Top Deck, and an additional 14 metres on the Main Mast, totalling 582 metres, as indicated by the line in the figure below. This survey quantifies species numbers and status (alive or dead) and the timing of migratory bird strandings in the area. In addition, this survey outlines the area searched and all findings in the search.

The capture and handling of migratory birds require authorization under the Migratory Birds Convention Act (1994) and Migratory Bird Regulations (2022). Equinor has obtained a Capture and Handling of Migratory Birds Permit and has met the Canadian Wildlife Service requirements for permit issuance.

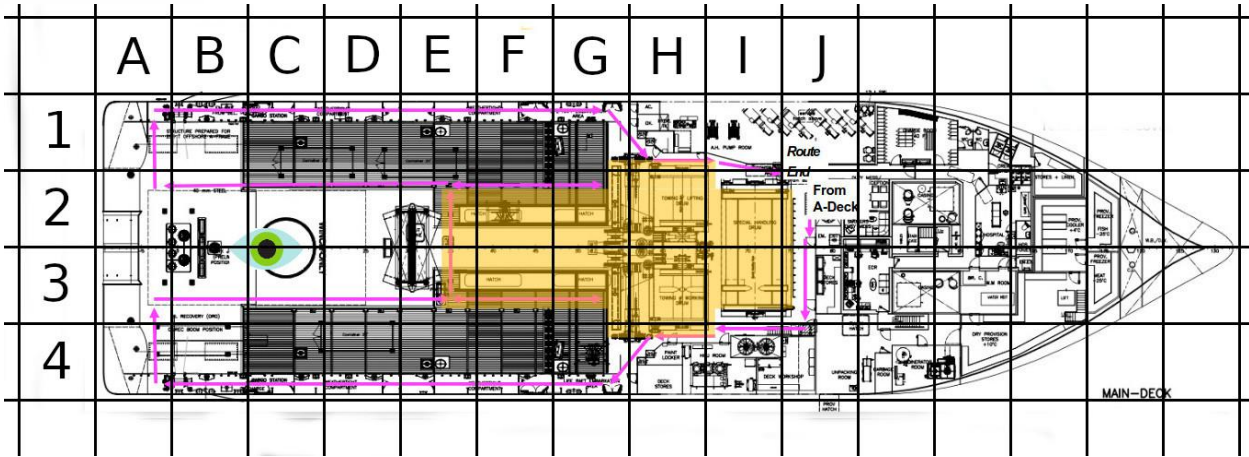


Figure 5: Horizon Arctic Search plan – Main Deck and A-Deck (250 Metres)

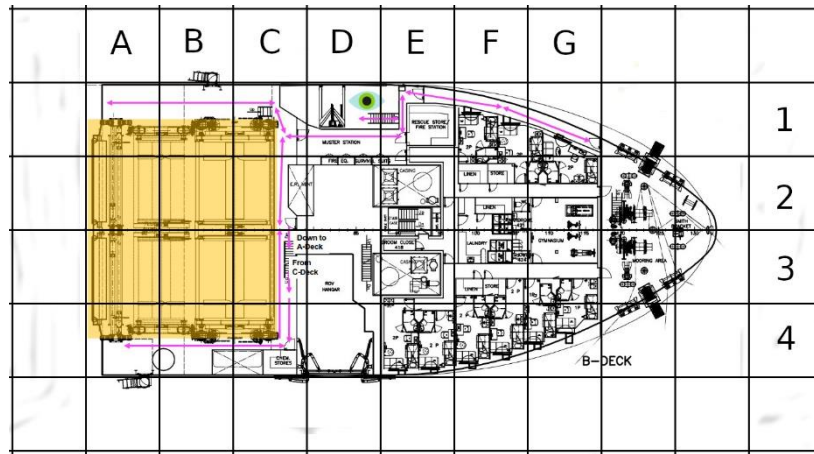


Figure 6: Horizon Arctic Search plan – B-Deck (94 Metres)

