



Post-Drilling Coral and Sediment Survey Seabird, Marine Mammal and Sea Turtle Monitoring Report

Newfoundland & Labrador Orphan Basin Exploration Drilling Program

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**Post-Drilling Coral and Sediment Survey Seabird, Marine Mammal and Sea Turtle
Monitoring Report (July 2023)**

Vessel: Maersk Mobiliser

Position: 50° 34.05' North, 49° 44.16' West (Ephesus)

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1. Introduction

bp Canada Energy Group ULC (bp) contracted the vessel Maersk Mobiliser (Figure 1-1) to conduct a post-drilling seabed survey at the Ephesus wellsite in July of 2023. The wellsite is located 395 km northeast of St. John's in the West Orphan Basin in Exploration License (EL) 1168 (a consolidation of EL1145 and 1146) (See Figure 1-2).

The post-drilling seabed survey included the implementation of a seabird monitoring program to collect data on seabird occurrences in the area and to minimize seabird mortalities due to seabird strandings. bp contracted PAL Aerospace (PAL) Ice and Environmental Services (IES) to provide seabird and marine mammal monitoring services on the seabed survey vessel Maersk Mobiliser while in transit to, from, and at the Ephesus F-94 wellsite.



Figure 1-1: Maersk Mobiliser

Both stationary and moving seabird surveys were conducted throughout the seabed survey. Two PAL Marine Mammal, Sea Turtle, and Seabird Observers (observers) were placed on the Maersk Mobiliser from July 05, 2023, to July 10, 2023. The observers conducted hourly seabird surveys and visual observations of marine mammals and sea turtles each day. Seabird occurrence data was collected in accordance with the Environment and Climate Change Canada's (ECCC-CWS) Eastern Canada Seabirds at Sea (ECSAS) Standardized Protocol for Pelagic Seabird Surveys from Moving and Stationary Platforms (Gjerdrum et al. 2012).

The observers also conducted systematic searches for stranded seabirds which were conducted each morning in accordance with ECCC-CWS Procedures for Handling and Documenting Stranded Birds Encountered on Infrastructure Offshore Atlantic Canada (ECCC-CWS 2016) and Guidance for Developing Systematic Stranded Bird Survey Protocols for Vessels and Platforms (ECCC-CWS 2016).

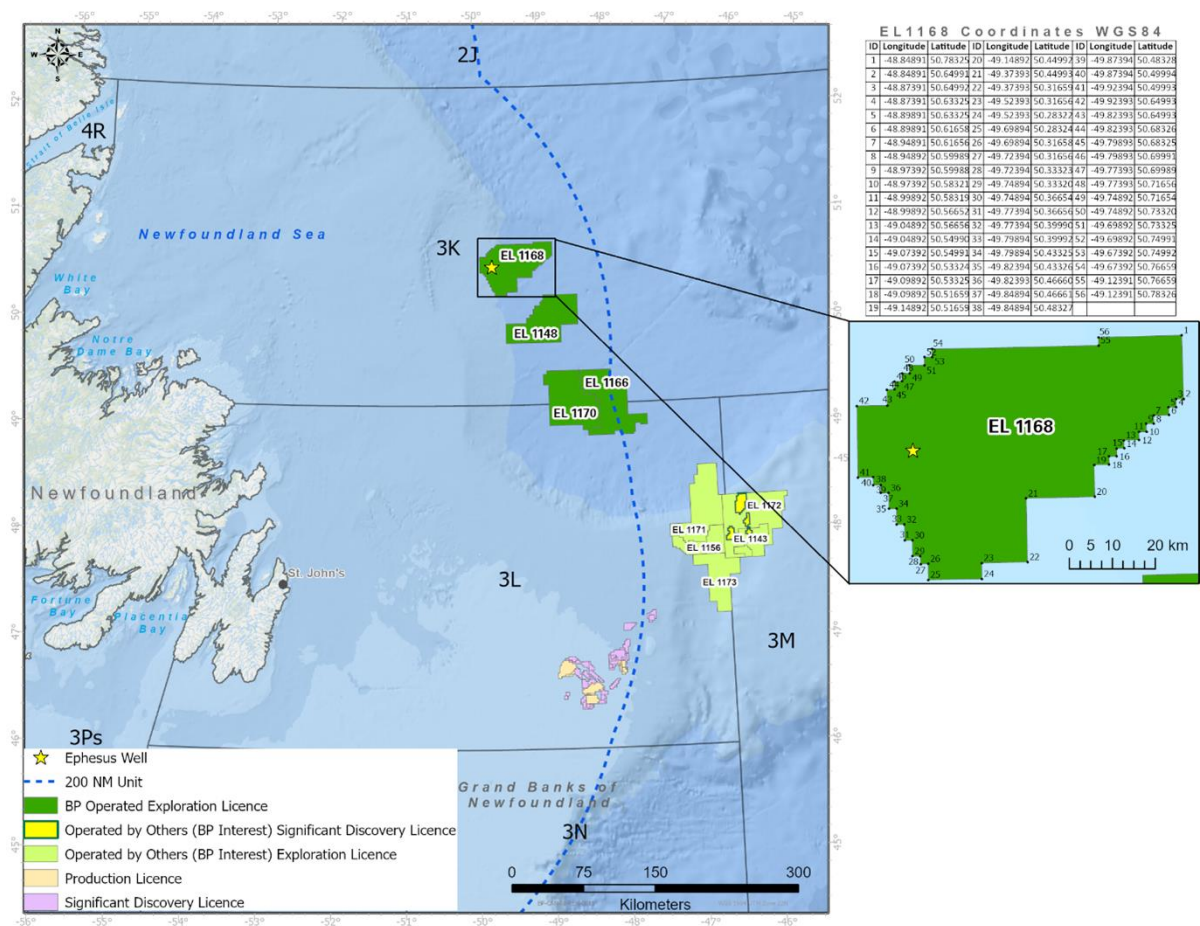


Figure 1-2: Ephesus Wellsite Within EL1168

2. Purpose

In February of 2019, bp developed and issued to the Canada Newfoundland Offshore Petroleum Board (C-NLOPB) an environmental assessment report titled Ephesus Prospect ROV Survey (2019-2024) which was updated in June of 2022 and amended in March of 2023. The purpose of the assessment was to support an application to the C-NLOPB for an operations authorization to complete a remote operated vehicle (ROV) survey at the Ephesus wellsite to assess corals and sponges in the area and to identify any potential subsea hazards to drilling. Prior to spudding, bp committed to gathering baseline benthic data at the wellsite to understand potential site sensitivities and opportunities for reducing potential adverse environmental effects on corals and sponges.

