

Wind Energy Research Lease on the Atlantic Outer Continental Shelf Offshore Maine Biological Assessment

For the United States Fish and Wildlife Service

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**US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs**



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ABBREVIATIONS AND ACRONYMS

Abbreviation	Definition
APM	Applicant-Proposed Measure
BA	Biological Assessment
BOEM	Bureau of Ocean Energy Management
BSEE	Bureau of Safety and Environmental Enforcement
CFR	Code of Federal Regulations
DOI	Department of the Interior
EA	Environmental Assessment
EFH	Essential Fish Habitat
EH	Estimated Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FSN	Final Sale Notice
FONSI	Finding of No Significant Impact
Framework	Avian and Bat Monitoring Framework
FW	Federal Waters
G&G	Geophysical and Geotechnical
GAP	Gap Analysis Project
GPS	Global Positioning System
HAPC	Habitat Area of Particular Concern
HD	High Definition
IPaC	Information for Planning and Consultation
IPF	Impact-Producing Factor
kV	Kilovolt
Lease Area	Lease Area OCS-A 0521
MA DFW	Massachusetts Division of Fish and Wildlife
MCEC	Massachusetts Clean Energy Center
MDAT	Marine-Life Data and Analysis Team
MLLW	Mean Lower Low Water
MSL	Mean Sea Level
MW	Megawatt
NEPA	National Environmental Policy Act
NHP	Natural Heritage Program
NHESP	National Heritage and Endangered Species Program
O&M	Operations and Maintenance
OCS	Outer Continental Shelf
OSRP	Oil Spill Response Plan
PDE	Project Design Envelope
PH	Priority Habitat
POI	Point of Interconnection
PPP	Piping Plover Protection Plan
PSN	Proposed Sale Notice
ROW	Right-of-Way
TSS	Traffic Separation Schemes

Wind Energy Research Lease on the Atlantic Outer Continental Shelf Offshore Maine
Biological Assessment

Abbreviation	Definition
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VHF	Very High Frequency
WDA	Wind Development Area
WEA	Wind Energy Area
WNS	White-Nose Syndrome

1. Introduction

Pursuant to Section 7(a)(2) of the Endangered Species Act (ESA), the Bureau of Ocean Energy Management (BOEM) requests informal consultation with the U.S. Fish and Wildlife Service (USFWS) regarding species that may be affected by the issuance of a research lease on the Atlantic Outer Continental Shelf (OCS) offshore Maine (Project). BOEM's mission is to continue to regulate offshore renewable energy development activities in an environmentally responsible way. The Energy Policy Act of 2005 authorized the development of regulations for the OCS Renewable Energy Program. This regulatory framework requires BOEM to coordinate with USFWS to conduct reviews under the ESA. Additionally, the Bureau of Safety and Environmental Enforcement (BSEE) is a co-action agency responsible for verifying and enforcing compliance with any conservation measures from this consultation for any activities occurring on the outer continental shelf (OCS).

As detailed in the Wind Energy Research Lease on the Atlantic Outer Continental Shelf Offshore Maine Environmental Assessment (EA), the Proposed Action for this EA is the issuance of a wind energy research lease in the Gulf of Maine. Figure 1 shows the location of the approximately 68,320-acre (276-square-kilometer) area (referred to in this biological assessment [BA] as the Research Lease Area) of the OCS in the Gulf of Maine. Within the Research Lease Area, BOEM would issue a research lease not to exceed 10,000 acres (40.5 square kilometers) and would site the lease in a location that minimizes impacts on navigation. The research lease would not authorize the installation of wind turbines on the OCS but would result in site assessment activities (i.e., placement of a meteorological ocean buoy) on the lease and site characterization activities (i.e., geophysical, geotechnical, biological, and archaeological surveys and monitoring activities) on the lease, grant, and potential project easements. Issuance of the research lease would also give the State of Maine exclusive right to submit a detailed research activities plan (RAP) for wind energy-related research activities offshore Maine. The research lease application submitted to BOEM by the State of Maine in October 2021 included a preliminary plan for development of an array of up to 12 floating offshore wind turbines (Research Array) on the OCS offshore Maine capable of generating up to 144 megawatts (MW) of renewable energy (State of Maine 2021). Figure 1 also shows the State of Maine's narrowed area of interest (34,596 acres [140 square kilometers]) and requested lease area (9,728 acres [39.4 square kilometers]) for potential installation of the Research Array pending approval of a RAP.

This BA evaluates the potential effects of the proposed Project on federally listed species under the jurisdiction of USFWS that would occur or potentially occur within the Action Area if BOEM were to approve the EA. Federally listed species under the jurisdiction of the National Marine Fisheries Service are being evaluated in a separate BA. This BA describes the proposed Project (Section 2), defines the Action Area (Section 3), describes the federally listed species potentially affected by the proposed Project (Section 4), analyzes how the proposed Project may affect listed species or their habitats (Section 5), and provides BOEM's ESA Section 7 effects determinations (Section 6).

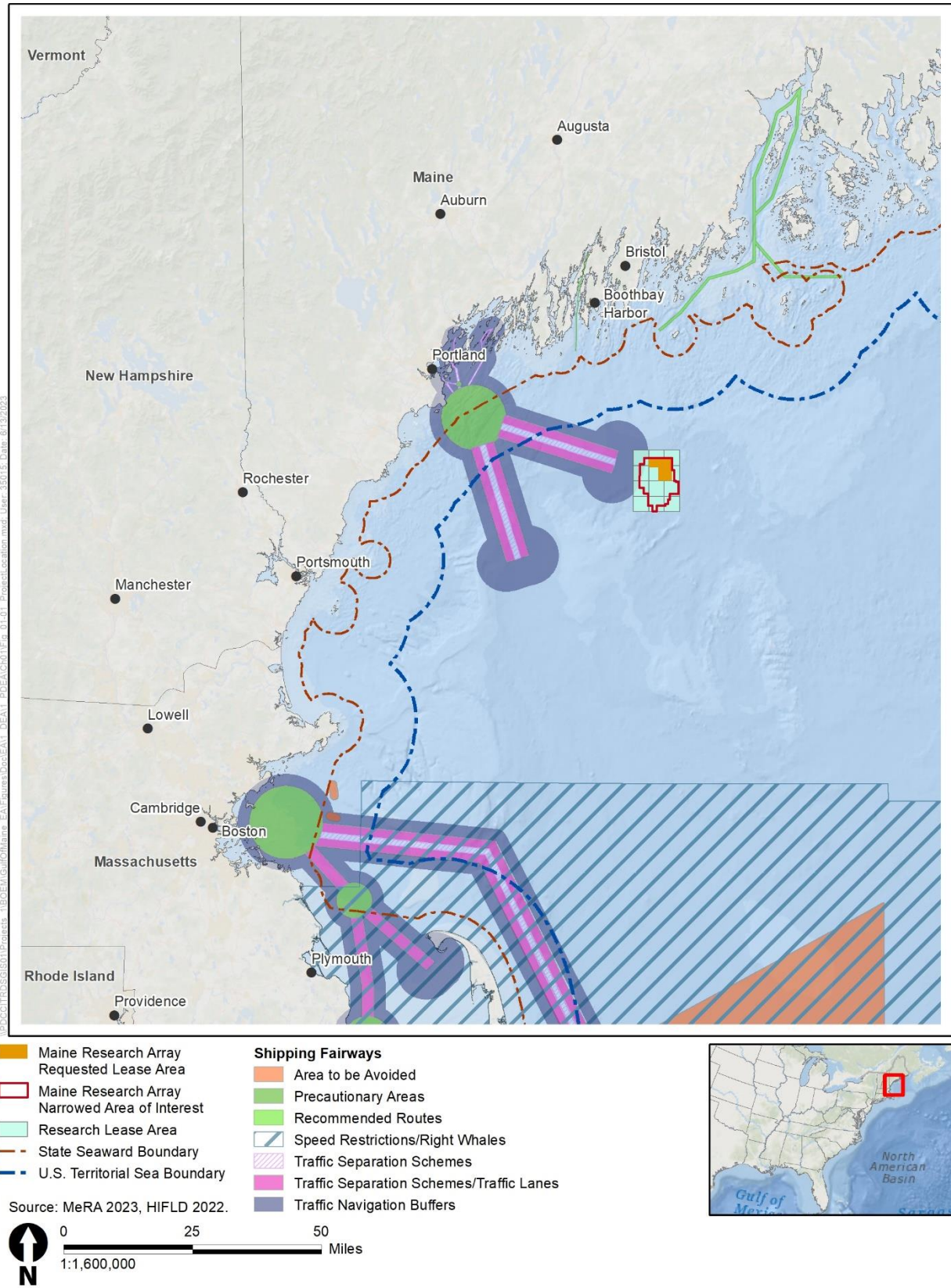


Figure 1. Wind Energy Research Lease Project Location

1.1 Background

In 2009, the Department of the Interior announced final regulations for the OCS Renewable Energy Program, which was authorized by the Energy Policy Act of 2005. The act, implemented by BOEM, provides a framework for issuing leases, easements, and rights-of-way (ROWs) for OCS activities.

The history of BOEM’s planning and leasing activities for the Lease Area includes the following:

- In October 2021, BOEM received an application from the State of Maine filed pursuant to 30 CFR 585.239 for a research lease requesting 9,700 acres (39 km²) on the OCS in a location more than 20 nm (37 km) offshore Maine (State of Maine, 2021).
- On June 22, 2021, Governor Mills signed Legislative Document 336 (Senate Paper 142), which directs the Maine Public Utilities Commission to enter into contract negotiations for a power purchase agreement for energy generated (up to 144 MW) from the Research Array should the state’s application be successful. Immediately following on July 6, 2021, Governor Mills signed Legislative Document 1619 (Senate Paper 512), which prohibited offshore wind development within territorial waters and submerged lands and created a research consortium to oversee the research strategy and priorities for the Research Array.
- On August 19, 2022, BOEM published a Request for Competitive Interest (RFCI) for an area of approximately 68,320 acres (276 km²) in the Gulf of Maine in the Federal Register for a 45-day public comment period (87 *Federal Register* 51134). BOEM issued this RFCI because regulations require that BOEM identify whether or not there is competitive commercial interest in any area that is the subject of an unsolicited lease request. The RFCI encompassed a broader area than identified in the State of Maine’s application to provide BOEM with flexibility to address any other potential conflicts that may be identified in the future that would result in areas of the RFCI not being suitable for leasing.
- On January 19, 2023, BOEM announced its “Determination of No Competitive Interest” for a research lease proposed by the State of Maine (BOEM 2023a). On March 20, 2023, BOEM published the Determination of No Competitive Interest in the Federal Register (88 *Federal Register* 16662). This determination allowed BOEM to begin processing the state’s research lease application.
- On May 4, 2023, BOEM published a Notice of Intent (NOI) to prepare an EA for issuance of a research lease in the Federal Register for a 30-day public comment period that closed on June 5, 2023 (88 *Federal Register* 28611).

1.2 Consultation History

This informal consultation for the Proposed Action builds upon BOEM’s experience with similar offshore wind assessment and development projects in the Atlantic. This is the first consultation with USFWS regarding offshore wind in the Gulf of Maine.

2. Description of Proposed Action

Under the Proposed Action, the issuance of a wind energy lease within an approximately 68,320-acre area in the OCS in the Gulf of Maine would occur within the range of parameters described in the EA for the wind energy research lease, subject to mitigation measures. The Proposed Action would result in site assessment activities on the lease and site characterization activities on the lease potential grant or project easements. Site assessment activities may include the temporary placement of a meteorological ocean buoy. Site characterization activities may include geophysical, geotechnical, biological, and archaeological surveys and monitoring activities. Key components of the site assessment and

characterization activities are summarized in Table 1. The EA provides further details and discussion on the description of the Proposed Action, which this document summarizes below.

2.1 Site Assessment and Site Characterization Activities

Table 1. Site Assessment and Site Characterization Activities

Survey or Monitoring Activity	Description	Activity Frequency and Timing	Port	Vessel Type	Equipment or Method
Site Assessment Activities					
FLiDAR Buoy-based Acoustic Monitoring ¹ – Deployment and Maintenance	Pine Tree Offshore Wind (PTOW) would deploy a floating light detection and ranging buoy (FLiDAR buoy) to collect and transmit information on wind, waves, currents, sea level, and other meteorological parameters in real time. The FLiDAR buoy diameter is 9.5 ft (2.9 m), with an overall height of 23 ft (6.8 m), and approximate weight of 5,512 lbs (2,500 kg). The buoy would be moored with a single gravity anchor estimated to be approximately 6,000 lbs (2,722 kg) and is not expected to exceed a footprint of 32 ft ² (3 m ²).	4 total vessel trips anticipated for deployment, maintenance (2 trips), and decommissioning. Anticipated 24-month buoy deployment (March 2024 through February 2026).	Boston, MA or Portland, ME	Crew boat up to 200 ft (61 m) in length.	Fugro SEAWATCH Wind FLiDAR buoy equipped with an independent tracker and dual global positioning system (GPS) to allow for real-time position monitoring. Primary power from solar panels with backup energy supplied by methanol fuel cells in the hull.
FLiDAR Buoy-based Acoustic Monitoring – Decommissioning	Decommissioning is essentially the reverse of the deployment process. Equipment recovery would be performed with the support of a vessel equivalent in size and capability to that used for deployment. Typically for small buoys, a crane-lifting hook would be secured to the buoy. A water/air pump system would de-ballast the buoy, causing it to tip into the horizontal position. The mooring chain and anchor would be recovered to the deck using a	See previous row.	See previous row.	See previous row.	See previous row.