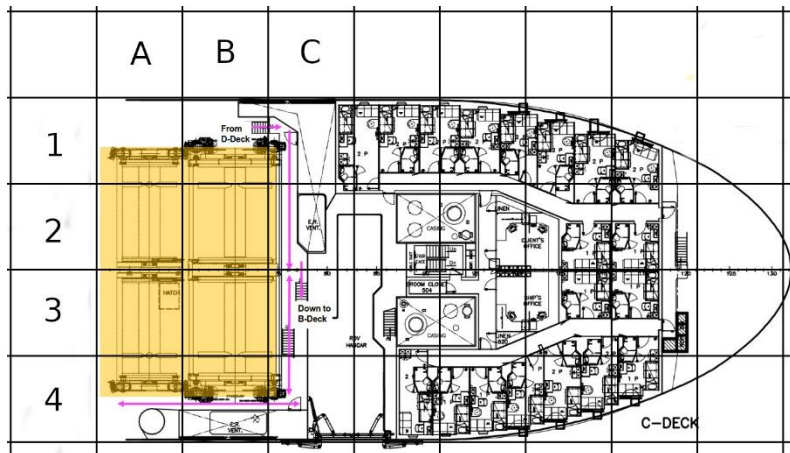


Figure 7: Horizon Arctic Search plan – C-Deck (46 Metres)

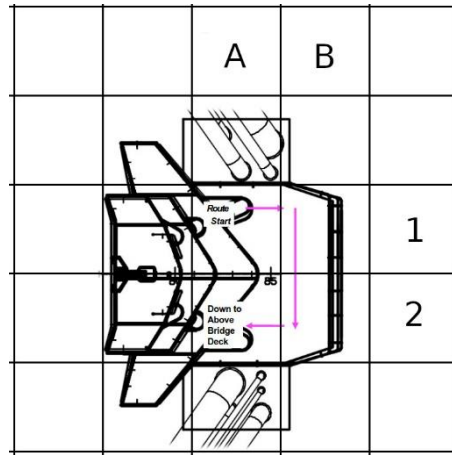


Figure 11: Horizon Arctic Search plan – Main Mast (14 Metres)

2.4 Summary of Marine Mammal and Sea Turtle Monitoring

The onboard MMSO conducted visual marine mammal and sea turtle observations on the Horizon Arctic. They acted as qualified MMSOs, primarily from the bridge wings during daylight hours. Several marine mammal sightings were observed in the area of interest throughout the project period.

Visual scans were made with the naked eye and with 10x50 binoculars with a range reticule. The detection cues that were used were the presence of groups of birds, unexpected splashes, blows, and black objects breaking the surface. Whenever possible, sightings would have been photographed to aid species identification.

Species are identified based on physical characteristics and behaviours. Identification is facilitated by consulting relevant field guides and by observer experience.

3.0 Results

The following sections outline the results from stationary seabird surveys, moving seabird surveys, stranded seabird searches, and marine mammals or sea turtles identified throughout the project.

3.1 Seabird Sightings

3.1.1 Stationary Seabird Sightings

PAL MMSOs conducted seabird monitoring services on the Horizon Arctic while stationary at the Cappahayden K-67 and Sitka O-02 wellsites from June 13, 2023, at 1428z, to June 17, at 1127z. During this period, a total of 177 seabird observations recorded 3,003 individual seabirds. Of these, 10 observations (5.6% of all observations) resulted in no seabirds identified in the observer’s facility’s viewing distance.

The most frequent seabird sighting was the Northern Fulmar, with 2,951 birds sighted (98.3% of all birds sighted).

Table 1 and Figure 12 summarize all seabird observations recorded while stationary at the Cappahayden K-67 and Sitka O-02 wellsites from June 12, 2023, to June 17, 2023.