The Ephesus Prospect ROV Survey (the Project) required an authorization as an environmental program C-NLOPB pursuant to section 138 of the Canada Newfoundland and Labrador Atlantic Accord Implementation Act and section 134 of the Canada Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act (the Accord Acts). In a June 2019 Letter of Determination, the C-NLOPB stated the environmental assessment report and associated correspondence described the Project in sufficient detail and provided an acceptable assessment of the potential environmental effects of the Project. The C-NLOPB also advised they had considered the information provided and the advice of the Boards’ advisory agencies and determined that the proposed project, following the application of mitigation measures, was not likely to cause significant adverse environmental effects.

The Letter of Determination also included a recommendation for the following conditions to be appended to the environmental program authorization:

- The Operator shall implement or cause to be implemented, all the policies, practices, recommendations and procedures for the protection of the environment included in or referred to in the Application and in the Ephesus Prospect ROV Survey (2019-2024) Environmental Assessment Report (Stantec February 2019), and the Correspondence on use of ECSAS software for bird observations (BP April 2019).
- A report on mitigation and monitoring identified in the environmental assessment, and undertaken during the program, should be submitted to the C-NLOPB within six (6) months of completion of the fieldwork in a format that is suitable for public release (e.g. PDF). The report should include a description of the mitigation and monitoring measures identified in the EA, including those described in the Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment, and implemented during the program as well as the assessment of the effectiveness of these measures. It shall include, but not be limited to, electronic copies of the Fisheries Liaison Officer (FLO), marine mammal observer (MMO), in Excel format, and seabird observations and reports that were produced during the program.

The purpose of this report is to provide the results of the implementation of the seabird related mitigations and monitoring conducted during the Project.

2.1. Objectives

The objectives of this report are as follows:

- To demonstrate the effectiveness of mitigations applied to reduce the impacts of seabird strandings on the Maersk Mobiliser;
- To enhance existing knowledge and understanding of seabird occurrences at and in transit to and from the Ephesus F-94 wellsite;
- To demonstrate compliance with regulations and conditions, and commitments arising from the environmental assessment.

3. Summary of Seabird Monitoring and Recovery

bp implemented a seabird monitoring program on the Maersk Mobiliser from July 05, 2023, when it left St. John's, until July 10, 2023, when the vessel returned to port. The monitoring program was conducted under the ECCC-CWS Scientific Permit LS2815 issued under the Migratory Birds Convention Act and Regulations.

3.1. Surveys from Moving Platforms

Moving platform surveys were conducted on the Maersk Mobiliser while in transit to or at the Ephesus wellsite. As per the ECSAS protocol, upon arrival at the Ephesus F-94 wellsite, the moving surveys were generally no longer applicable due to vessel speed being less than 4 knots.

When moving platform surveys were conducted, the observer completed surveys looking forward on the vessel, scanning at a 90° angle from the port side of the vessel, covering a 300-metre band (Figure 3-1).

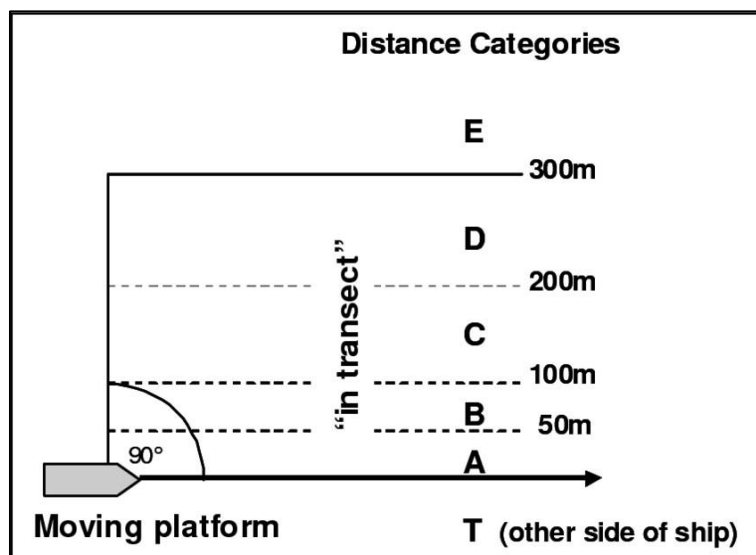


Figure 3-1: Survey Method using a 90° Scan

Observers completed scanning using the naked eye. Binoculars were used to confirm species and other details (i.e. moult, age, carrying fish, etc.). However, when large concentrations of birds occurred in the survey area, and birds flew away as the vessel approached, binoculars were used to count individuals.

The observer also scanned ahead regularly to increase the likelihood of detecting birds prone to diving as the vessel approached.

3.2. Surveys from Stationary Platforms

When the Maersk Mobiliser was at the wellsite, observers conducted observations using instantaneous counts, or snapshots, of seabirds within a 300m radius semi-circle area from the port side of the vessel. Scans occurred at regular intervals throughout the day and lasted only a few seconds.

Observers conducted observations once per hour during dayshift regardless of whether birds were present or not. Observations were recorded and logged digitally in the ECCC-CWS Access database and recorded physically on the record sheet for a stationary platform survey.

In addition, observers scanned from the same location each time to increase the comparability among scans. Surveys were conducted by scanning a 180° arc, prioritizing birds within a 300m semi-circle (Figure 3-2). The semi-circle is divided into five zones;

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

The observer 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 that time. The distance to birds from the observer was estimated and recorded for all birds. Range sticks were also used to gauge the

distance to birds when the observer could see the horizon. As necessary, binoculars and spotting scopes were utilized to confirm species identification and other details.

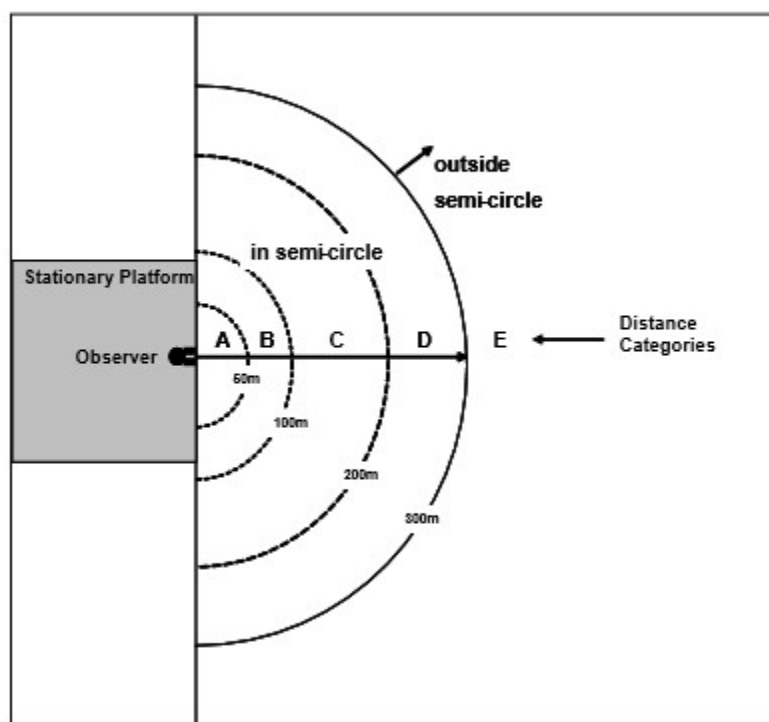


Figure 3-2: 180° Survey from a Stationary Platform

When the entire width of the 300m semi-circle was not visible, the observer indicated the limit of visibility on the database. When no birds were detected during a scan, the observer recorded the whole observation, leaving any bird information blank. Any gaps between observations would have been due to poor weather and the lack of visibility.