Survey or Monitoring Activity	Description	Activity Frequency and Timing	Port	Vessel Type	Equipment or Method
	winching system. The buoy would then be transported to shore. Buoy decommissioning is expected to be completed within 1 to 2 days.				
Site Characterization Activities					
Geophysical Reconnaissance Surveys ²	PTOW would conduct geophysical reconnaissance surveys of the Request for Commercial Interest (RFCI) area, export cable routes, and wet storage area identified in the State of Maine’s research lease application. The surveys would cover a broader area and collect relatively lower resolution data to identify specific locations for subsequent high-resolution geophysical surveys.	15 multi-day trips by 24-hr vessel. Each multi-day trip would be approximately 7–14 days depending on many factors, including weather downtime, vessel replenishment, and crew changes. 60 daily trips by 12-hour vessel. September 2023 through November 2023.	Portland, ME	24-hr vessel, with length of approximately 164 ft (50 m), for offshore locations. 12-hr vessel, with length of approximately 49 ft (15 m), for nearshore and inshore locations.	Hull-mounted multibeam echosounder with backscatter measurement (proxy for seafloor hardness) and a parametric sub-bottom profiler (e.g., Innomar) with directional chirp signal with operation frequency of 30–115 kHz. The sensors are of such frequency and amplitude level to not require Incidental Harassment Authorization for marine mammals.
High-Resolution Geophysical Surveys ^{2,3}	PTOW would conduct high-resolution geophysical surveys of the Research Lease Area, export cable routes, and wet storage area identified in the State of Maine’s research lease application. The surveys would collect bathymetrical (seafloor depth), morphological (topography), and geological data to inform various charting, interpretation, analyses, and reporting efforts for the State of Maine’s research project, including assessment of archaeological resources.	15 multi-day trips by 24-hr vessel. Each multi-day trip would be approximately 7–14 days depending on many factors, including weather downtime, vessel replenishment, and crew changes. 60 daily trips for 12-hour vessel. March 2024 through October 2024.	Portland, ME	24-hour vessel, with length of approximately 164 ft (50 m) for offshore locations. 12-hour vessel, with length of approximately 49 ft (15 m) for nearshore and inshore locations.	Multibeam echosounder, side-scan sonar, sub-bottom profiler, magnetometer, and ultrahigh-resolution seismic imaging.
Geotechnical Surveys ^{2,3}	PTOW would conduct geotechnical surveys of the Research Lease Area, potential export cable routes,	30 multi-day trips. March 2024 through October 2024.	Portland, ME	Vessel with a length of ≈246–262 ft (75–80 m).	Shallow geotechnical coring (piston or vibracores) and cone penetration testing. The

Survey or Monitoring Activity	Description	Activity Frequency and Timing	Port	Vessel Type	Equipment or Method
	and wet storage area identified in the State of Maine’s research lease application. The surveys would sample or test seabed characteristics to inform design specifications of and locations suitable for placement of anchors and cable infrastructure.				number and location of test sites would be determined based on the results of the geophysical reconnaissance survey, likely up to several hundred test sites.
Benthic Surveys ³	PTOW would conduct detailed benthic surveys of the Research Lease Area, potential export cable routes, and wet storage area identified in the State of Maine’s research lease application. The surveys would be used to characterize seafloor habitats of the RFCI area, export cable routes, and wet storage area identified in the State of Maine’s research lease application.	Expected to require 30 multi-day trips, conducted as part of geophysical and geotechnical surveys. September 2023 through October 2023.	Portland, ME	See geophysical reconnaissance and geophysical and geotechnical surveys.	Benthic grabs (Hamon grab or Van Veen grab), sediment profile imaging/plan view cameras, and underwater video. The number and location of benthic grab sites would be determined based on the results of the geophysical reconnaissance survey, likely up to several hundred grab sites.
Seafloor Habitat Characterization Sampling and Surveys	The Maine Department of Marine Resources (DMR) would conduct sampling and surveys of the Research Lease Area, potential export cable routes, and wet storage area identified in the State of Maine’s research lease application to characterize seafloor habitat and benthic infauna species composition. Data collected would include water column profiles; average seafloor values for temperature, pH, chlorophyll, dissolved oxygen, and salinity; surficial sediment information; seafloor video; benthic species composition; bathymetry; and backscatter.	Once annually. Number of trips per annual survey depends on steam time of contracted vessel. Beginning in Quarter 1 2023 and continuing until approval of the Research Activities Plan (RAP). ⁴	Boothbay, ME	45-ft (14-m) research vessel capable of deploying/retrieving sampling equipment at depth.	Seafloor sampling with benthic grab. Multibeam sonar surveys. The number and location of benthic grab sites would be determined based on the results of the geophysical reconnaissance survey, likely up to several hundred grab sites.

Survey or Monitoring Activity	Description	Activity Frequency and Timing	Port	Vessel Type	Equipment or Method
Physical Oceanographic Monitoring	DMR would conduct monitoring to characterize the physical oceanographic conditions and surface wind conditions in and around the Research Lease Area. Above-water and surface data would be collected from existing shore-based radar stations with 3.1-mi (5-km) resolution operated by the State of Massachusetts. Two additional radar stations with 1.2-mi (2-km) resolution would be installed along the Maine coast in the first year after lease issuance. In following years, one to three additional radar stations may be installed. Subsurface water data on water column temperature, salinity, chlorophyll a concentration, and suspended particulate concentration would be collected with an underwater glider following a bowtie or sawtooth pattern around the Research Lease Area.	Beginning in July 2023 and continuing until approval of the RAP. ⁴ Monitoring from shore-based radar stations would occur continuously. Glider deployments would occur monthly or less frequently based on data needs.	Undetermined. Portland, ME assumed for analysis.	45-ft (14-m) research vessel capable of deploying/retrieving sampling equipment at depth.	Shore-based radar stations. Underwater glider.
Digital Aerial Surveys	PTOW would work with HiDef and Biodiversity Research Institute to conduct high-definition digital aerial surveys of the RFCI area to sample and map seasonal occurrence and activity of birds, bats, marine mammals, sea turtles, and large fish. Surveys would focus on birds and document the number of individuals, distribution, behaviors (e.g., foraging, flying, resting), and flight height and direction (if applicable). Four	12 flights total, conducted monthly. April 2023 through March 2024, with possible extension through March 2025.	Flights from Plymouth, MA	Fixed-wing aircraft	High-resolution digital video cameras mounted on a fixed-wing aircraft flying at an altitude of approximately 1,312 ft (400 m) and ground speed of approximately 137 mph (220 kph or 120 knots), providing imagery at 0.6 in (1.5 cm) ground sample distance. Initially, surveys would cover the entire RFCI area, but may be reduced to cover lease area plus a 2.5-

Survey or Monitoring Activity	Description	Activity Frequency and Timing	Port	Vessel Type	Equipment or Method
	surveys would be extensions to BOEM's quarterly bird surveys; there would be eight standalone surveys.				mi (4-km) buffer.
Visual Wildlife Surveys	Biodiversity Research Institute, in cooperation with the Gulf of Maine Research Institute, would conduct visual surveys along fixed transects to confirm marine mammal, bird, and sea turtle species utilization of the lease area, with emphasis on endangered and threatened species. The surveys would also assess information variability and uncertainty associated with baseline surveys. All observers would document species ID, location, group size, distance and bearing from vessel, flight height for birds, and behavior for each sighting as well as sea state, time of day, glare, and fishing activity in the area.	Number of trips per month depends on the vessel type, steam time, and port location. Beginning in 2023 and continuing until approval of the RAP. ⁴	Undetermined. Portland, ME assumed for analysis.	Depends on contracted industry vessel. Crew boat less than 65 ft (19 m) in length with elevated platform for observations assumed for analysis.	Surveys would be conducted by two bird observers, trained by the Maine Department of Inland Fisheries and Wildlife for protected species and bird observations, and four marine mammal observers, trained as protected species observers. Vessels would follow fixed transects and would not deviate to intercept marine mammals; vessel speed would not exceed 11.5 mph (18.5 kph or 10 knots).
Passive Acoustic Monitoring of Marine Mammals and Ambient Noise	DMR would conduct passive acoustic monitoring to characterize marine mammal utilization of the RFCI area and to quantify levels of ambient noise. The mooring suites would be spaced across the Research Lease Area and vicinity to incorporate into a larger network across the Gulf of Maine used for location and tracking work.	Number of trips needed to deploy and service mooring suites depends on steam time of contracted vessel. Beginning July 2023 and continuing until approval of the RAP. ⁴	Boothbay, ME	45-ft (14-m) research vessel capable of deploying/retrieving sampling equipment at depth.	Acoustic data collected via nine SoundTrap ST600 hydrophones equipped with FPOD devices. Recorded data would be analyzed for all whale calls, especially the presence of North Atlantic right whale calls, with a primary focus on their 100–300 Hz upcalls. Sound traps would sample at a rate of 48 kHz (24-kHz effective analysis range). FPODs enable detection of

Survey or Monitoring Activity	Description	Activity Frequency and Timing	Port	Vessel Type	Equipment or Method
					odontocete (toothed whale) species with core detection bands generally under 140 kHz.
MOTUS Tracking	MOTUS is an international collaborative network established by researchers that have tagged birds and bats with automated radio telemetry tags. A MOTUS Wildlife Tracking System-compatible receiver station would be deployed on the FLiDAR buoy by PTOW to provide data on the occurrence of tagged birds or bats in the RFCI area coupled with information on the season, time of day, and weather conditions. The receiving station would operate at a common frequency compatible with other MOTUS installations in the region.	Expected to require 2 trips, conducted as part of FLiDAR buoy deployment and decommissioning. 24-month deployment (March 2023 through February 2026)	Portland, ME	See FLiDAR buoy-based acoustic monitoring.	MOTUS Wildlife Tracking System-compatible receiver station.
Active Acoustic Surveys and Environmental DNA (eDNA) Sampling of Marine Fish and Invertebrates	Gulf of Maine Research Institute would conduct active acoustic surveys along fixed transects in the Research Lease Area and vicinity to evaluate marine fish, particularly small pelagics, and invertebrate species and taxon abundance and distribution in the water column and in proximity to the benthos.	One 12-hour vessel trip per month. Beginning in September 2022 and continuing until approval of the RAP. ⁴	Portland, ME	RV Merlin, a 37-ft (11-m) converted offshore tuna harpoon vessel.	Simrad EK60 echosounder system with three split-beam transducers (38, 120, and 200 kHz). Water samples collected with a General Oceanics Niskin Water Sampler and run through eDNA analysis would be used to ground truth the acoustic data.
Passive Acoustic Monitoring of Large Pelagic and Benthic Fish	DMR opportunistically tags fish with passive acoustic tags to characterize seasonal distribution, movement patterns, and habitat use of highly migratory (e.g., tuna, sharks) and benthic (e.g., cod,	The number of trips would depend on the contracted vessel, port location, and the number of tags or receivers deployed	Undetermined. Portland, ME assumed for analysis.	45-ft (14-m) research vessel capable of deploying/retrieving sampling equipment at	15 Vemco VR2AR Receivers would be moored with custom weights and floated approximately 50 ft (15 m) above the seafloor to detect tags. Each receiver would be

Survey or Monitoring Activity	Description	Activity Frequency and Timing	Port	Vessel Type	Equipment or Method
	hake, haddock, redfish, dogfish) fishes. Pop-up satellite archival tags (PSATs) may be used in future years for longer range monitoring of larger species such as basking sharks. Receivers capable of detecting the presence of tagged fish would be deployed in a grid across the RFCI area with a few additional receivers placed adjacent to the RFCI area in areas of high species abundance.	per trip. Beginning in Quarter 3 of 2022 and continuing until approval of the RAP. ⁴		depth.	equipped with an acoustic release, eliminating the use of vertical lines that may pose risks to marine mammals and turtles. PSATs do not require detection by the acoustic array and would pass data via a satellite link at a pre-selected time.
Bottom Trawl Surveys for Marine Fish and Invertebrates	DMR would conduct bottom trawl surveys to evaluate marine fish and invertebrate species composition in proximity to the benthos. Each season, 30–38 tows would be conducted within and up to 12 nautical mi (22 km) outside of the Research Lease Area. Surveys would not be conducted under regular commercial fishing.	1–6 vessel trips per season depending on steam time, port location, and ability of contracted vessel to overnight offshore. Beginning as soon as September 2023 and continuing for 2 years, or until approval of the RAP. ⁴	Boothbay, ME	70-ft (21-m)stern rigged single screw bottom trawler	Protocols and equipment would be consistent with those used for the Maine-New Hampshire Inshore Trawl Survey for sorting, weighing, and measuring protocols. Net metric data would be collected at each tow to ensure the net is fishing comparably at each location. Survey equipment would consist of a 57–70-ft (17–21-m) modified shrimp trawl net with Thyborøn™ type 25 THYson trawl doors approximately 21 ft ² (2 m ²) in size, weighing 606 lbs (275 kg) each, and towed at a speed of 2.9 mph (4.6 kph or 2.5 kn).
Plankton and Larval Lobster Surveys	DMR would conduct vertical and neuston tows to characterize the zooplankton community, examine aggregation patterns throughout the water column, and quantify abundance and seasonal timing of	During the first year after lease issuance, 1 or 2 vessels trips per month. In subsequent years, the port and number	Boothbay, ME	45-ft (14-m) research vessel capable of deploying/retrieving sampling equipment at	Vertical tows would follow Fisheries and Oceans Canada's Atlantic Zone Monitoring Program protocols. Neuston tows would follow DMR's larval

Survey or Monitoring Activity	Description	Activity Frequency and Timing	Port	Vessel Type	Equipment or Method
	lobster and other crustacean larvae. Tows would be conducted within and up to 3 nautical mi (5.6 km) outside of the Research Lease Area. Surveys would not be conducted under regular commercial fishing.	of trips per month would depend on contracted vessel. Beginning in July 2023 and continuing until approval of the RAP. ⁴		depth.	survey protocol. Selection of survey locations would consider seasonal wind patterns in order to establish a baseline to examine potential impacts on stratification downstream from potential future turbine installations.
Lobster Trawl Surveys	DMR would conduct lobster surveys to characterize the lobster population, including the presence of large egg-bearing and oversized lobsters, to assess movement patterns of lobsters, and to test ropeless fishing gear. Traps would be set within and up to 12 nautical mi (22 km) outside the Research Lease Area and hauled three times per quarter. Surveys would not be conducted under regular commercial fishing.	Six trips by 12-hour vessel per quarter. Beginning as soon as September 2023 and continuing for 2 years, or until approval of the RAP. ⁴	Bristol, ME	50-ft (15-m) commercial lobster boat, single screw.	Trawls would be equipped with 12 traps, alternating vented and ventless, and would be set with one regular endline and one ropeless fishing unit. The exact gear specifications would be determined based on conversations with industry members.
Gillnet Survey	PTOW would conduct gillnet surveys to sample fish populations. Each season, 20–30 trawls would be conducted within and around the Research Lease Area. Surveys would not be conducted under regular commercial fishing.	6 vessel trips per quarter. September 2023 through September 2025.	Portland, ME	50–75-ft (15–21-m) single screw commercial fishing vessel.	The gillnet survey may be conducted using gillnets that are typical of the commercial fishery in Maine. Each gillnet string would consist of six, 300-foot (91-meter) net panels of 12-inch (30-centimeter) mesh with a hanging ratio of ½ (50 percent) and using net tie-downs.