Table 1: Seabird Sightings while Stationary

Species	Number
Common Murre	4
Genus: Murres	1
Great Shearwater	42
Leach’s Storm-Petrel	2
Northern Fulmar	2,951
Northern Gannet	1
Wilson’s Storm Petrel	2
Total	3,003

Observation	Number
Total Observations	177
No Birds	10

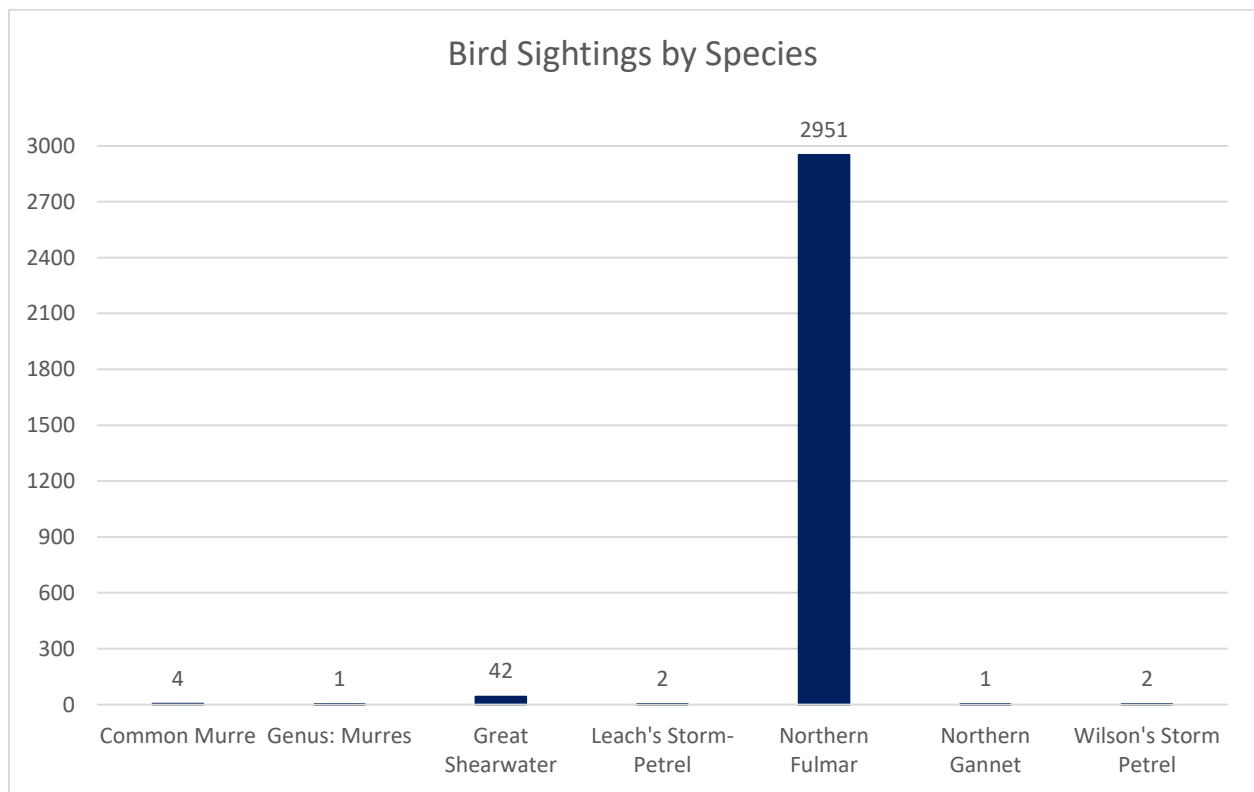


Figure 12: Stationary Seabird Sightings

3.1.2 Moving Seabird Sightings

PAL MMSOs conducted seabird monitoring services while in transit to and on the Cappahayden K-67 and Sitka O-02 wellsites from June 12, 2023, at 1715z, to June 13, 2023, at 1407z and again from June 17, 2023, at 1229z until 2225z. During this period, 575 seabird observations recorded 959 individual seabirds. Of these, 37 observations (6.4% of all observations) resulted in no seabirds identified in the observer’s facility’s viewing distance.

The most frequent individual seabird sighting was the Leach’s Storm-Petrel (410) individual birds sighted (42.8% of all birds sighted), followed by Northern Fulmar (182) individual birds sighted (19.0% of all birds sighted).

Table 2 and Figure 13 summarize all seabird observations recorded while in transit from June 12, 2023, to June 17, 2023.