3.3. Stranded Seabird Search Procedures

The seabird observers searched the vessel for stranded birds at least once daily. All crew members were also requested to alert the observer if stranded birds were found. The systematic survey routes are reflected in Figure 3-3, Figure 3-4, Figure 3-5, Figure 3-6, Figure 3-7, and Figure 3-8. The area covers 200 metres on the main deck, 80 metres on the A-deck, 65 metres on the B-deck, 100 metres on the E-deck, 70 metres on the bridge top deck, and an additional 50 metres on the roll reduction tank, totaling 565 metres. The red line in the figures below illustrates the systematic search route. This survey quantifies species numbers and status (alive or dead) and the timing of migratory bird strandings in the area.

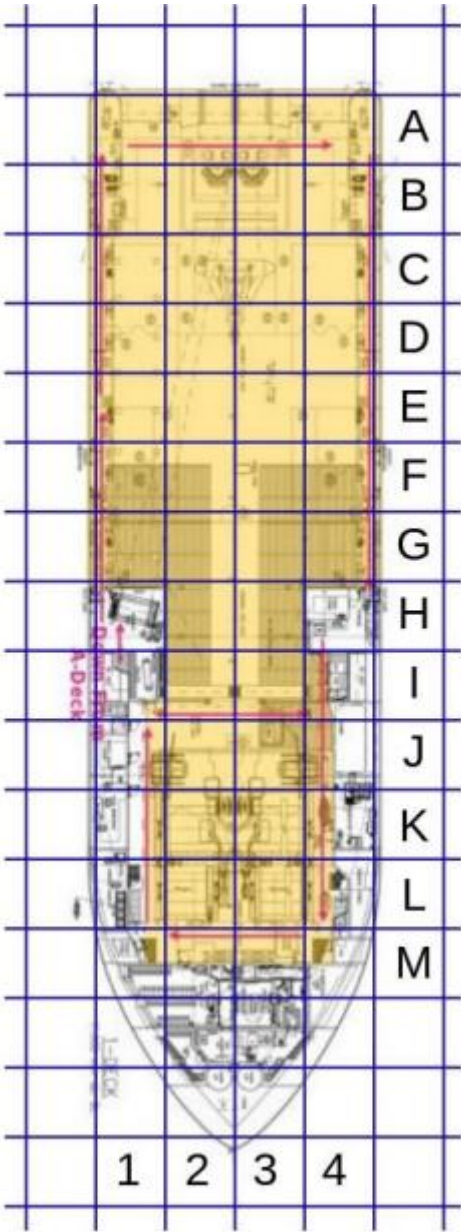


Figure 3-3: Maersk Mobiliser Main Deck (200 Meters)

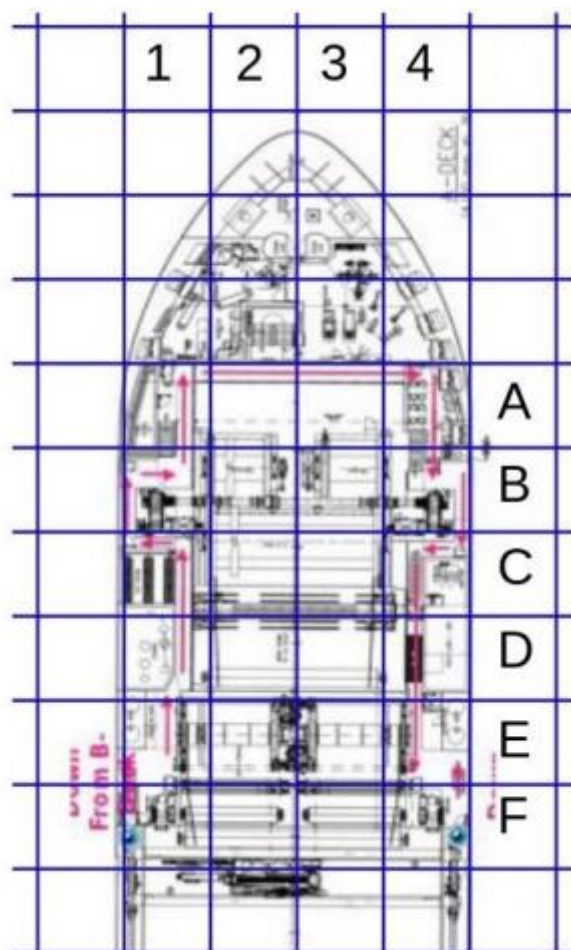


Figure 3-4: Maersk Mobiliser A-Deck (80 Meters)

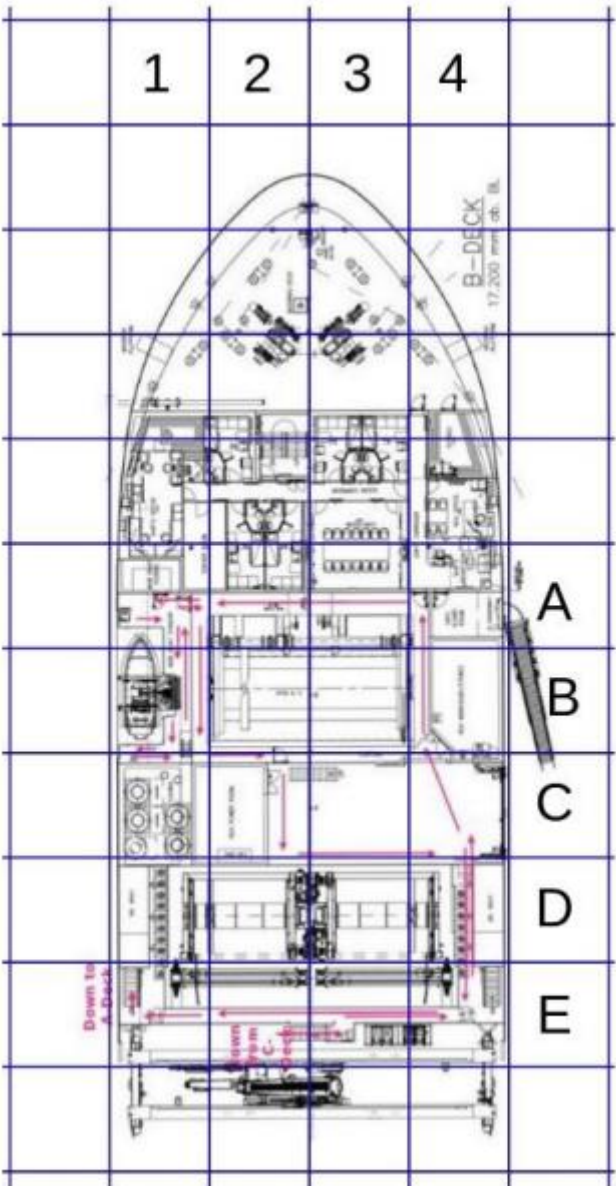


Figure 3-5: Maersk Mobiliser B-Deck (65 Meters)