Sources: DMR, 2023a; Stantec, 2023.

¹ Avian and bat acoustic detectors, as well as a marine mammal hydrophone and fish detection system, would be installed on the FLiDAR buoy prior to deployment. The acoustic detectors and hydrophone will collect data on species (or species group) occurrence. It is currently anticipated that the avian and bat acoustic detectors would be Wildlife

Acoustics SM4 units, a SonoVault hydrophone would be used for acoustic monitoring of marine mammal vocalizations, and a VEMCO Positioning system would be used to monitor fish.

² All vessels would have protected species observers onboard to monitor for impacts on marine mammals and wildlife.

³ Avian and bat acoustic detectors may be installed on survey vessels to opportunistically collect seasonal bat activity data within the G&G survey areas, including species occurrence, timing of occurrence, and weather conditions (as recorded by instrumentation on the vessel) at the time of recording. The detectors would be powered by internal batteries and mounted as high as possible on the exterior shipboard side of each vessel's upper deck to enhance bat activity detection and minimize exposure to saltwater and acoustic interference from wave action and other ship operations. It is currently anticipated that the avian and bat acoustic detectors would be Wildlife Acoustics SM4 units.

⁴ This EA makes the conservative assumption that the RAP would be approved within 5 years of lease issuance, or approximately September 2028.

⁵ Installation of shore-based radar stations would occur independent from the Proposed Action. Potential effects of these onshore activities are not analyzed in this EA.

⁶ After discussion with interested parties, a decision was made to limit the gillnet survey to a single mesh size of 12-inches (30 centimeters) to target monkfish and skates of commercial sizes. While it was recognized that deploying experimental gillnets with multiple mesh sizes could potentially sample a wider range of species and size classes, this would also necessitate deploying more strings of gillnets, which could increase the potential for interactions with protected species. The standard soak time of approximately 48 hours is proposed based on input from industry, to maximize catch and standardize catch rates, while also ensuring the gear fishes properly during the soak (i.e., not collapsed from saturation), to minimize depredation of catch, and to improve the logistics of the survey. Soak time would remain consistent throughout the duration of the survey, to the extent practicable. fishable gillnet lines will be determined through consultation with the participating fishermen. Ten to fifteen gillnet lines per area will be randomly selected for each sampling event, resulting in 20 to 30 gillnet strings conducted per sampling event. The sample size, location, and timing of sampling events are subject to change to reduce the potential for interactions with protected species and avoid space-use conflicts with active fisheries.

DMR = Maine Department of Marine Resources; FLiDAR = floating light detection and ranging; ft² = square foot; kg = kilogram; kHz = kilohertz; km = kilometer; kph = kilometers per hour; m² = square meter; MA = Massachusetts, ME = Maine; mph = miles per hour; nm = nautical mile; PTOW = Pine Tree Offshore Wind

2.2 Non-routine Events

Reasonably foreseeable non-routine and low-probability events and hazards that could occur during site assessment and site characterization activities include: (1) severe storms, such as hurricanes and extratropical cyclones; (2) allisions and collisions between structures or vessels used for site assessment or site characterization activities and other marine vessels or marine life; (3) spills from collisions or fuel spills resulting from generator refueling; and (4) recovery of lost survey equipment.

2.2.1 Storms

Severe weather events have the potential to cause structural damage and injury to personnel. Major storms, winter nor'easters, and hurricanes pass through the area regularly, resulting in elevated water levels (storm surge) and high waves and winds. Storm surge and wave heights from passing storms are worse in shallow water and along the coast but can pose hazards in offshore areas. The Atlantic Ocean hurricane season extends from June 1 to November 30, with a peak in September when hurricanes would be most likely to impact the Research Lease Area at some time during the Proposed Action. Storms could contribute to an increased likelihood of allisions and collisions that could result in a spill. However, the storm would cause the spill and its effects to dissipate faster, vessel traffic is likely to be significantly reduced in the event of an impending storm, and surveys related to the Proposed Action would be postponed until after the storm has passed. Although storms have the potential to impact the FLiDAR buoy, the structures are designed to withstand storm conditions. Though unlikely, structural failure of a FLiDAR buoy could result in a temporary hazard to navigation.

2.2.2 Allisions and Collisions

An allision occurs when a moving object (i.e., a vessel) strikes a stationary object (e.g., FLiDAR buoy); a collision occurs when two moving objects strike each other. The presence of the FLiDAR buoy in the Research Lease Area could pose a risk to vessel navigation. An allision between a vessel and the FLiDAR buoy could result in the damage or loss of the buoy and/or the vessel, as well as loss of life and spillage of petroleum product. Vessels conducting site assessment and site characterization activities could collide with other vessels, resulting in damages, petroleum product spills, or capsizing. Collisions between vessels and allisions between vessels and the FLiDAR buoy are considered unlikely because vessel traffic is subject to USCG Navigation Rules and Regulations and controlled by multiple routing measures, such as, safety fairways, traffic separation schemes (TSSs), and anchorages for vessels transiting into and out of the ports of Maine and the other New England states. Risk of allisions with FLiDAR buoys would be further reduced by USCG-required marking and lighting.

As explained in BOEM's decision memorandum regarding the RFCI on August 17, 2022, in order to minimize the potential for conflicts identified by the USCG in locating Maine's proposed project in proximity to the existing TSS, BOEM will consider issuance of no more than one lease within the Research Lease Area, and that lease will neither exceed 10,000 acres (40 km²) nor support more than 12 floating wind turbine generators. BOEM also expanded the RFCI or Research Lease Area beyond the preferred location (referred to as the Narrowed Area of Interest) identified in the State of Maine's request for the research lease to provide more siting options should the preferred location be determined unsuitable. These measures are anticipated to minimize the potential for conflicts during all stages of the project, including site assessment and site characterization activities, which would result in only a temporary and negligible increase in vessel traffic in proximity to the TSSs.

BOEM anticipates that aerial surveys would not be conducted during periods of storm activity because the reduced visibility conditions would not meet visibility requirements for conducting the surveys; flying at low elevations would pose a safety risk during storms and times of low visibility.

2.2.3 Spills

A spill of petroleum product could occur as a result of hull damage from allisions with a FLiDAR buoy, collisions between vessels, accidents during the maintenance or transfer of offshore equipment and/or crew, or natural events (i.e., strong waves or storms). From 2011 to 2021, the average spill size for vessels other than tank ships and tank barges was 95 gallons (360 liters) (USCG, 2022); should a spill from a vessel associated with the Proposed Action occur, BOEM anticipates that the volume would be similar.

Diesel fuel is lighter than water and may float on the water's surface or be dispersed into the water column by waves. Diesel would be expected to dissipate very rapidly, evaporate, and biodegrade within a few days (MMS, 2007). The National Oceanic and Atmospheric Administration's (NOAA's) Automated Data Inquiry for Oil Spills (an oil weathering model) was used to predict dissipation of a maximum spill of 2,500 barrels (105,000 gallons or 397,468 liters), a spill far greater than what is assumed as a non-routine event during the Proposed Action. Results of the modeling analysis showed that dissipation of spilled diesel fuel is rapid. The amount of time it took to reach diesel fuel concentrations of less than 0.05 percent varied between 0.5 and 2.5 days, depending on ambient wind (Tetra Tech Inc., 2015), suggesting that 95 gallons (360 liters) would reach similar concentrations much faster and limit the environmental impact of such a spill.

Vessels are expected to comply with USCG requirements relating to prevention and control of oil spills. Solar panels would be the primary source of power for equipment on the FLiDAR buoy, with backup energy supplied by methanol fuel cells in the hull, which would minimize the volume of oil and fuel that could be released in the event of a spill. BOEM expects that each of the vessels involved with site assessment and site characterization activities would minimize the potential for a release of oils and/or chemicals in accordance with 33 Code of Federal Regulations (CFR) Part 151, 33 CFR Part 154, and 33 CFR Part 155, which contain guidelines for implementation and enforcement of vessel response plans, facility response plans, and shipboard oil pollution emergency plans. Based on the size of the spill, it would be expected to dissipate very rapidly and would then evaporate and biodegrade within a day or two (at most), limiting the potential impacts to a localized area for a short duration.

2.2.4 Recovery of Lost Survey Equipment

Equipment used during site assessment and site characterization activities could be accidentally lost during survey operations. Additionally, it is possible (although unlikely) that the FLiDAR buoy could disconnect from its anchor. In the event of lost equipment, recovery operations may be undertaken to retrieve the equipment. Recovery operations may be performed in a variety of ways depending on the equipment lost. A commonly used method for retrieval of lost equipment that is on the seafloor is through dragging grapnel lines (e.g., hooks, trawls). A single vessel deploys a grapnel line to the seafloor and drags it along the bottom until it catches the lost equipment, which is then brought to the surface for recovery. This process can result in significant bottom disturbances as it requires dragging the grapnel line along the bottom until it hooks the lost equipment, which may require multiple passes in a given area. In addition to dragging a grapnel line along the bottom, after the line catches the lost equipment, it will drag all the components along the seafloor until recovery.

Marine debris, such as lost survey equipment, that cannot be retrieved because it is either small or buoyant enough to be carried away by currents or is completely or partially embedded in the seafloor (for example, a broken vibracore rod), could create a potential hazard for bottom-tending fishing gear or cause additional bottom disturbance. Various equipment may be deployed to recover marine debris such as cranes, air bags, other mechanical lifts, or remotely operated vehicles. A broken vibracore rod that cannot be retrieved may need to be cut and capped 1 to 2 m below the seafloor. Lease stipulations listed in Appendix D of the EA would require any lost survey gear to be reported and recovered according to BOEM and BSEE Marine Debris Elimination and Reporting requirements. All lost gear must also be

reported to the National Marine Fisheries Service Greater Atlantic Regional Fisheries Office, Protected Resources Division within 24 hours of the documented time when gear is discovered to be missing or lost (Appendix D of the EA). For marine debris unable to be recovered within 48 hours, the lessee would be required to develop a recovery plan and submit to the Department of the Interior for review as specified in Appendix A of the National Marine Fisheries Service biological assessment (BOEM, 2023b). Selection of a mitigation strategy would depend on the nature of the lost equipment, and further consultation may be necessary.

Other impacts associated with recovery of marine debris such as lost survey equipment may include vessel traffic, noise and lighting, air emissions, and routine vessel discharges from a single vessel.

3. Action Area

The Action Area is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02). Therefore, the Action Area for the site characterization and assessments will include the Research Lease Area as well as areas subject to survey as potential export cable corridors and a wet storage area, as well as anticipated areas of marine vessel and aircraft transit to and from the assessment and survey areas; collectively, these areas compose the overall Potential Action Area (see Figure 2). For this BA, there are no onshore components.