Table 2: Seabird Sightings while in Transit

Species	Number
Atlantic Puffin	58
Black-legged Kittiwake	4
Common Murre	77
Dovekie	7
Genus: Murres	13
Glaucous Gull	1
Great Shearwater	149
Leach’s Storm-Petrel	410
Northern Fulmar	182
Northern Gannet	5
Sooty Shearwater	11
Thick-billed Murre	40
Wilson’s Storm Petrel	2
Total	959

Observation	Number
Total Observations	575
No Birds	37

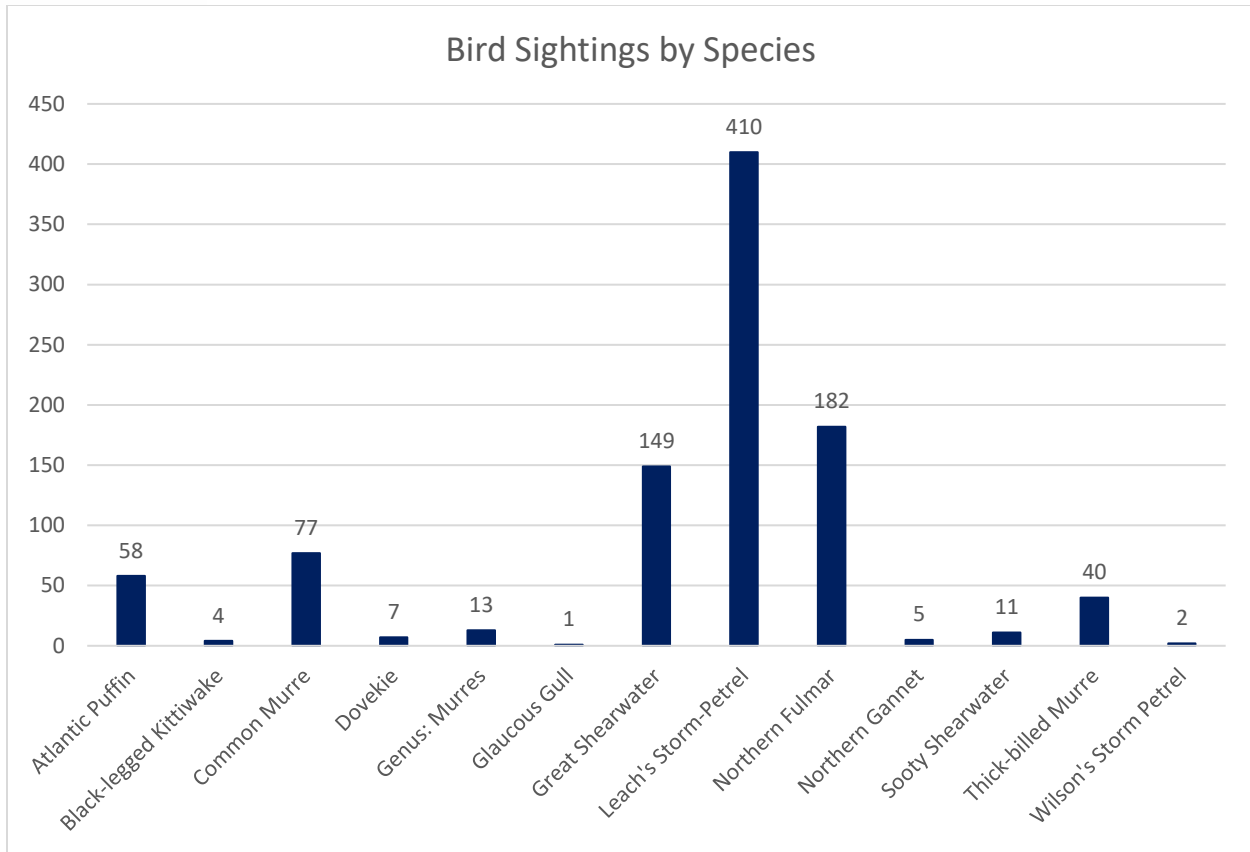


Figure 13: Seabird Sightings while Moving

3.2 Stranded Seabird Searches

3.2.1 Stranded Seabird Searches

There were six stranded seabird searches while the Horizon Arctic was operating to and from the Cappahayden K-67 and Sitka O-02 wellsites. Five (83% of all searches) had no seabirds found, zero searches (0% of all searches) had one seabird present, and one search (17% of all searches) identified more than one seabird during the search. Table 3 outlines the number and the results of the searches.