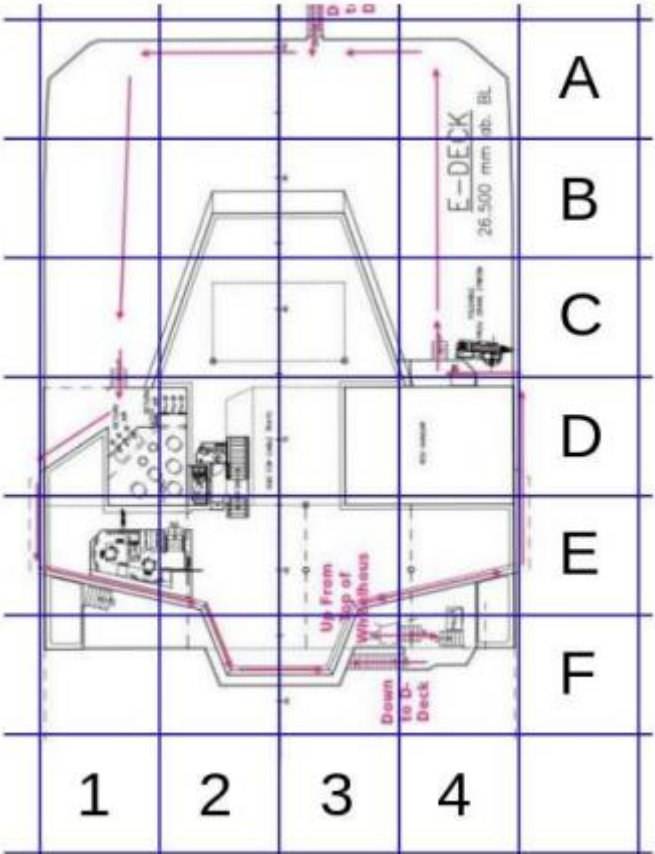


Figure 3-6: Maersk Mobiliser E-Deck (100 Meters)

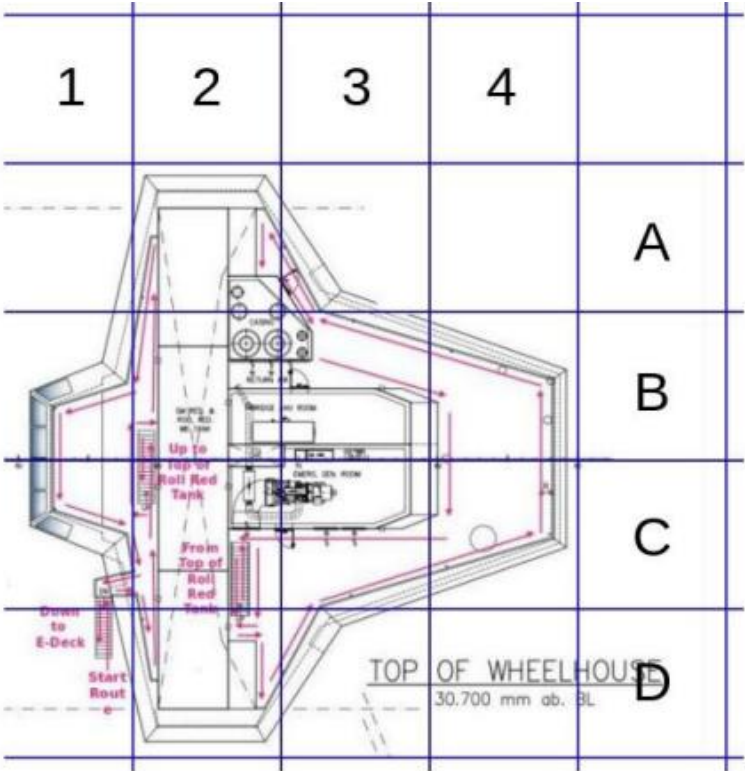


Figure 3-7: Maersk Mobiliser Bridge Top Deck (70 Meters)

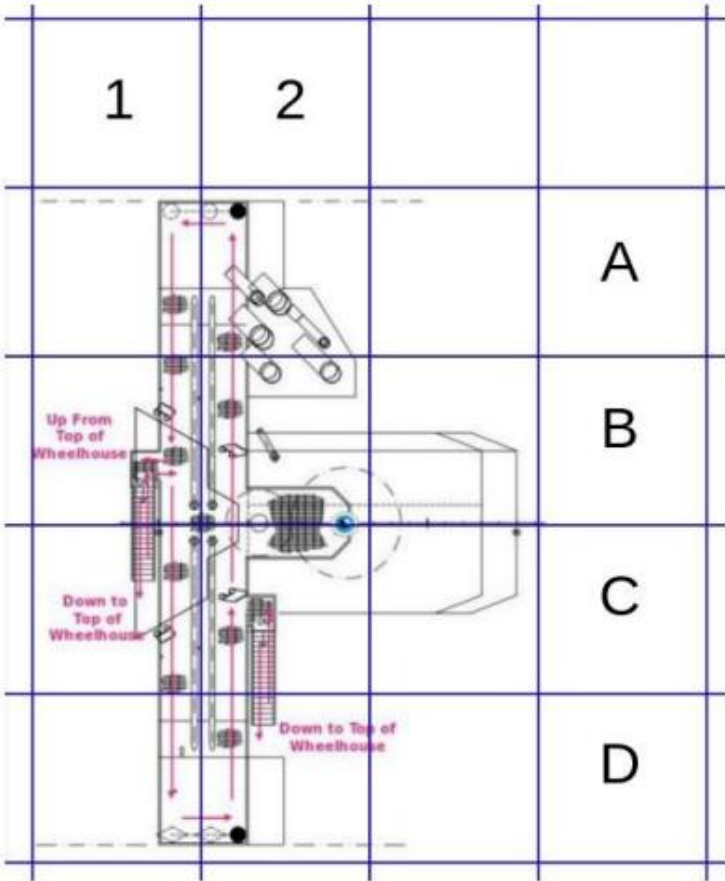


Figure 3-8: Maersk Mobiliser Roll Reduction Tank (50 Meters)

3.4. Summary of Marine Mammal and Sea Turtle Monitoring

The onboard observer conducted visual observations on the Maersk Mobiliser primarily from the bridge wings during daylight hours. A single marine mammal was observed during the survey however no sea turtles were seen.