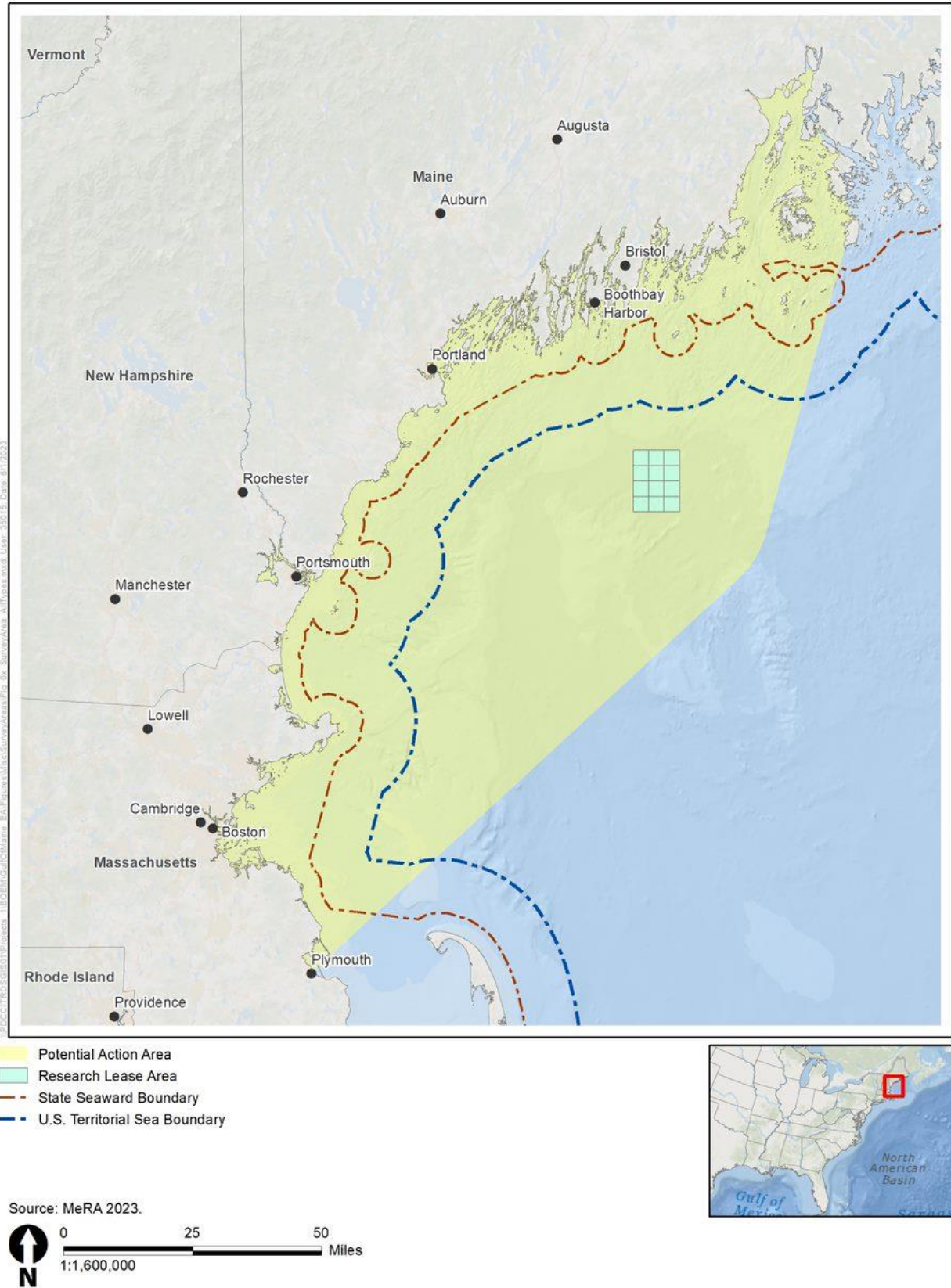


Figure 2. Wind Energy Research Lease Potential Action Area

4. Covered Species

Three federally listed birds, one federally listed bat, one candidate insect, one federally listed turtle, and one bat proposed to be listed as endangered under USFWS jurisdiction occur or potentially occur in all or portions of the Action Area, depending on species and Project element (Table 2). Data sources used for the analysis are discussed in Section 4.1, and a description of each species and the potential occurrence in the Action Area is provided in Sections 4.2 through 4.8. The piping plover, red knot, roseate tern, monarch butterfly, northern long-eared bat, and tricolored bat can fly considerable distances; therefore, BOEM assumes these species potentially could occur within the offshore environment regardless of IPaC results. For the remaining species (Plymouth redbelly turtle), the potential effects within the Action Area are unlikely as there are no onshore Project elements.

Table 2. Threatened, Endangered, Candidate, or proposed species that occur or potentially occur in the Action Area based on IPaC

Species	Research Lease Area	Benthic Survey Areas	Potential Action Area	Habitat(s)
Northern long-eared bat (E) (<i>Myotis septentrionalis</i>) ^a	No	Yes	Yes	Winter habitat: hibernacula in caves and mines; Summer habitat: roost and maternity trees with loose bark or cavities near wetlands/open water; forages in open forests, edges, and around wetlands or water (NHESP 2019).
Tricolored bat (PE) (<i>Perimyotis subflavus</i>) ^b	No	Yes	Yes	Winter habitat: hibernacula in caves and mines; Spring, Summer, and Fall Habitat: primarily roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees. May also roost in structures (e.g., barns, bridges). Forages around water and forest edges (NHESP 2015a).
Piping plover (T) (<i>Charadrius melodus</i>)	No	No	No	Nesting habitat: sandy coastal dunes and beaches flat and free of vegetation in the narrow land between high tide line and foot of coastal dunes, and in least tern colonies (NHESP 2015a).
Rufa red knot (T) (<i>Calidris canutus rufa</i>)	No	Yes	No	Foraging habitat: intertidal areas, sandy beaches, tidal mudflats, salt marshes, and peat banks (NHESP 2020).
Roseate tern (E) (<i>Sterna dougallii dougallii</i>)	Yes	Yes	Yes	Breeding habitat: gravelly, sandy, or rocky islands and less commonly at ends of long barrier beaches (NHESP 2015b). Nesting habitat: dense vegetation such as beach pea and seaside goldenrod (NHESP 2015b). Foraging habitat: offshore and in shoals, inlets, and shallow sandbars (NHESP 2015b)
Monarch butterfly (C) (<i>Danaus plexippus</i>) ^c	No	No	Yes	Areas near flowering plants and milkweed (USFWS 2022a).
Plymouth redbelly turtle (E) (<i>Pseudemys rubriventris bangsi</i>)	No	No	No	Aquatic habitats, primarily coastal plain ponds, river systems, cranberry bogs, and other wetlands (USFWS 2021d).

Source: Appendix A.

^a USFWS has reclassified the northern long-eared bat as endangered, effective March 31, 2023.

^b Tricolored bat does not show up on IPaC, but the species range includes Maine and suitable habitat is generally similar to northern long-eared bat.

^c Candidate species are provided no statutory protection under the ESA.

C = candidate for federal listing; E = federally listed as endangered; PE = Proposed Endangered; T = federally listed as threatened

4.1 Data Sources for Analysis

Bird data sources that cover the Action Area consist of numerous avian survey efforts by federal and state agencies over many years, as well as surveys conducted by other offshore wind projects. Secondary offshore bird data sources include the *Tracking Offshore Occurrence of Common Terns, Endangered Roseate Terns, and Threatened Piping Plovers with VHF Arrays* (Loring et al. 2019), *Tracking Movements of Common Terns, Endangered Roseate Terns, and Threatened Piping Plovers in the Northwest Atlantic: 2017 Annual Report to the Bureau of Ocean Energy Management* (Loring et al. 2017), *Tracking Movements of Migratory Shorebirds in the US Atlantic Outer Continental Shelf Region* (Loring et al. 2020), *Tracking Movements of Threatened Migratory Rufa Red Knots in US Atlantic Outer Continental Shelf Waters* (Loring et al. 2018), and the Commercial Wind Lease Issuance and Site Assessment Activities on the Atlantic Outer Continental Shelf Offshore New Jersey, Delaware, Maryland, and Virginia Final Environmental Assessment.

Potential habitat and occurrences of the northern long-eared bat and the tricolored bat in the vicinity of the Action Area were identified through a review of offshore and onshore monitoring studies covering the Action Area and the northeast, *Federal Register* publications, recent USFWS BAs, peer-reviewed literature, probability estimations by USGS using North American Bat Monitoring Program data (Udell et al. 2022), and USGS GAP data (USGS 2018).

To identify potential habitat and occurrences of the monarch butterfly in the vicinity of the Project elements, *Federal Register* publications, USFWS species status assessments, and peer-reviewed literature were reviewed.

Potential habitat and occurrence of the Plymouth redbelly turtle in the vicinity of the Action Area were identified through a review of USFWS species status assessments and peer-reviewed literature.

4.2 Northern Long-Eared Bat

4.2.1 Species Description

The federally endangered northern long-eared bat occurs throughout Massachusetts, including Cape Cod, Martha's Vineyard, Nantucket, and throughout Maine and New Hampshire. This species has declined by 97 to 100 percent in most locations due to impacts from white-nose syndrome (WNS), caused by the fungus *Pseudogymnoascus destructans* (*P.d.*), especially in the Northeast; declines are expected to continue as WNS continues to spread (USFWS 2016). This fungus causes infections in bats which ultimately may increase the frequency and duration of arousals during hibernation which can result in mortality as their fat reserves become depleted (87 *Federal Register* 16442). WNS was confirmed present in Massachusetts in 2008, New Hampshire in 2008, and Maine in 2010 (USFWS 2018a; Whitenosesyndrome.org 2022).

Given observed drastic population declines, USFWS listed the Northern long eared bat as threatened in 2015 throughout its range (80 *Federal Register* 17974). On January 14, 2016, USFWS published a final ESA §4(d) Rule that specifically defines “take” prohibitions and exempts most incidental take for a variety of commercial and industrial projects within the species range (81 *Federal Register* 1900). Specifically, incidental take of northern long-eared bat is exempt from prohibition if the following criteria are met:

- No impacts on known occupied hibernation sites;

- No tree removal within 0.25 mile (0.4 kilometer) of a known occupied hibernation site; and
- No tree removal within 150 feet (45.7 meters) of a known occupied maternity roost tree between June 1 and July 31.

In 2016, USFWS additionally determined that designating critical winter and summer habitat for the northern long-eared bat was not prudent (81 *Federal Register* 24707). A proposed rule by USFWS was published on March 23, 2022, to reclassify the northern long-eared bat as an endangered species and remove its species-specific 4(d) rule (87 *Federal Register* 16442). On November 30, 2023, USFWS reclassified the northern long-eared bat as an endangered species and removed the species-specific rule issued under section 4(d) of the Act (87 *Federal Register* 73488). After delaying the original effective date of January 30, 2023, this rule will be effective March 31, 2023. Additionally, the northern long-eared bat is listed as Endangered under the Massachusetts ESA (Mass Wildlife 2020), State Endangered in New Hampshire (NH Fish and Game n.d.), and state Endangered in Maine (Maine DIFW 2015).

The northern long-eared bat is an insectivore which feeds on moths, flies, leafhoppers, caddisflies, and beetles approximately 3 to 10 feet (1 to 3 meters) above the ground (Brack and Whitaker 2001) in open forests, edges, and around ponds, streams, and wetlands. Similar to most bats, the northern long-eared bat emerges at dusk and uses echolocation to hunt for insect or by gleaning motionless insects from vegetation. The annual life-cycle of the northern long-eared bat includes winter hibernation (caves and mines), spring staging, spring migration, summer birth of young, fall migration, and fall swarming and mating. In spring, the bats leave their hibernacula to roost in trees and forage near the hibernaculum in preparation for migration. From approximately mid-May through mid-August, northern long-eared bats occupy summer habitat. Trees used are typically greater than or equal to 3 inches (7.6 centimeters) diameter at breast height, within 1,000 feet (305 meters) of forest. Northern long-eared bats roost under bark and in cavities or crevices of both live and dead trees (Foster and Kurta 1999; Owens et al. 2002; Perry and Thill 2007a; Sasse and Perkins 1996), as well as in anthropogenic structures (Amelon and Burhans 2006; Timpone et al. 2010). Although most northern long-eared bats are opportunistic in regard to tree-roost selection, depending on the reproductive stage of female northern long-eared bats, roost-site selection with respect to canopy cover and height may change. Females are known to roost in small maternity colonies and males roost alone (Amelon and Burhans 2006). A recent study on northern long-eared bats on Nantucket documented up to 18 bats sharing a maternity roost (Dowling 2017). Northern long-eared bats also switch roosts frequently, typically every two to three days (Carter and Feldhamer 2005; Foster and Kurta 1999; Owen et al. 2002; Timpone et al. 2010). Northern long eared bats forage relatively close (a few kilometers) to their roost sites (Sasse and Perkins 1996; Timpone et al. 2010). Compared to migratory tree-roosting bat species, northern long-eared bats are short-distance migrants and are thought to have a small home range of less than 25 acres (10 hectares; Silvis et al. 2016 as cited in Dowling et al. 2017). During the fall migration, individuals congregate in the vicinity of their hibernacula in August or September and enter hibernacula in October and November. An individual will use the same hibernaculum for multiple years.

4.2.2 Northern Long-Eared Bat in the Action Area

BOEM anticipates limited use of the offshore environment by the northern long-eared bat, and exposure to the Wind Energy Area, if occurs, is anticipated to be minimal. The USGS's NABat Status and Trends data indicate that northern long-eared bat summer occupancy is lower along the Atlantic coast and higher in interior areas (Udell et al. 2022). Of all the offshore surveys for bats on the Atlantic, there is only one of potential detection of Northern long eared bat during geo surveys for South Fork Wind by 2 acoustic bat detectors were deployed on the Fugro Enterprise vessel railing from July 14 to November 15, 2017. During the offshore construction of the Block Island Wind Farm, bats were monitored with acoustic detectors on boats; no northern long-eared bats were detected among the 1,546 bat passes. (Stantec 2018). There are no records of northern long-eared bats on the OCS, and the available bat survey data suggest

there is little evidence of use of the offshore environment (Pelletier et al. 2013; ESS Group, Inc. 2014; Hatch et al. 2013; Sjollema et al. 2014; Smith and McWilliams 2016; Dowling et al. 2017). Although no surveys have been conducted for Northern-long eared bats within the Lease Area.

4.3 Tricolored Bat

4.3.1 Species Description

Formally known as the eastern pipistrelle, the tricolored bat is one of the smallest bat species within North America (USFWS 2021c). On September 14, 2022, the USFWS issued a proposed rule to list the species as endangered, primarily due to impacts of WNS which is a deadly fungal disease affecting cave dwelling bats (87 *Federal Register* 56381). If USFWS finalizes the rule as proposed, it will add the tricolored bat to the List of Endangered and Threatened Wildlife and extend the ESA's protection to the species. Additionally, the tricolored bat is listed as endangered under the Massachusetts ESA (Mass Wildlife 2020), a species of concern in Maine (Maine DIFW 2015), and as state endangered in New Hampshire (NH Fish and Game n.d.).