Table 3: Seabird Strandings

Total Stranded Seabird Searches	No Seabirds Present	One Seabird Present	Multiple Seabirds Present
6	5	0	1
	83%	0%	17%

One Leach's Storm-Petrel and one Blackpoll Warbler were identified in the stranding with multiple seabirds. Figure 14 identifies the total time the MMSO spent during their stranded search while in transit to and on the Cappahayden K-67 and Sitka O-02 wellsites. The longest search lasted 25 minutes on the mornings of June 16, June 17, and June 18, 2023. The shortest lasted 20 minutes on the morning of June 13, 2023.

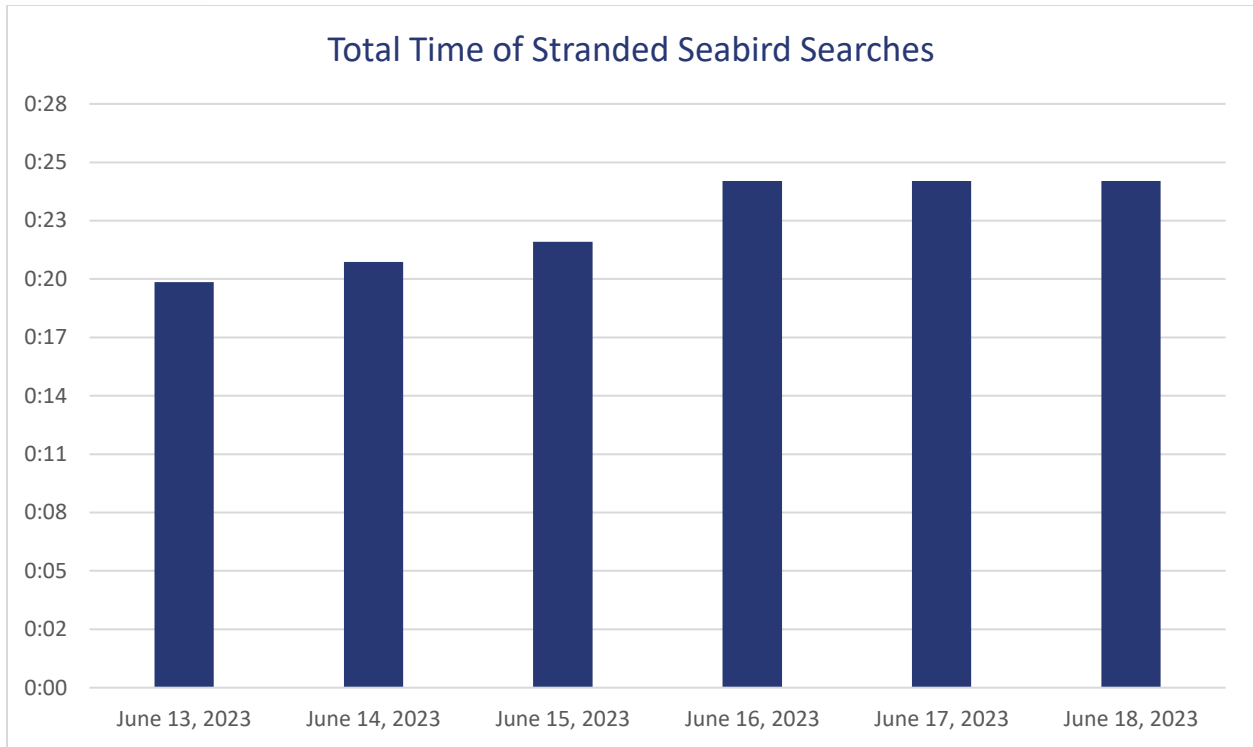


Figure 14: Total Time of Stranded Seabird Searches

Figure 15 below identifies the total area covered for the stranded seabird searches while in transit, based on the outline in Figure 5. Of the 6 stranded bird surveys, all 6 (100%) covered 568m of the possible 582m. The main mast area (14m) was not searched due to EM radiation from the radar.