Visual scans were made with the naked eye and with binoculars with 8x or 10x magnification. The detection cues 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 were identified based on physical characteristics and behaviours. Identification is facilitated by consulting relevant field guides and by observer experience.

4. Results

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

4.1. Seabird Sightings

4.1.1. Moving Platform Seabird Sightings

The seabird observers conducted moving platform seabird monitoring surveys during the transit from St. John's harbour to the Ephesus F-94 wellsite and during their time at the wellsite from:

- July 05, 2023, at 0748z until 2302z,
- July 07, 2023, from 1602z until 2101z,
- July 08, 2023, from 1511z until 1939z,
- July 09, 2023, from 1424z until 2247z, on the return to St. John's.

During these periods, a total of 481 seabird observations recorded 462 individual seabirds. 87 of the 481 observations (18.8%) resulted in no seabirds identified. The most frequent individual seabird sighting was the Northern Fulmar (181 birds sighted, 39.2% of all birds sighted), followed by the Great Shearwater (140 birds sighted, 30.3% of all birds sighted). Table 4-1 and Figure 4-1 summarize all seabird observations recorded during the moving platform surveys from July 05, 2023, until July 09, 2023.

Table 4-1: Moving Platform Seabird Sightings

Species	Number
Arctic Tern	1
Atlantic Puffin	4
Common Murre	21
Family: Auks	2
Family: Hydrobatid Storm-Petrels	1
Genus: Murres	8
Genus: Shearwaters (Puffinus or Calonectris)	1
Great Shearwater	140
Leach's Storm-Petrel	94
Manx Shearwater	1
Northern Fulmar	181
Sooty Shearwater	5
Thick-billed Murre	3
Total	462

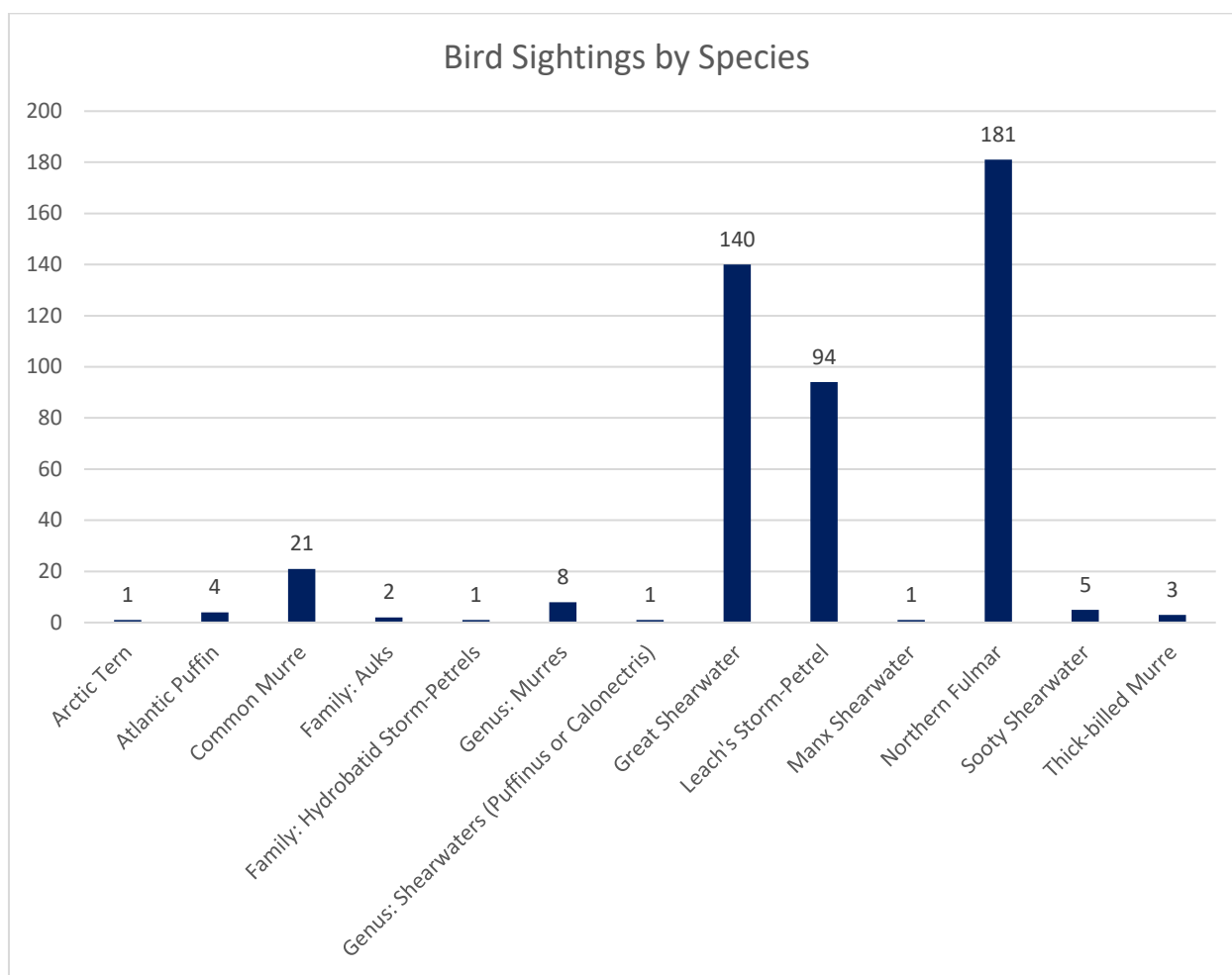


Figure 4-1: Moving Platform Seabird Sightings

4.1.2. Stationary Platform Seabird Sightings

The seabird observers conducted seabird monitoring surveys from stationary platforms at the Ephesus F-94 wellsite from July 05, 2023, at 2207z, until July 09, 2023, at 1657z. During this period, a total of 187 seabird observations recorded 1,397 individual seabirds. 8 of the 187 observations (0.6%) resulted in no seabirds identified.

The most frequent individual seabird sighting was the Northern Fulmar (1,280 birds sighted, 91.6% of all birds sighted), followed by the Great Shearwater (102 birds sighted, 7.3% of all birds sighted). Table 4-2 and Figure 4-2 summarize all stationary seabird observations at the Ephesus F-94 wellsite on July 05, 2023, to July 09, 2023.