The tricolored bat is the only member of its genus (Hooper et al. 2006). It is a small bat, measuring 77 to 89 mm in total length. Females are consistently heavier than males. Weight fluctuates with season, in the fall, females weigh approximately 7.9 grams while males weigh 7.5 grams. Weight in the spring for females and males is approximately 5.8 grams and 4.6 grams, respectively (Fujita and Kunz 1984). The tricolored bat is distinguished by its unique tricolored fur that appears dark at the base, lighter in the middle and dark at the tip. They often appear yellowish, varying from pale yellow to nearly orange, but may also appear silvery-gray, chocolate brown or black. Newly flying young are much darker and grayer than adults. The tricolored bat's range covers most of the eastern United States, spanning from Nova Scotia in the north, westward to Colorado, and into Mexico to the south (USFWS 2021c). Populations have declined sharply from historical levels. The tricolored bat was once the third most abundant bat found in Massachusetts caves. Initial population declines were due to heavy pesticide use in the mid-20th century. A gradual population recovery followed, until the outbreak of WNS. Infected populations in the Northeast U.S. have seen 90 percent reductions on average (NHESP 2015d).

Tricolored bats are insectivores, feeding on a variety of insects including moths, beetles, wasps, ants and flies. They commonly feed over waterways and forest edges. At early evening hours, tricolor bats will feed at treetop level or above. Foraging height lowers closer to ground level later in the evening and into the night. (USFWS 2021c). Their foraging area may be up to 5 miles from their roosting site (NHESP 2015). Tricolored bats spend the winter months at hibernacula sites before dispersing to summer roosting habitat in forests. During the summer tricolored bats primarily roost among live foliage and dead leaf clusters. Tricolored bats have also been known to roost in Spanish moss (*Tillandsia usneoides*), *Usnea trichodea* lichen, and squirrel nests. Hardwood trees, especially oak trees (*Quercus* spp.) are most frequently selected for roosting, but roosting has also been observed in conifer trees such as the eastern red cedar (*Juniperus virginiana*) (Thames 2020). Summer roosting locations are generally chosen in older (> 50 years) growth forests that have a hardwood component. Male Tricolor bats will roost singly, while females will roost in small maternal colonies averaging seven individual bats (Perry and Thill 2007b). Although primarily occurring in forests, roosting may also take place in anthropogenic structures such as barns, beneath porch roofs, bridges, and concrete bunkers (USFWS 2021c). Tricolored bats exhibit high site fidelity, returning year after year to the same summer roosting locations and winter hibernacula. Winter hibernacula and summer roosting locations may be separated by great distances. Typical migrations to hibernacula in Massachusetts may be up to 137 km (NHESP 2015d), although the longest spring migration observed was 151 miles (243 kilometers) from a cave in southern Tennessee to a roost in Georgia (Samoray et al. 2019). During the winter, tricolored bats hibernate in caves and mines; although, in the southern United States, where caves are sparse, tricolored bats often hibernate in road-associated

culverts, as well as sometimes in tree cavities and abandoned water wells. Tricolored bats are the first species to enter hibernation in the fall and the last to leave the hibernacula in the spring. Breeding occurs in the fall when the bats swarm around the entrances of their winter hibernacula. Females typically give birth to two young in June or July the following summer. Young bats will begin flying at less than 3 weeks of age (NHESP 2015d).

4.3.2 Tricolored bat in the Action Area

As is the case with the northern long-eared bat, the tricolored bat is not expected to be found offshore or on the OCS (Pelletier et al. 2013; ESS Group, Inc. 2014; Hatch et al. 2013; Sjollem et al. 2014; Smith and McWilliams 2016; Dowling et al. 2017). An acoustic survey of bat activity on islands and offshore sites in the Gulf of Maine, mid-Atlantic coast, and Great Lakes regions from 2012 to 2014 found tricolored bats to be the least encountered bat species (Stantec 2016). During the offshore construction of the Block Island Wind Farm, bats were monitored with acoustic detectors on boats; no tricolored bats were detected among the 1,546 bat passes. Preliminary results of the first year of post-construction monitoring at Block Island Wind Farm indicated low number of tricolored bat calls (33 out of 1,086 calls) (Stantec 2018). Tricolored bats have been observed in areas along the coast, and occupying islands some distance from the mainland. Acoustic studies on Martha's Vineyard provide evidence of tricolored bats flying along the coast, and potentially crossing open water to reach the mainland (Pelletier et al. 2013). However, as these bats are not latitudinal migrators, these flights would be limited to nearshore waters, and restricted to migrations to and from hibernacula. Tricolored bats are not anticipated to be encountered in the Research Lease Area.

4.4 Piping Plover

4.4.1 Species Description

The piping plover is a small, migratory shorebird that breeds along the Atlantic coast, the Great Lakes, and the Great Plains regions of the United States and winters in coastal habitats of the southeastern United States, coastal Gulf of Mexico, and the Caribbean (Elliott-Smith and Haig 2004; USFWS 1996, 2009). USFWS listed the Atlantic coast breeding population as threatened in 1985 (50 *Federal Register* 50726). Additionally, the piping plover is listed as Threatened under the Massachusetts ESA (Mass Wildlife 2020), State Endangered in New Hampshire (NH Fish and Game n.d.b), and State Endangered in Maine (Maine Fish and Wildlife n.d.). Critical habitat for wintering piping plovers has been designated along the coasts of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas (66 *Federal Register* 36038). Only the Atlantic coast population has the potential to occur in the Action Area during the breeding season, as well as during spring and fall migration. According to USFWS, piping plovers which breed on the Atlantic coast belong to the *melodus* subspecies. Coastal development is the primary anthropogenic threat to piping plovers which results in lost habitat. Other threats include disturbance by humans, dogs, and vehicles on sandy beaches and dune habitats (Elliott-Smith and Haig 2004; USFWS 2009). Predation is also an issue and is associated with human-related disturbance in the Commonwealth of Massachusetts (BOEM 2013; USFWS 2009; Elliott-Smith and Haig 2004). Despite these population pressures, there is little risk of near-term extinction of the Atlantic coast population of piping plovers (Plissner and Haig 2000), and since that prediction, the Atlantic coast population has been steadily growing. In fact, the Atlantic coast piping plover population has increased 190 percent from a low of 790 breeding pairs in 1986 to an estimated 2,289 breeding pairs in 2021 (USFWS 2022b, 2020a). According to the *USFWS 2019 Atlantic Coast Piping Plover Abundance and Productivity Estimates*, there were 743 breeding pairs recorded in Massachusetts with 1.5 chicks fledged per pair, 11 breeding pairs recorded in New Hampshire with 1.82 chicks fledged per pair, and 89 breeding pairs in Maine with 1.97 chicks fledged per pair. Massachusetts currently contains one of the largest breeding populations of piping plovers along the Atlantic coast and during the 2021 breeding season, the population increased

21.7 percent relative to 2020 (NHESP and MA DFW 2022). The piping plover is among 72 species (out of 177 species on the Atlantic OCS) that ranked moderate in its relative vulnerability to collision with wind turbines (Robinson Willmott et al. 2013).

The breeding range of the Atlantic coast population includes the Atlantic coast of North America from Canada to North Carolina. The piping plover breeding season extends from April through August, with piping plovers arriving at breeding locations in mid-March and into April. In spring, adult Atlantic coast piping plovers arrive at breeding locations in proximity to the Action Area beginning in mid-March and nest from April through August. Post-breeding staging in preparation for migration extends from late July through September, rarely into October (USFWS 1996; Loring et al. 2020). Piping plover breeding habitat consists of generally undisturbed, sparsely vegetated, flat, sand dune–beach habitats such as coastal beaches, gently sloping foredunes, sandflats, and washover areas to which they are restricted (USFWS 1996, 2009). Nest sites are shallow, scraped depressions in a variety of substrates situated above the high-tide line (USFWS 1996). Piping plovers forage in the intertidal zone. Foraging habitat includes intertidal portions of ocean beaches, washover areas, mudflats, and sandflats, as well as shorelines of coastal ponds, lagoons, and saltmarshes where they feed on beetles, crustaceans, fly larvae, marine worms, and mollusks (USFWS 1996).

Piping plover breeding in Maine is concentrated primarily on sandy beaches along the state’s southern coast. The highest nesting population of piping plovers in Maine with 19 nesting pairs occurs at Ogunquit Beach, Ogunquit (Maine Audubon 2022). Within Massachusetts, the nesting population of piping plovers is spread throughout the state but focused on Cape Cod. A 2021 census of breeding pairs in Massachusetts found 48 percent of pairs nested on Cape Cod beaches. The most productive breeding site was located on Crane Beach, Ipswich, which hosted 54 breeding pairs. (NHESP and MA DFW 2022). Within New Hampshire, piping plovers nest on coastal sandy beaches and are focused in Hampton and Seabrook (NH Fish and Game 2015).

While the precise migratory pathways along the Atlantic coast and to the Bahamas are not well known (USFWS 2009; Normandeau Associates, Inc. 2011), both spring and fall migration routes are believed to follow a narrow strip along the Atlantic coast but may extent up to 124 miles (200 kilometers) offshore (Loring et al. 2020). Similar to other shorebirds, piping plovers either make nonstop long-distance migratory flights (Normandeau Associates, Inc. 2011) or offshore migratory “hops” between coastal areas (Loring et al. 2020). Due to the difficulty in detecting piping plovers in the offshore environment during migration, because of the assumed nocturnal and high-elevation migratory flights, there are no definitive observations of this species in offshore environments greater than 3.0 miles (4.8 kilometers) from the Atlantic coast (Normandeau Associates, Inc. 2011).

4.4.2 Piping Plover in the Action Area

Piping plovers are present in Massachusetts, New Hampshire, and Maine during their breeding season and spring and fall migratory seasons which occur from late March through mid-October. A recent Very High Frequency (VHF)-tracking study documented the movement of piping plovers in Rhode Island and Massachusetts and found that most piping plovers fly close to and parallel to the coast with a favorable atmospheric condition and all individuals tracked during the migratory departure exhibited a south–southwest trajectory (Loring et al. 2019). The study is located south of the Gulf of Maine but provides a good indicator for piping plovers offshore routes during migration. Additionally, it is possible Canadian piping plovers could migrate through the Gulf of Maine.

During the spring migration, a pilot study was conducted where 10 plovers were fitted with transmitters in the Bahamas; only two plovers that had enough data for analysis traveled north along the Atlantic coast. The migration period lasted for a period of several weeks, during which the two birds stayed close to

shore and were not detected north of Montauk, New York (Loring et al. 2019). Although it is possible for piping plovers to cross the Research Lease Area, relatively few are likely to do so.

4.5 *Rufa* Red Knot

4.5.1 Species Description

The *rufa* red knot is a medium-sized member of the sandpiper family that breeds in the Canadian Arctic and winters along the northwest coast of the Gulf of Mexico, along the Atlantic coast from Florida to North Carolina, and along the Atlantic coasts of Argentina and Chile (USFWS 2014). Over the last 20 years, the *rufa* red knot has declined from a population estimated at 100,000 to 150,000 down to 18,000 to 33,000 (Niles et al. 2008). The primary threat to the *rufa* red knot population is the reduced availability of horseshoe crab (*Limulus polyphemus*) eggs in Delaware Bay arising from elevated harvest of adult crabs (Niles et al. 2008). Horseshoe crab eggs are an important dietary component during migration, and reduced availability at key migratory stopover sites may be a likely cause of recent species declines (Niles et al. 2008; USFWS 2014). Due to observed population declines, USFWS listed the *rufa* red knot as threatened under the ESA in 2014 (79 *Federal Register* 73706). USFWS proposed critical habitat for the *rufa* red knot in 2021 (86 *Federal Register* 37410), but not in the Action Area. Additionally, the red knot is listed as Threatened under the Massachusetts ESA (Mass Wildlife 2020), a Species of Concern in Maine (Maine DIFW 2015) and are not state listed in New Hampshire (NH Fish and Game 2015). The *rufa* red knot is one of 72 species (out of 177 species on the Atlantic OCS) that ranked moderate in its relative vulnerability to collision with wind turbines (Robinson Willmott et al. 2013). Despite the presence of many onshore turbines along the red knot's overland migration route (Diffendorfer et al. 2017), there are no records of knots colliding with turbines (78 *Federal Register* 60024).

Rufa red knot migration northward through the contiguous United States occurs in April to June and southward migration occurs in July to October. During the spring and fall migration, the red knot is known to migrate over the Atlantic OCS and use stopover sites along the Atlantic coast to refuel and rest (Burger et al. 2012a). This species occurrence on the Atlantic coast is strictly seasonal. Northerly migrants are known to congregate in shoreline foraging areas in the mid-Atlantic region during the spring, while concentrations of southern migrants congregate in the north-Atlantic region during the fall (Niles et al. 2010; Normandeau 2011; Burger et al. 2012a, 2012b). Coastal areas in Massachusetts are known migratory staging areas during southern migration (USFWS 2021a) and approximately 2,000 to 5,000 individual red knots may stage on Cape Cod during southbound migration (L. Niles, personal communication, July 1, 2020). Few knots are known to occur in Massachusetts from May to June during the spring migration; however, many individuals continue to stop over from July to September (NHESP 2020). Historical migratory stopover locations in Massachusetts included outer Cape Cod beaches and mainland beaches along West Cape Cod (NHESP 2020).