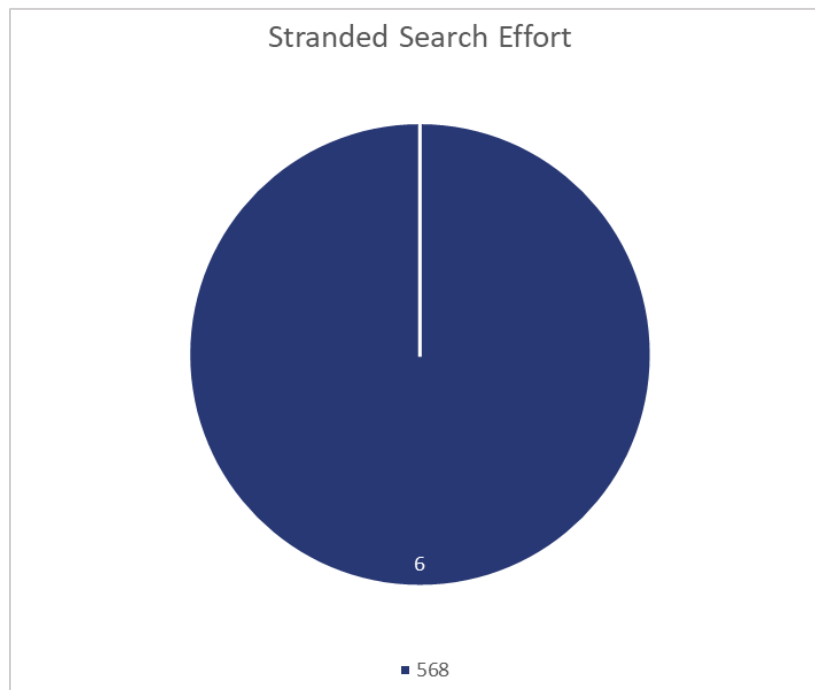


Figure 15: Stranded Search Effort

Please see Table 4 and Figure 16 for reference to all findings. A description of these strandings is found below.

Table 4: Seabird Strandings

Date (yyyy-mm-dd)		2023-06-16	2022-06-16	
Location of stranding (Lat/Long, or Name)		Bridge Top Deck (3A)	A-Deck (3E)	
Bird Species		Blackpoll Warbler	Leach's Storm Petrel	
Total # of Stranded Birds		1	1	
Found Dead	# Oiled		0	0
	Fate	# Disposed of at Sea	1	0
		# Sent Ashore	0	0
Captured Alive	Oiled	# Died in Care	0	0
		# Released Alive	0	0
		# Sent Ashore	0	0
	Not Oiled	# Died in Care	0	0
		# Released Alive	0	1
		# Sent Ashore	0	0
Fog (y/n)		Y	Y	
Rain (y/n)		N	N	

During the only search to produce stranded seabirds, a Blackpoll Warbler was found deceased on the bridge top deck (3A). This was on June 16, 2023, at 0650z. The bird was desiccated, had been deceased for a long time, and the carcass was disposed of at site. During the same search, a Leach's Storm-Petrel was found alive in the ROV Hangar under the umbilical winch, captured with a net and was released in good condition. See Figure 16.



Figure 16: Leach’s Storm-Petrel – June 16, 2023

3.3 Marine Mammal and Sea Turtle Monitoring

Table 5 and Figure 17 outline all marine mammals identified along with their activity and distance to the facility, from June 12, 2023, to June 18, 2023, in the Cappahayden K-67 and Sitka O-02 wellsites.