Table 4-2: Seabird Sightings from the Mobiliser

Species	Number
Common Murre	1
Great Shearwater	102
Leach’s Storm-Petrel	9
Long-tailed Jaeger	1
Northern Fulmar	1,280
Sooty Shearwater	4
Total	1,397

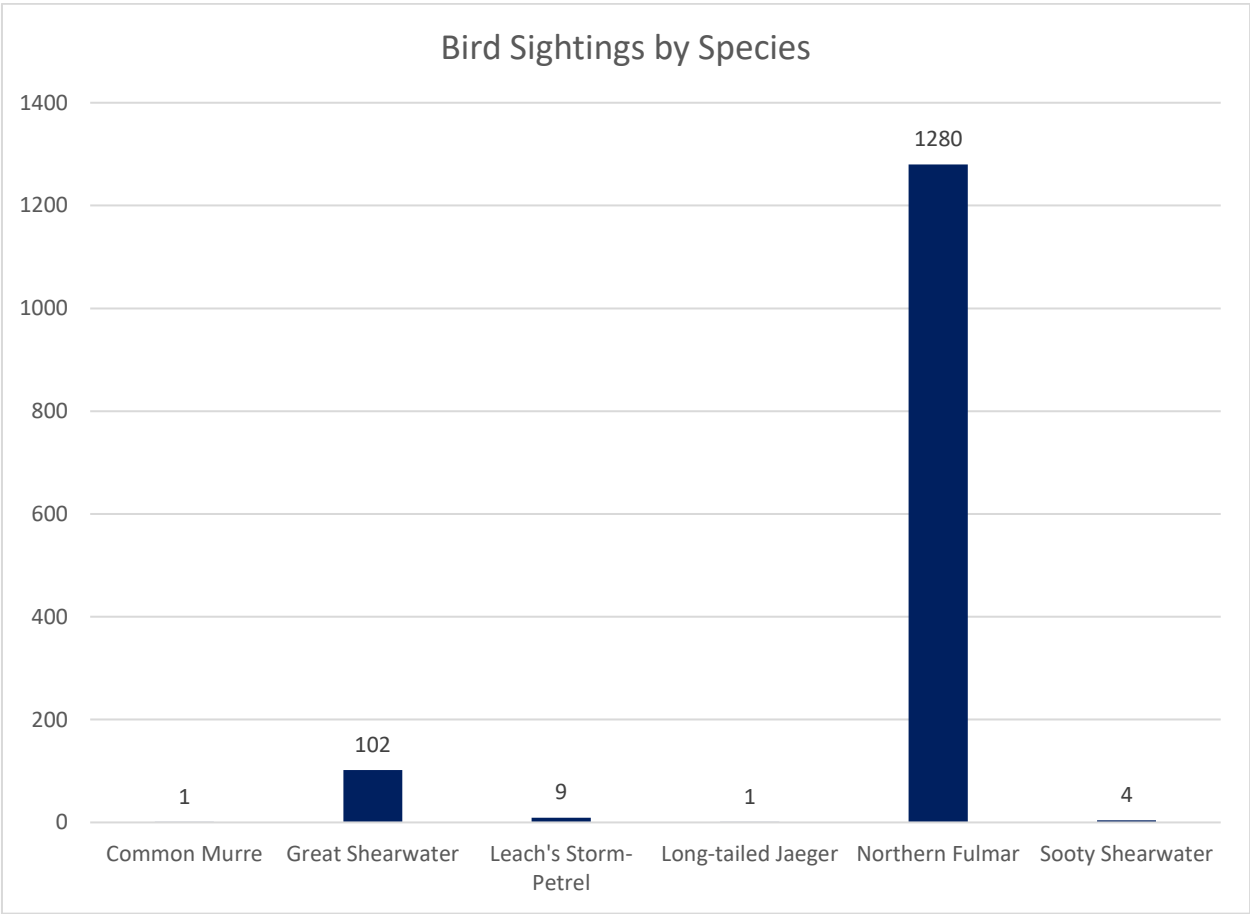


Figure 4-2: Seabird Sightings from Ephesus F-94 Wellsite

4.1.3. Seabird Behaviour

Seabirds' most commonly identified behaviour was an escape from ship – take-off (65.0%), followed by an escape from ship–diving (24.0%).

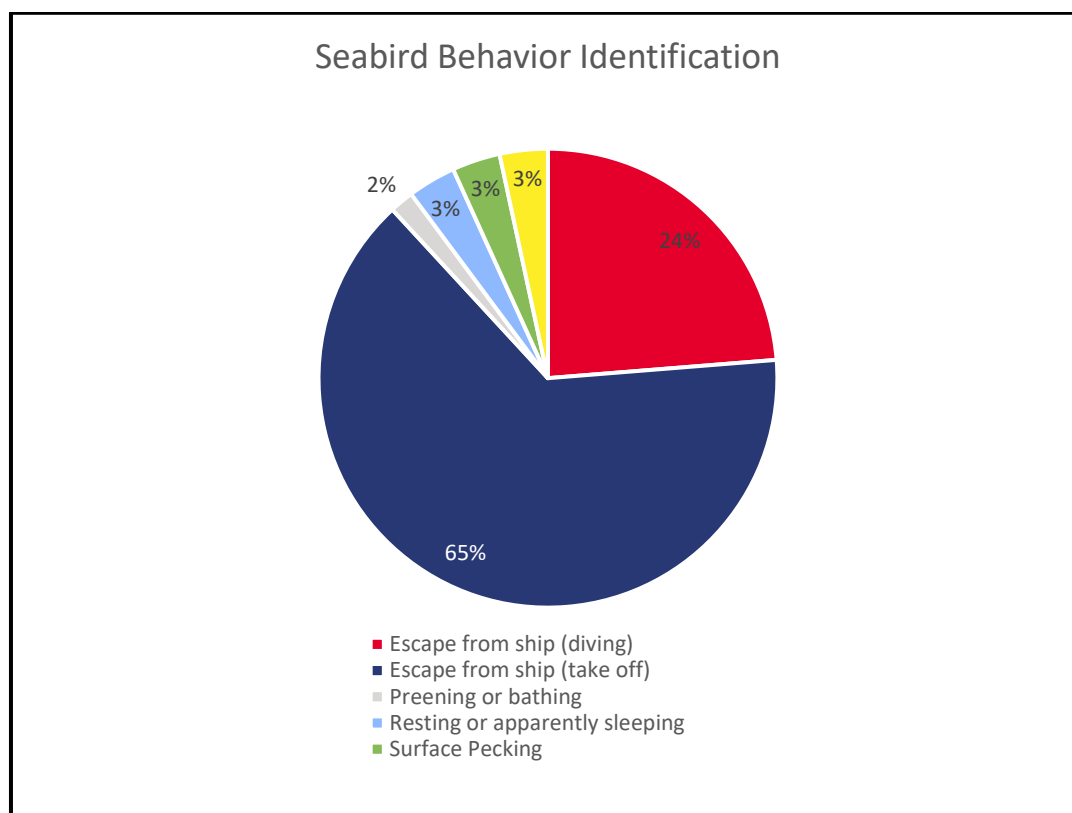


Figure 4-3: Seabird Behavior Identification

4.2. Stranded Seabird Searches

Six stranded seabird searches were completed while the Maersk Mobiliser was in transit or at the Ephesus F-94 wellsite. Results from these searches can be found in Table 4-3, Figure 4-5, and Figure 4-6.