Delaware Bay, along the southern border of Cape May County, is a critical stopover area for *rufa* red knots and supports 50 to 80 percent of all *rufa* red knots during spring migration (USFWS 2014). This stopover site allows the *rufa* red knot to refuel and prepare for a nonstop flight to the Arctic (USFWS 2010a). They use sandy coastal beaches at or near tidal inlets or the mouths of bays and estuaries, peat banks, salt marshes, brackish lagoons, tidal mudflats, mangroves, and sandy/gravelly beaches where they feed on clams, crustaceans, invertebrates, and the eggs of horseshoe crabs that come ashore to spawn in late May. Spring migration coincides with the spawning season for the horseshoe crab, which is an important food for migrating birds, particularly in Delaware Bay. Mussel beds on the New Jersey coast are also an important food source (USFWS 2021b). After stopping in Delaware Bay, some *rufa* red knots traveled up the coast, but the vast majority directly overland to breeding areas in Hudson Bay, Canada, and do not fly farther east over federal waters on the OCS (Loring et al. 2020; Figure 24).

There are no observation records of *rufa* red knots near the Research Lease Area (USFWS 2018b). Recent studies of *rufa* red knot migratory patterns have shown great variation in routes, but with more Mid-Atlantic to southerly concentrations during spring migration and more northerly concentrations during fall migration, including Massachusetts (Burger et al. 2012a and 2012b; Niles et al. 2010; Normandeau 2011).

4.5.2 *Rufa* Red Knot in the Action Area

The *rufa* red knot is known to pass through coastal habitats along Maine, New Hampshire, and Massachusetts during the spring and fall migration, with a greater number of individuals passing through during the fall (BOEM 2013). A telemetry study by Loring et al. (2018) found that red knots that migrated during early fall departed from the Atlantic coast in a southeast direction, likely heading to long-distance wintering destinations in South America. In addition, *rufa* red knots that migrated during late fall traveled southwest across the Mid-Atlantic Bight, likely heading to short distance wintering destinations in the southeastern United States and Caribbean. Interestingly, *rufa* red knots migrated through federal waters of the Atlantic Outer Continental Shelf during evenings with fair weather and a tailwind blowing in their direction of travel. Tagged individuals exhibited a temporal difference in fall migration between hatch year birds (late fall) and adults (early fall) and short distance migrants are more likely to migrate during late fall than long distance migrants. A telemetry study by Loring et al. (2020) found that in spring, red knots had the highest probability of presence in the Atlantic OCS from mid-May to early June when wind speeds were moderate (~10 meters/second) blowing to the north-northeast. In the fall, red knots had the highest probability of presence in the Atlantic OCS at the beginning of July, which decreased through October, followed by a slight increase in November. A correlation of higher probability of presence in the Atlantic OCS during the fall was associated with wind direction, which blew to the south-southeast and a high atmospheric pressure. During both the spring and fall, precipitation was low (<3 kilograms/meters²) during flights in the Atlantic OCS.

Duijns et al. (2019) recently examined migration speeds, airspeed, and timing of departure and found that *rufa* red knots migrated quicker during the pre-breeding season, compared to the post-breeding season. During the spring migration period, *rufa* red knots migrate quicker to breeding grounds from wintering areas, but they fly at faster speeds during the fall migration. Results also displayed that post-breeding season, *rufa* red knots exhibit flexible departure direction to capture tailwinds, higher airspeed, and longer stopover durations. However, the automated telemetry array did not fully cover the length of the Flyway and bird behavior outside of the study area was not captured during this study.

Only a small portion of *rufa* population uses the Atlantic coast during the southward migration (Loring et al. 2018). A recent study that tracked 388 red knots fitted with nanotags found that no individuals flew over the Massachusetts Wind Energy Area during fall migration in November (Loring et al. 2018). Most of the knots (254) were tagged at stop over sites in James Bay and Mingan Islands Canada, and most headed directly south over open ocean (Loring et al. 2018). In spring, the vast majority of *rufa* red knots fly directly overland from stopover areas in Delaware Bay to breeding areas in Hudson Bay Canada. However, some *rufa* red knots do travel up the coast in spring as confirmed by a tracking study (Loring et al. 2018). The results from Loring et al. (2018) overall indicate that most individuals followed a coastal migratory route and probability to exposure in the Research Lease Area is low.

Very little, if any, *rufa* red knot activity is expected over the Research Lease Area, with relatively few flying through the Potential Action Area during the spring and fall migration. Due to the variation in seasonal migration behavior, this may affect the potential population that would cross the Potential Action Area and provides support that fewer *rufa* red knots may traverse this area during spring migration as individuals choose overland direct flights from the mid-Atlantic to breeding grounds, as opposed to following the coastline.

4.6 Roseate Tern

4.6.1 Species Description

The roseate tern is a small colonial tern identifiable due to its long white trail-streamers, black cap and bill, and orange legs and feet (NHESP 2015b). Roseate terns have Atlantic and Caribbean discrete population segments that breed from Long Island, New York, north and east to Quebec and Nova Scotia and the eastern and western Caribbean Sea, respectively, and winter along the northeastern coast of South America (USFWS 2020b; 2010b). The northeastern roseate tern population¹ was listed under the ESA as Endangered in 1987, while terns in the Caribbean population are listed as Threatened (52 *Federal Register* 42064). No critical habitat has been designated for this species (52 *Federal Register* 42064). USFWS recently initiated a 5-year review for this species (83 *Federal Register* 39113–39115). Furthermore, the roseate tern is one among 61 species (out of 177 species on the Atlantic OCS) that ranked high in its relative vulnerability to collision with wind turbines (Robinson Willmott et al. 2013). This high ranking is partially driven by the amount of time the species spends foraging on the ocean, and if time on the ocean was restricted to migration the population would be ranked medium.

The northeastern roseate tern population breeds on small islands or on sand dunes at the ends of barrier beaches along the Atlantic coast, occurring in mixed colonies with common terns (*Sterna hirundo*). The population is currently restricted to a small number of colonies on predator-free islands from Nova Scotia to Long Island, New York, with over 90 percent of remaining individuals breeding at just three colony locations (Bird Island and Ram Island in Buzzards Bay, Massachusetts, and Great Gull Island in Long Island Sound, New York) (Nisbet et al. 2014; Loring et al. 2019; USFWS 2020b). Historically, the northeastern roseate tern population was known to breed as far south as Virginia, but the species currently does not breed south of Long Island, New York (USFWS 1998). Declines have been attributed largely to low productivity, partially related to predators and habitat loss and degradation, although adult survival is also unusually low for a tern species (USFWS 2010b). A recent USFWS 5-year review has shown that the historical population size in northeastern North America was estimated at 8,500 pairs in the 1930s (USFWS 2020b). In 2019, the range-wide breeding population was estimated at 4,374 breeding pairs at peak period count. Since 2016 the U.S. roseate tern breeding population has exceeded 4,000 breeding pairs annually. Since the USFWS 5-year review in 2010, new information has been discovered on metapopulation structure and dynamics on the distribution and behavior of roseate terns post-breeding, especially during the 3-to-4-year maturation period. It is speculated that a greater proportion of adults and non-breeding birds may return to their summer range within the northeast in North America than what was previously thought (USFWS 2020b citing J. Spendelow, personal communication 2020) and there are more 1 year old roseate terns which migrate north to their summer breeding range than previously thought (USFWS 2020b citing J. Spendelow, personal communication 2020 and I. Nisbet, personal communication 2020). Additionally, 2-year-old roseate terns, which return to their summer range may prospect at breeding colonies as well as spending time offshore or nearshore at staging areas (USFWS 2020b citing J. Spendelow, personal communication 2020 and I. Nisbet, personal communication 2020).

Roseate tern foraging behavior and ecology are well described. Roseate terns dive less than 1.6 feet (0.5 meter) into the water to forage primarily for the inshore sand lance (*Ammodytes americanus*) in shallow, warmer waters near shoals, inlets, and rip currents close to shore (Safina 1990; Heinemann 1992; Rock et al. 2007). Roseate tern foraging flights are slow and range from 3 to 12 meters (10 to 39 feet) above the ocean surface. During the breeding season, most terns from colonies on Great Gull Island and Buzzards Bay forage relatively close to their colonies, but some do travel along the coast to other nearshore foraging sites (Loring 2016; Loring et al. 2019). In sharp contrast to common terns, roseate

¹ This population is also known as the Northwest Atlantic population of the roseate tern and Northeast Distinct Population Segment of the roseate tern. Herewith, the population will be addressed as the Northeastern roseate tern population to distinguish the population from the Caribbean roseate tern population or the Northeastern Atlantic roseate tern population of Europe.

terns are dietary specialists and exhibit strong fidelity to foraging sites and avoidance of clusters of other feeding tern species (Goyert 2015). In other words, roseate terns are picky feeders and do not meander around searching for food and do not follow or rely on common terns to find food. Furthermore, shipboard surveys conducted from 2006 through 2009 for the Ecosystems Monitoring Survey provided data on the foraging behavior of roseate terns on the northeastern U.S. continental shelf. Roseate terns were found to exhibit facilitative interactions with sub-surface marine predators as a positive spatial and behavioral association was found between foraging roseate terns and tunas (Goyert et al. 2014).

The inshore sand lance is the primary forage fish for roseate terns and is a small to medium size 1.9 to 6.6 inches (49 to 168 millimeters) and are chiefly found in waters shallow <7 feet (<2 meters) coastal waters and estuaries and not found offshore (Collette and Klein-MacPhee 2002). The average size of inshore sand lance delivered by roseate terns to chicks is 2.3 inches (59 millimeters) (Safina et al. 1990). This is in contrast to the offshore sand lance (*A. dubius*) which is larger 3 to 10 inches (77 to 253 millimeters) and found offshore, particularly in Nantucket Shoals and over the shallows of Georges and Browns Banks, and stays on the bottom during the day (Collette and Klein-MacPhee 2002). Humpback whales do consume offshore sand lance and will flush the offshore sand lance from the bottom (Hain et al. 1995).

The northeastern roseate tern population generally migrates through the Mid-Atlantic to and from its wintering grounds on the northeastern coast of Brazil, arriving at its northwest Atlantic breeding colonies in late April to late May, with nesting occurring between mid-May and late July. During breeding, roseate terns generally stay within about 6 miles (10 kilometers) of the colony, although they may travel 20 to 30 miles (32 to 48 kilometers) from the colony while feeding chicks (USFWS 2010b; Burger et al. 2011; Nisbet et al. 2014; Loring et al. 2019). Following the breeding season, adult and hatch-year roseate terns move to post-breeding coastal staging areas from approximately late July to mid-September (USFWS 2010b). Foraging activity during the staging period is known to occur up to 10 miles (16 kilometers) from the coast, although most foraging activity occurs much closer to shore (Burger et al. 2011). Recent very high frequency (VHF) and geolocator data suggest roseate terns migrate in late August to mid-September from staging areas to their wintering range. A recent study tagged six roseate terns in Bird Island, Massachusetts and found that geolocator data suggests roseate terns exhibit southbound migration flight paths, which are transoceanic until reaching the Caribbean where a stopover period may occur (USFWS 2020b).

4.6.2 Roseate Terns in the Action Area

About 200 to 250 pairs of roseate terns nest on Maine coastal islands in the early spring (April-May). During nesting season, they feed primarily in near-shore habitats on sand lance. Roseate tern foraging areas are not well known but can be 10 or 15 miles or greater from nesting islands (USFWS Maine n.d.).

Given that roseate terns migrate mainly offshore during spring and fall (Nisbet et al. 2014), it is possible that some birds pass through the Potential Action Area during migration. However, none of the 145 modeled roseate tern flight paths crossed the Vineyard Wind lease area during breeding and non-breeding dispersal periods by the network of tracking stations (Loring et al. 2019). It is possible that the roseate terns did not pass through the lease area, or were flying so low that they evaded detection. If the terns decided to fly higher, the stations would be able to detect them, because the same stations were also detecting the relatively high-flying red knots and piping plovers (Loring et al. 2018; Loring et al. 2019). Given that roseate terns were flying low as they departed the region (Loring et al. 2019), it is most likely roseate terns continued to fly low as they headed further out to sea even if they flew through the Research Lease Area.

In conclusion, based on the behavioral and foraging ecology, and survey data, roseate tern activity is expected within the offshore Action Area. It is possible that small numbers of breeding and non-breeding terns, including 2-year-old birds and adults, may pass through the Action Area in spring, late summer,

and early fall to rest on the water or travel to adjacent foraging habitat on barrier islands in Maine. Some individuals may also pass through the offshore Action Area during the spring and fall migration.

4.7 Monarch Butterfly

4.7.1 Species Description

The monarch butterfly occurs throughout the United States during the summer months and is a candidate species for federal listing. This species is recognizable in their adult stage due to the presence of bright orange wings covered with black veins and white spots reaching a wingspan of up to 3 to 4 inches (7 to 10 centimeters) (USFWS 2022a). During their larval stage and prior to metamorphosis, the monarch caterpillars are black and yellow with white stripes and can reach 2 inches (5 centimeters) in length (USFWS 2022a). Metamorphosis is completed in approximately 30 days and includes four stages: egg, larva, pupa, and adult (Jepsen et al. 2015). Adults deposit eggs on their obligate host plant, milkweed (*Asclepias* spp.), which larvae feed almost exclusively on as they grow and molt. Over the course of 9 to 18 days larvae undergo five larval instars upon which they pupate into a chrysalis before emerging into an adult butterfly 6 to 14 days later (USFWS 2022a).