Table 5: Marine Mammal Sightings for the Cambriol J-31A Well Site

Month	Day	Year	Time (UTC)	Species	Number	Activity	Distance (m)
06	13	2023	1010	Long-Finned Pilot Whale	2	Travelling NE, crossed the bow	20
06	16	2023	1440	Sperm Whale	1	Travelling north	300
06	17	2023	1611	Harp Seal	1	Unknown	100
06	17	2023	1628	Long-Finned Pilot Whale	3	Travelling south, crossed close to the bow and moved off into the fog	N/A

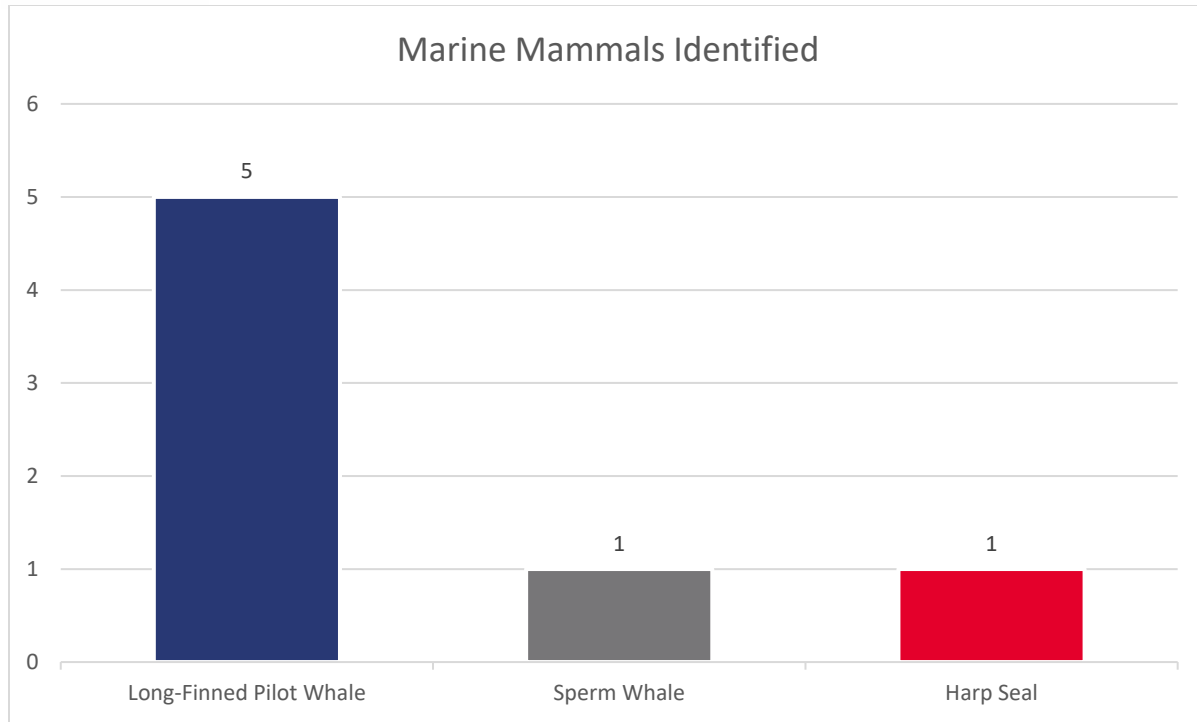


Figure 17: Marine Mammals Identified

4.0 Supplementary Digital Data

The following data has also been provided for this report:

- ECSAS Wildlife Survey spreadsheet: Spreadsheet outlining all data recorded (June 12, 2023 – June 17, 2023);
- Daily Seabird Observation Report: Forms identifying the number of seabirds recorded daily during the Equinor project;
- Weekly Seabird Observation Report: Forms identifying the number of seabirds recorded for the week during the Equinor project;
- Stranded Bird Search and Encounter Datasheet (Environment and Climate Change Canada): Forms identifying numbers for seabird searches performed and the seabirds identified on these searches.

5.0 Sources Cited

Equinor Canada Ltd. Newfoundland (2022). Seabird Survey, Handling, and Observation Protocol.

Migratory Birds Convention Act, SCC 1994, c. 22.

Migratory Birds Regulations, SORC 2022, c. 105.