The Leach's Storm-Petrel was the only type of bird found, accounting for all 3 (100.0%) identified birds. One stranding occurred on July 07, 2023, at 2145z and another on July 09, 2023, at 0915z. Please see Table 4-3 for reference to all findings.

Table 4-3: Seabird Strandings

Date			July 07, 2023	July 09, 2023
Location of stranding (Lat/Long, or Name)			Grid C2	Grid C2
Species			Leach’s Storm-Petrel	Leach’s Storm-Petrel
Total # of Stranded Birds			1	2
Found Dead	# Oiled		0	0
	Fate	Disposed of at Sea	0	0
		Sent Ashore	0	0
Found Alive	Oiled	Died in Care	0	0
		Released Alive	0	0
		Sent Ashore	0	0
	Not Oiled	Died in Care	0	0
		Released Alive	1	2
		Sent Ashore	0	0
Fog (Y/N)			Y	Y
Rain (Y/N)			Y	N

During an opportunistic survey on July 07, 2023, at 2145z, the crew reported one Leach's Storm-Petrel in the ROV hanger. It was released according to protocol.

On July 09, 2023, at 0650z, two Leach's Storm Petrels were discovered in the ROV hangar under grating. The birds were photographed and placed in a recovery box later released at 0915z. See Figure 4-4.



Figure 4-4: Leach's Storm-Petrel –July 09, 2023

Figure 4-5 illustrates the total time the observer took to complete the systematic searches. The longest stranded seabird search lasted 45 minutes on July 09, 2023. The shortest stranded seabird search lasted 20 minutes on both July 05 and July 06, 2023.

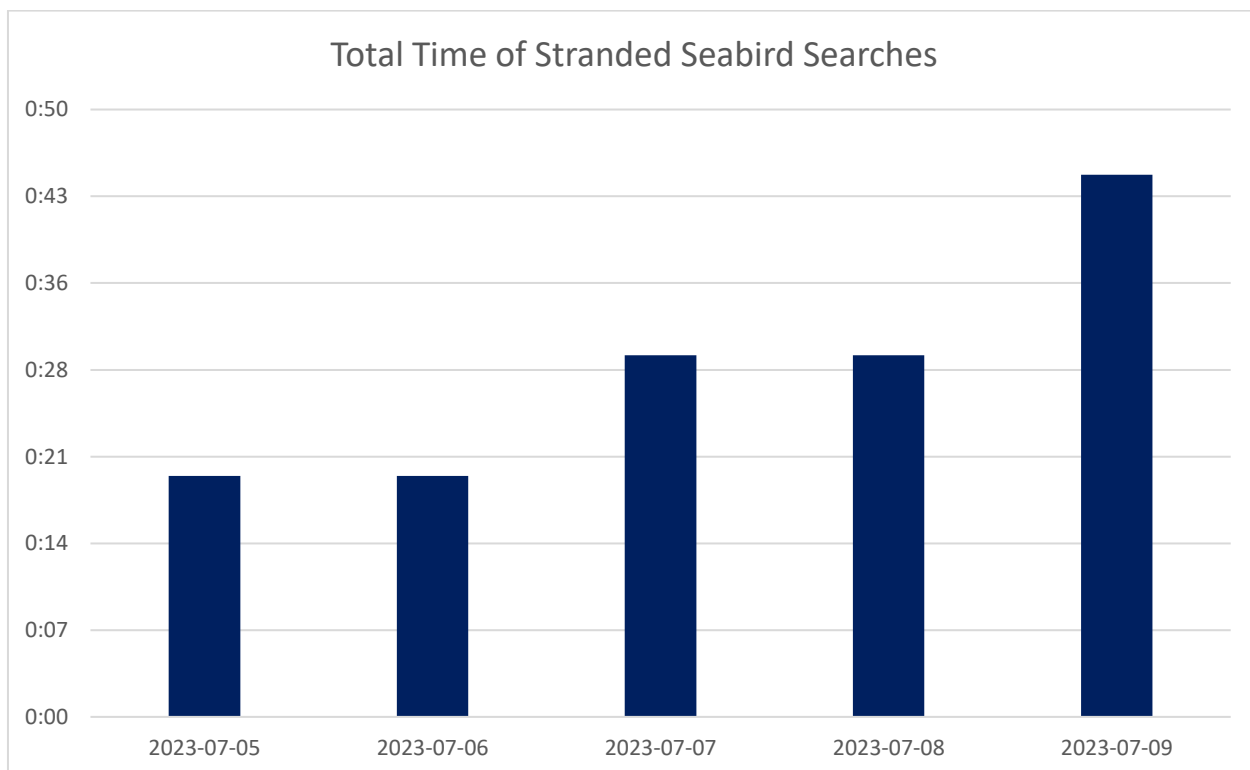


Figure 4-5: Total Time of Stranded Seabird Searches

Figure 4-6 below identifies the total area covered for the stranded seabird searches on the Maersk Mobiliser based on the search routes illustrated in Figure 3-3 to Figure 3-8. It should be noted that one opportunistic search was recorded with a duration of 0 minutes on June 07, 2023, at 2145z. Since this was an opportunistic search that crew members reported, it does not have an end time, unlike a typical systematic search. All six stationary stranded bird surveys

(100.0%) covered less than the 565 metres of the total path. This was due to active radar near the stabilizer tanks.