East of the Rocky Mountains, most monarch butterflies migrate north in successive generations from overwintering areas in central Mexico to as far north as southern Canada. As they migrate north, monarch butterflies mate and deposit their eggs and die. The offspring typically survive 2 to 5 weeks in the adult stage, moving north generation by generation as temperatures warm and plants flower. After three to four generations, the population reaches the northern United States and southern Canada; the final generation makes the return migration in the fall to overwintering sites. Monarch butterflies may travel over 1,864 miles (3,000 kilometers) during the fall migration for over two months. Unlike previous generations, the last generation of each year lives for about 8 months over winter and begins the multi-generational migration the following spring (NJDEP 2017). The preferred habitat for monarchs is open meadows, fields, and wetland edges with the presence of milkweed and flowering plants (Mass Audubon 2022). While overwintering, the eastern North American population prefers a specific microclimate of oyamel fir tree roosts found within mountainous regions in central Mexico (USFWS 2022a).

USFWS recently conducted a Monarch Species Status Assessment Report and found that past annual census data indicates that the eastern North American population has been declining over the last 26 years (USFWS 2020c). Specifically, monarch butterfly populations east of the Rocky Mountains, which are the largest of all populations, have declined by over 90 percent in the last three decades (CBD et al. 2014; Xerces 2020). USFWS (2020c) estimated the eastern North American population's probability of extinction in 60 years under current conditions ranges from 48 percent to 69 percent. USFWS determined in 2020 that listing the monarch butterfly as an endangered or threatened species is warranted but precluded by higher priority actions (85 *Federal Register* 81813). Candidate species are provided no statutory protection under the ESA; therefore, Section 7 consultation is not required. However, the monarch butterfly is evaluated here to streamline consultation should this species become listed in the future. Because the monarch butterfly is not listed under the ESA, no critical habitat is designated for the species.

Threats identified in the petition to list monarch butterflies include loss and degradation of habitat and loss of milkweed resulting from herbicide application, conversion of grasslands to cropland, loss to development and aggressive roadside management, loss of winter habitats from logging, forest disease, and climate change. The reduced availability, spatial distribution, and quality of milkweed and nectar plants associated with breeding and use of insecticides are most responsible for their decline (85 *Federal Register* 81813).

Monarch butterflies may occur offshore as, occasionally, mass flights may be blown offshore, or monarchs may use offshore structures for resting during migration. Ross (1998) observed large numbers of monarchs resting on oil platforms 72 miles offshore in the Gulf of Mexico during migration. Additionally, Urquhart (1976) studied Peninsular Florida populations and noted monarchs may migrate via the offshore islands of Florida in the Gulf of Mexico and along the Florida Keys. Monarch butterflies can also be found onshore in open meadows and fields that usually contain a variety of wildflowers including milkweed, coastal beaches with dunes, and human-made butterfly gardens (NYSDEC n.d.).

4.7.2 Monarch Butterfly in the Action Area

Data received using the USFWS IPaC system identified the monarch butterfly as potentially occurring in the Potential Action Area. The eastern North American monarch population has been observed both in Massachusetts, New Hampshire, and Maine during the spring and fall migration period. As stated above, monarchs rely on their obligate host plant, *Asclepias*, which is known to occur within Maine, New Hampshire, and Massachusetts. Monarchs are known to traverse the open water and may occur within the Potential Action Area.

4.8 Plymouth Redbelly turtle

4.8.1 Species Description

The Plymouth redbelly turtle is a coastal plain species found only in ponds within Plymouth County, Massachusetts, as well as south from New Jersey to South Carolina, and inland to West Virginia. In Massachusetts, the Redbelly turtle occurs in freshwater ponds and river systems (New England Herpetological Society 2023).

4.8.2 Plymouth redbelly turtle in the Action Area

Data received using the USFWS IPaC system identified Plymouth redbelly turtle as potentially occurring due to the proximity of the Potential Action Area to land. As previously stated, Plymouth redbelly turtles are found in freshwater ponds and do not occur offshore, therefore, it is unlikely this species will occur in the Action Area. As this species habitat is not present within the Action Area, it is dismissed for further analysis of effects.

5. Effects of Proposed Action

Pursuant to ESA requirements, this BA analyzes the potential direct, indirect, and cumulative effects of the Proposed Action on northern long-eared bat, tricolored bat, roseate terns, piping plovers, *rufa* red knots, monarch butterfly, and Plymouth redbelly turtle and/or their habitats to determine if the Proposed Action is likely to adversely affect these species or their habitats (50 CFR § 402.12). This analysis uses the following definitions in the effects determination:

- **No effect:** A listed resource is not exposed to the Proposed Action; therefore, no impacts (positive or negative) would occur.
- **May affect, not likely to adversely affect:** This is the appropriate determination if effects on listed species are either:
 - Beneficial, meaning entirely positive, with no adverse effects;
 - Insignificant, which are related to the size of the impact and include effects that are too small to be measured, evaluated, or are otherwise undetectable; or
 - Discountable, which are effects that are extremely unlikely to occur.
- **May affect, likely to adversely affect:** This is the appropriate determination if any direct or indirect adverse effects on listed species that are not entirely beneficial, insignificant, or discountable would occur as a result of the Proposed Action.

The impact-producing factors (IPF) of Project construction, operation, and decommissioning that have the potential to affect federally listed species under USFWS jurisdiction are summarized in Table 3.

Table 3. Impact-producing factors for Gulf of Maine Research Lease Area site characterization and assessment activities on ESA-listed species

Impact-Producing Factor	Potentially Affected Species	Potential Type of Exposure
Air Emissions	Northern long-eared bat Tricolored bat Piping plover Roseate tern <i>Rufa</i> red knot Monarch butterfly Plymouth redbelly turtle	Injury and mortality Behavioral
Noise	Northern long-eared bat Tricolored bat Piping plover Roseate tern <i>Rufa</i> red knot	Behavioral
Seafloor disturbance	Roseate tern	Prey availability
Entanglement	Piping plover Roseate tern <i>Rufa</i> red knot	Injury and mortality behavioral

Impact-Producing Factor	Potentially Affected Species	Potential Type of Exposure
Routine vessel discharges	Northern long-eared bat Tricolored bat Monarch butterfly Piping plover Roseate tern <i>Rufa</i> red knot	Habitat modification injury and mortality behavioral
Lighting	Northern long-eared bat Tricolored bat Piping plover Roseate tern <i>Rufa</i> red knot	Behavioral

5.1 Bats (Northern Long-Eared Bat and Tricolored Bat)

Potential IPFs from the site characterization and assessment activities of the proposed Project on northern long-eared bat and tricolored bat include air emissions, noise, routine vessel discharge, and lighting.

5.1.1 Potential Impact

The species' exposure to vessels during site characterization and assessment activities is expected to be insignificant if exposure were to occur at all. Therefore, because few, if any, northern long-eared bats and tricolored bats are expected to be in the offshore Action Area and because bats are agile flyers, collisions are considered unlikely to occur (*discountable*) and the size of any impact, were it to occur, would be too small to be measured or evaluated (*insignificant*).

Anthropogenic noise associated with vessels and aircrafts during site characterization and assessment activities has the potential to result in impacts on bats in the Action Area. BOEM anticipates impacts from noise would be temporary and highly localized, and that the low potential presence of northern long-eared bat and tricolored bat in the offshore and onshore Action Area would result in minimal, if any, exposure to these potential impacts.

Therefore, because few, if any, northern long-eared bats or tricolored bats are expected to occur in the offshore Action Area, BMPs and appropriate mitigation measures would be implemented. Under these measures, potential effects from noise are extremely unlikely to occur (*discountable*) and the size of any impact, were it to occur, would be too small to be measured or evaluated (*insignificant*).

5.1.2 Avoidance, Minimization, and Mitigation Measures

Several APMs identified for bats would be beneficial to the northern long-eared bat and tricolored bat:

- Coordinate with USFWS to identify appropriate mitigation measures.
- Ensure that lighting will be minimized to reduce potential attraction of bats to vessels and aircraft during site assessment and site characterization activities to the extent practicable.

5.2 Birds (Piping Plover, *Rufa* Red Knot, Roseate Tern)

Potential IPFs from the site characterization and assessment activities of the proposed Project on northern long-eared bat and tricolored bat include air emissions, noise, routine vessel discharge, and lighting.

5.2.1 Potential Impact

Vessel and survey noise could disturb offshore bird species, but they would likely acclimate to the noise or move away, potentially resulting in a temporary loss of habitat (BOEM 2012). Construction and maintenance vehicle activity would also not significantly increase or alter the existing levels of disturbance within onshore areas; therefore, any noise-related effects on federally listed bird species in the vicinity would be temporary and localized. Therefore, potential effects from noise may affect the roseate tern, piping plover, and *rufa* red knot, but adverse impacts would be unlikely to occur (*discountable*) and the size of any impact, were it to occur, would be too small to be measured or evaluated (*insignificant*).

Aircraft traffic during site characterization activities could pose a collision threat to federally listed birds that may be in the area of aircraft use. General aviation traffic accounts for approximately two bird strikes per 100,000 flights (Dolbeer et al. 2019). Because aircraft flights associated with the Project are expected to be minimal in comparison to baseline conditions, aircraft strikes with federally listed birds are highly unlikely to occur. In addition, as previously described in this BA, the occurrence of federally listed birds in the offshore portions of the Action Area expected in very small numbers. Therefore, potential effects from aircraft-related collisions are extremely unlikely to occur (*discountable*) and the size of any impact, were it to occur, would be too small to be measured or evaluated (*insignificant*).

5.2.2 Accidental Releases

Roseate tern is the only federally listed species considered in this BA with the potential to be affected by accidental releases in the offshore environment. Accidental releases would not affect piping plovers or *rufa* red knots, as these species are strictly terrestrial foragers and do not use aquatic habitats for foraging and resting on the water.

Some potential exists for bird mortality, decreased fitness, and health effects due to the accidental release of fuel, hazardous materials, and trash and debris from vessels associated site characterization and assessment activities. Ingestion of fuel and other hazardous contaminants has the potential to result in lethal and sublethal impacts on birds, including decreased hematological function, dehydration, drowning, hypothermia, starvation, and weight loss (Briggs et al. 1997; Haney et al. 2017; Paruk et al. 2016). Additionally, even small exposures that result in oiling of feathers can lead to sublethal effects that include changes in flight efficiencies and result in increased energy expenditure during daily and seasonal activities, including chick provisioning, commuting, courtship, foraging, long-distance migration, predator evasion, and territory defense (Maggini et al. 2017). Vessels associated with the Proposed Action may potentially generate operational waste, including bilge and ballast water, sanitary and domestic wastes, and trash and debris. BOEM expects accidental trash releases from offshore vessels to be rare and localized in nature. In the unlikely event of a release, lethal and sublethal impacts on individuals could occur as a result of blockages caused by both hard and soft plastic debris (Roman et al. 2019).

USGS regulations and operating procedures would minimize effects on offshore bird species resulting from the release of debris, fuel, hazardous materials, or waste (BOEM 2012). In the case of an accidental spill within the proposed Action Area, approved OSRP mitigation measures will be used to prevent birds from going to affected areas including hazing, chumming, and relocating to unaffected areas. These releases, if any, would occur infrequently at discrete locations and vary widely in space and time; as such, BOEM expects localized and short-term impacts on roseate tern.

As previously described in this BA, the occurrence of roseate terns in the offshore portions of the Action Area is expected in very small numbers; therefore, exposure to accidental releases would be minimal. In addition, any release is anticipated to be rare and localized, and USCG regulations would further minimize potential exposure to accidental releases. Therefore, potential effects of accidental releases are

extremely unlikely to occur (*discountable*) and the size of any impact, were it to occur, would be too small to be measured or evaluated (*insignificant*).

5.2.3 Avoidance, Minimization, and Mitigation Measures

Several APMs identified for birds would be beneficial to federally listed birds:

- Coordinate with USFWS to identify appropriate mitigation measures.
- Minimize lighting, to the extent practicable, to reduce potential attraction of birds to vessels during site assessment and site characterization activities.
- Use approved OSRP mitigation measures, as necessary, to prevent birds from going to affected areas including chumming, hazing, and relocating to unaffected areas.

5.3 Monarch Butterfly

IPFs from the site characterization and assessment of the proposed Project will not impact monarch butterflies.

Monarch butterflies have been documented offshore on oil platforms in the Gulf of Mexico, 72 miles south of the Louisiana coastline potentially utilizing the structures as a safe haven to cross from Louisiana to northeastern Mexico each fall (Ross 1998). Although monarchs are far-ranging fliers, they are easily blown off course, likely by storms, into offshore waters. Therefore, because the occurrence of monarch butterflies in the offshore portions of the Action Area is anticipated to be very rare, potential collisions are extremely unlikely to occur (*discountable*) and the size of any impact, were it to occur, would be too small to be measured or evaluated (*insignificant*).

6. Determination of Effect

6.1 Proposed Action

6.1.1 Bats (Northern Long-Eared Bat and Tricolored Bat)

Given that the northern long-eared bat occurs or potentially occurs in portions of the Action Area and, as described in Section 5, there is potential risk to the species, the proposed Project **may affect** the northern long-eared bat and the tricolored bat. However, because few (if any) northern long-eared bats or tricolored bats are expected in the Action Areas, and the potential effects related to noise are extremely unlikely to occur (*discountable*) and the size of any impact, were it to occur, would be too small to be measured or evaluated (*insignificant*). For these reasons, BOEM anticipates that the Proposed Action is **not likely to adversely affect** the northern long-eared bat or the tricolored bat.