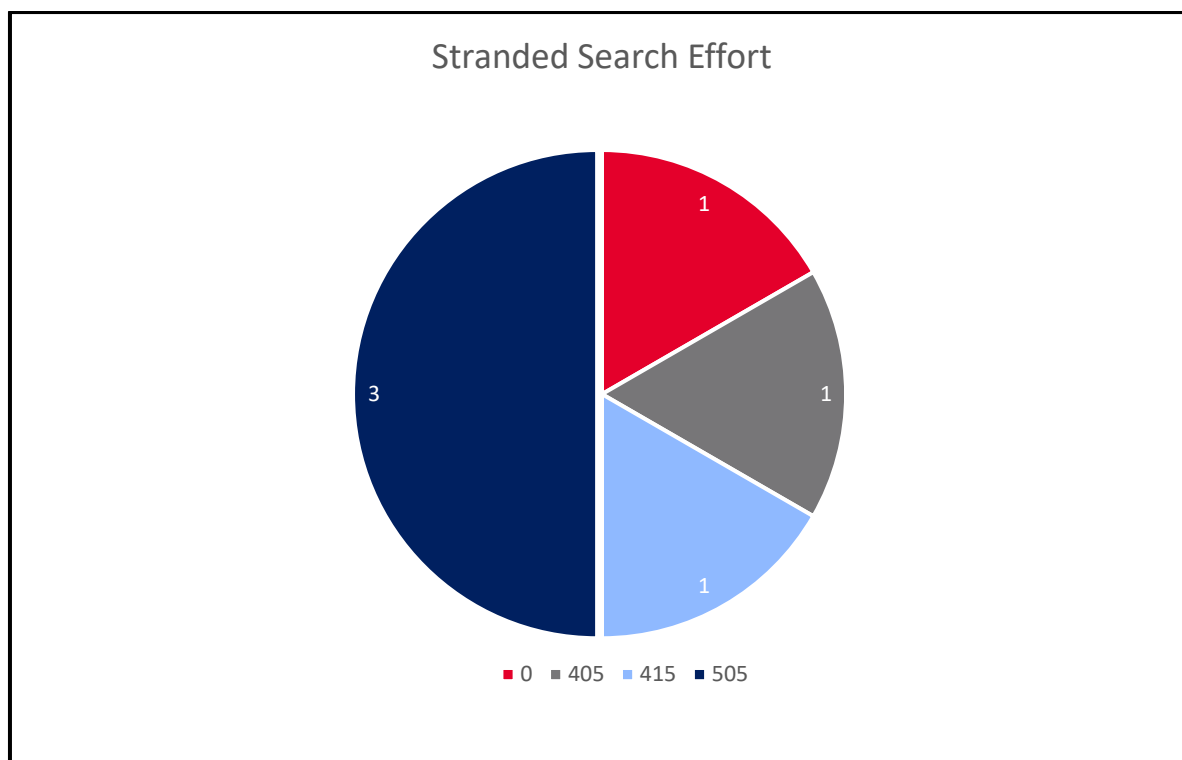


Figure 4-6: Stranded Search Effort

4.3. Leach's Storm-Petrel Strandings

There were 3 Leach's Storm-Petrels stranded during the post-drilling survey, all 3 were released alive.

4.4. Marine Mammal and Sea Turtle Monitoring

One marine mammal, a Harp Seal, was identified during the survey on July 5, 2023 at 2100 UTC. The seal was observed lying on the surface approximately 200m from the vessel prior to diving.

5. Mitigations and Effects Summary

5.1. Lighting Control Measures

Gjerdrum et al. (2021) have identified that lighting is the leading cause of seabird strandings offshore, with the Leach's Storm-Petrel being the most commonly stranded species in Atlantic Canada. The highest percentage of these strandings occur when fledgling petrels leave the nest in September and October. Data indicates that strandings of storm petrels are more common during dark phases of the moon, and ECCC-CWS now issues an annual forecast for when to expect most Leach's Storm-Petrel strandings during the Fall months. ECCC-CWS releases seasonal strandings awareness predictions identifying expected stranding based on time of year and lunar phases. bp utilized this tool through their seabird program to reinforce awareness of personnel on the mitigations in place to minimize risks to Leach's Storm-Petrels

Throughout the project, the lighting control measures included the closure of curtains at night (rooms, galley, common areas). Any additional lighting (e.g. cargo deck) was reduced when not required for operational purposes. Measures were implemented daily for a total of 6 days

during the project. The ROV hanger proved to be an area prone to strandings. A assesement of lighting requirments in the hanger should be considered to deetrmine if any lightimng reduction opportunities exist.

The effectiveness of the lighting control measures in reducing seabird attraction and strandings cannot be ascertained but can reasonably be assumed to have been effective to some unknown degree.

5.2. Systematic Searches

Systematic stranded seabird searches were conducted daily on the Maersk Mobiliser. The Leach's Storm-Petrel was the most commonly occurring seabird stranded throughout the project, with the Northern Fulmar being the most observed.

During the project, no seabirds were sighted or stranded to the extent that the EIS prediction of no significant adverse effects could be stated to be invalid. Stranded seabirds which appeared healthy were held to rest and released on site.

Systematic searches resulted in the identification and release of healthy storm petrels. As described above in Section 4.2, this mitigation can be said to have effectively reduced the mortality of stranded Leach's Storm-Petrels by 100%.

5.3. Vessel Requirements

During the drilling program, the Maersk Mobiliser did not sail within 300m of migratory bird nesting colonies.

At no point during the survey did the vessel speed have to be reduced due to the potential of a collision with a marine mammal or sea turtle.

No collisions or interactions occurred between the Maersk Mobiliser and a marine mammal, a sea turtle or fishing gear or any other vessel.

5.4. ECSAS Observation Data

As reflected in this report, Competent ECSAS observers were positioned on the Maersk Mobiliser for the duration of seabed survey to monitor daily for the presence of marine birds. All data was entered into an Excel workbook, and into the ECCC-CWS provided MS Access database. The data will serve to increase general knowledge of seabirds in the area and improve future impact assessments.

6. Supplementary Digital Data

The following data has also been provided for this report:

- ECSAS Wildlife Survey Access Database (Maersk Mobiliser 2023): Database outlining all data recorded (July 05, 2023 – July 09, 2023);
- Daily Seabird Observation Report: Forms identifying the number of seabirds recorded daily during the Ephesus F-94 project;
- Weekly Seabird Observation Report: Forms identifying the number of seabirds recorded for the week during the Ephesus F-94 project;
- Recording Effort Forms: Forms identifying observers' weekly effort for seabird watches;

- Stranded Bird Search and Encounter Datasheet (Environment and Climate Change Canada): Datasheet identifying numbers for seabird searches performed and the seabirds identified on these searches;
- Stranded Bird Data Entry Forms (Environment and Climate Change Canada): Forms identifying numbers for seabird searches performed and the seabirds identified on these searches.

7. References

Environment and Climate Change Canada's (ECCC-CWS) Procedures for Handling and Documenting Stranded Birds Encountered on Infrastructure Offshore Atlantic Canada. (2016).

Gjerdrum et al. (2012). Eastern Canada Seabirds at Sea (ECSAS) Standardized Protocol for Pelagic Seabird Surveys from Moving and Stationary Platforms. ECC-CWS.

Guidance for Developing Systematic Stranded Bird Survey Protocols for Vessels and Platforms. (2016). ECCC-CWS.