6.1.2 Birds (Piping Plover, *Rufa* Red Knot, Roseate Tern)

Given that the piping plover, *rufa* red knot, and roseate tern occur or potentially occur in portions of the Action Area and, as described in Section 5, there is potential risk to the species, the proposed Project **may affect** these birds. However, the occurrence of these birds in the offshore portions of the Action Area is expected but in very small numbers; therefore, exposure to the IPFs in the offshore environment would be minimal. Furthermore, any noise, accidental releases, and traffic (aircraft), would be temporary and localized. Therefore, for the piping plover, and *rufa* red knot, potential effects from the IPFs are extremely unlikely to occur (*discountable*) and the size of any impact, were it to occur, would be too small to be measured or evaluated (*insignificant*). For these reasons, BOEM anticipates that the Proposed Action is **not likely to adversely affect** the piping plover, the *rufa* red knot, or the roseate tern.

6.1.3 Monarch Butterfly

Given that the monarch butterfly occurs or potentially occurs in portions of the Action Area and, as described in Section 5, there is potential risk to the species, the proposed Project **may affect** the monarch butterfly. However, the potential effects from the IPFs are extremely unlikely to occur (*discountable*) and the size of any impact, were it to occur, would be too small to be measured or evaluated (*insignificant*). Therefore, if USFWS were to list the monarch butterfly as threatened or endangered in the future, BOEM anticipates the Proposed Action is **not likely to adversely affect** the species.

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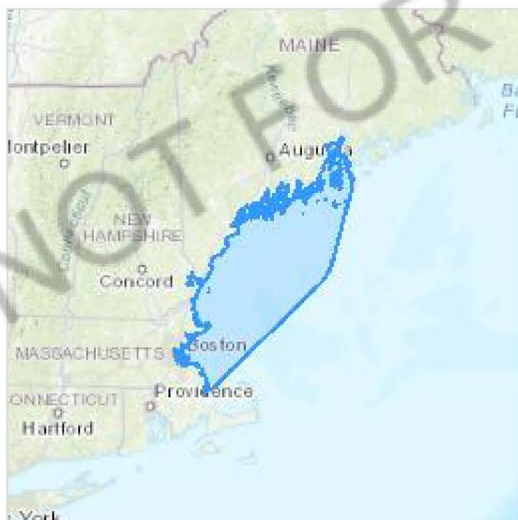
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Maine, Massachusetts, and New Hampshire



Local offices

New England Ecological Services Field Office


☎ (603) 223-2541


🏠 (603) 223-0104

70 Commercial Street Suite 300

70 Commercial Street, Suite 300
Concord, NH 03301-5094

Maine Ecological Services Field Office

 (207) 469-7300

 (207) 902-1588

MAILING ADDRESS

P. O. Box A
East Orland, ME 04431

PHYSICAL ADDRESS

306 Hatchery Road
East Orland, ME 04431

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

-
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered

Birds

NAME	STATUS
Piping Plover <i>Charadrius melodus</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> Wherever found There is proposed critical habitat for this species. https://ecos.fws.gov/ecp/species/1864	Threatened
Roseate Tern <i>Sterna dougallii dougallii</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2083	Endangered

Reptiles

NAME	STATUS
Plymouth Redbelly Turtle <i>Pseudemys rubriventris bangsi</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/451	Endangered

Fishes

NAME	STATUS
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Atlantic Salmon *Salmo salar*

Endangered

There is **final** critical habitat for this species. Your location overlaps the critical habitat.

<https://ecos.fws.gov/ecp/species/2097>

Insects

NAME

STATUS

Monarch Butterfly *Danaus plexippus*

Candidate

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/9743>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME

TYPE

Atlantic Salmon *Salmo salar*

Final

<https://ecos.fws.gov/ecp/species/2097#crithab>

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take->

[migratory-birds](#)

- Nationwide conservation measures for birds

<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

Migratory bird information is not available at this time

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability

of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Coastal Barrier Resources System

Projects within the [John H. Chafee Coastal Barrier Resources System](#) (CBRS) may be subject to the restrictions on Federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local [Ecological Services Field Office](#) or visit the [CBRA Consultations website](#). The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

This location overlaps the following CBRS unit(s):

System Unit (SU)

*Most new Federal expenditures and financial assistance, including Federal flood insurance, are prohibited within System Units. **Federally-funded projects within System Units require consultation with the Service.** Consultation is not required for projects using private, state, or local funds.*

[A05A - SU 10/18/1982 - FI 10/1/1983](#)

[A05B - SU 10/18/1982 - FI 10/1/1983](#)

[A05C - SU 10/18/1982 - FI 10/1/1983](#)

[A05C - SU 11/16/1990 - FI 11/16/1990](#)

[A06 - SU 10/18/1982 - FI 10/1/1983](#)

[A07 - SU 10/18/1982 - FI 10/1/1983](#)

[A08 - SU 10/18/1982 - FI 10/1/1983](#)

[A08 - SU 11/16/1990 - FI 11/16/1990](#)

[A09 - SU 10/18/1982 - FI 10/1/1983](#)

[C00 - SU 10/18/1982 - FI 10/1/1983](#)
[C00 - SU 11/16/1990 - FI 11/16/1990](#)
[C01 - SU 10/18/1982 - FI 10/1/1983](#)
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[C01B - SU 10/18/1982 - FI 10/1/1983](#)
[C01B - SU 2/24/1997 - FI 2/24/1997](#)
[C01C - SU 10/18/1982 - FI 10/1/1983](#)
[C02 - SU 10/18/1982 - FI 10/1/1983](#)
[C03 - SU 10/18/1982 - FI 10/1/1983](#)
[C03 - SU 11/16/1990 - FI 11/16/1990](#)
[C03A - SU 10/18/1982 - FI 10/1/1983](#)
[C04 - SU 10/18/1982 - FI 10/1/1983](#)
[C04 - SU 11/16/1990 - FI 11/16/1990](#)
[MA-03 - SU 11/16/1990 - FI 11/16/1990](#)
[MA-03 - SU 2/24/1997 - FI 2/24/1997](#)
[MA-04 - SU 11/16/1990 - FI 11/16/1990](#)
[MA-06 - SU 11/16/1990 - FI 11/16/1990](#)
[MA-11 - SU 11/16/1990 - FI 11/16/1990](#)
[MA-12 - SU 11/16/1990 - FI 11/16/1990](#)
[MA-13 - SU 10/18/1982 - FI 10/1/1983](#)
[MA-13 - SU 11/16/1990 - FI 11/16/1990](#)
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[ME-17 - SU 11/16/1990 - FI 11/16/1990](#)
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[ME-18 - SU 2/24/1997 - FI 2/24/1997](#)
[ME-19 - SU 11/16/1990 - FI 11/16/1990](#)
[ME-23 - SU 11/16/1990 - FI 11/16/1990](#)

Otherwise Protected Area (OPA)

*OPAs are denoted with a "P" at the end of the unit number. The only prohibition within OPAs is on Federal flood insurance. **CBRA consultation is not required for projects within OPAs.** However, agencies providing disaster assistance that is contingent upon a requirement to purchase flood insurance after the fact are advised to disclose the OPA designation and information on the restrictions on Federal flood insurance to the recipient prior to the commitments of funds.*

[MA-01P - FI 11/16/1991](#)

[MA-02P - FI 11/16/1991](#)

[MA-08P - FI 11/16/1991](#)

[MA-09P - FI 11/16/1991](#)

[MA-10P - FI 11/16/1991](#)

[ME-15P - FI 11/16/1991](#)

[ME-16P - FI 11/16/1991](#)

[ME-19P - FI 11/16/1991](#)

[ME-20P - FI 11/16/1991](#)

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the [official CBRS maps](#). The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: <https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation>

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

Facilities

Wildlife refuges and fish hatcheries

Refuge and fish hatchery information is not available at this time

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC resource list

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Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Maine, Massachusetts, and New Hampshire



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PHYSICAL ADDRESS

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NOT FOR CONSULTATION

Endangered species

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For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

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1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered

Birds

NAME	STATUS
Piping Plover <i>Charadrius melodus</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> Wherever found There is proposed critical habitat for this species. https://ecos.fws.gov/ecp/species/1864	Threatened
Roseate Tern <i>Sterna dougallii dougallii</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2083	Endangered

Reptiles

NAME	STATUS
Plymouth Redbelly Turtle <i>Pseudemys rubriventris bangsi</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/451	Endangered

Fishes

NAME	STATUS
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Atlantic Salmon *Salmo salar*

Endangered

There is **final** critical habitat for this species. Your location overlaps the critical habitat.

<https://ecos.fws.gov/ecp/species/2097>

Insects

NAME

STATUS

Monarch Butterfly *Danaus plexippus*

Candidate

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/9743>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME

TYPE

Atlantic Salmon *Salmo salar*

Final

<https://ecos.fws.gov/ecp/species/2097#crithab>

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take->

[migratory-birds](#)

- Nationwide conservation measures for birds

<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

Migratory bird information is not available at this time

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability

of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Coastal Barrier Resources System

Projects within the [John H. Chafee Coastal Barrier Resources System](#) (CBRS) may be subject to the restrictions on Federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local [Ecological Services Field Office](#) or visit the [CBRA Consultations website](#). The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

This location overlaps the following CBRS unit(s):

System Unit (SU)

*Most new Federal expenditures and financial assistance, including Federal flood insurance, are prohibited within System Units. **Federally-funded projects within System Units require consultation with the Service.** Consultation is not required for projects using private, state, or local funds.*

[A05A - SU 10/18/1982 - FI 10/1/1983](#)

[A05B - SU 10/18/1982 - FI 10/1/1983](#)

[A05C - SU 10/18/1982 - FI 10/1/1983](#)

[A05C - SU 11/16/1990 - FI 11/16/1990](#)

[A06 - SU 10/18/1982 - FI 10/1/1983](#)

[A07 - SU 10/18/1982 - FI 10/1/1983](#)

[A08 - SU 10/18/1982 - FI 10/1/1983](#)

[A08 - SU 11/16/1990 - FI 11/16/1990](#)

[A09 - SU 10/18/1982 - FI 10/1/1983](#)

[C00 - SU 10/18/1982 - FI 10/1/1983](#)
[C00 - SU 11/16/1990 - FI 11/16/1990](#)
[C01 - SU 10/18/1982 - FI 10/1/1983](#)
[C01A - SU 10/18/1982 - FI 10/1/1983](#)
[C01A - SU 11/16/1990 - FI 11/16/1990](#)
[C01B - SU 10/18/1982 - FI 10/1/1983](#)
[C01B - SU 2/24/1997 - FI 2/24/1997](#)
[C01C - SU 10/18/1982 - FI 10/1/1983](#)
[C02 - SU 10/18/1982 - FI 10/1/1983](#)
[C03 - SU 10/18/1982 - FI 10/1/1983](#)
[C03 - SU 11/16/1990 - FI 11/16/1990](#)
[C03A - SU 10/18/1982 - FI 10/1/1983](#)
[C04 - SU 10/18/1982 - FI 10/1/1983](#)
[C04 - SU 11/16/1990 - FI 11/16/1990](#)
[MA-03 - SU 11/16/1990 - FI 11/16/1990](#)
[MA-03 - SU 2/24/1997 - FI 2/24/1997](#)
[MA-04 - SU 11/16/1990 - FI 11/16/1990](#)
[MA-06 - SU 11/16/1990 - FI 11/16/1990](#)
[MA-11 - SU 11/16/1990 - FI 11/16/1990](#)
[MA-12 - SU 11/16/1990 - FI 11/16/1990](#)
[MA-13 - SU 10/18/1982 - FI 10/1/1983](#)
[MA-13 - SU 11/16/1990 - FI 11/16/1990](#)
[ME-11 - SU 11/16/1990 - FI 11/16/1990](#)
[ME-14 - SU 11/16/1990 - FI 11/16/1990](#)
[ME-16 - SU 11/16/1990 - FI 11/16/1990](#)
[ME-17 - SU 11/16/1990 - FI 11/16/1990](#)
[ME-17 - SU 2/24/1997 - FI 2/24/1997](#)
[ME-18 - SU 11/16/1990 - FI 11/16/1990](#)
[ME-18 - SU 2/24/1997 - FI 2/24/1997](#)
[ME-19 - SU 11/16/1990 - FI 11/16/1990](#)
[ME-23 - SU 11/16/1990 - FI 11/16/1990](#)

Otherwise Protected Area (OPA)

*OPAs are denoted with a "P" at the end of the unit number. The only prohibition within OPAs is on Federal flood insurance. **CBRA consultation is not required for projects within OPAs.** However, agencies providing disaster assistance that is contingent upon a requirement to purchase flood insurance after the fact are advised to disclose the OPA designation and information on the restrictions on Federal flood insurance to the recipient prior to the commitments of funds.*

[MA-01P - FI 11/16/1991](#)

[MA-02P - FI 11/16/1991](#)

[MA-08P - FI 11/16/1991](#)[MA-09P - FI 11/16/1991](#)[MA-10P - FI 11/16/1991](#)[ME-15P - FI 11/16/1991](#)[ME-16P - FI 11/16/1991](#)[ME-19P - FI 11/16/1991](#)[ME-20P - FI 11/16/1991](#)

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the [official CBRS maps](#). The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: <https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation>

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

This location overlaps the following National Wildlife Refuge lands:

LAND	ACRES
FRANKLIN ISLAND NATIONAL WILDLIFE REFUGE	17.51 acres
GREAT BAY NATIONAL WILDLIFE REFUGE	1,100.51 acres

PARKER RIVER NATIONAL WILDLIFE REFUGE	4,570.6 acres
PETIT MANAN NATIONAL WILDLIFE REFUGE	4,555.12 acres
POND ISLAND NATIONAL WILDLIFE REFUGE	16.83 acres
RACHEL CARSON NATIONAL WILDLIFE REFUGE	3,310.13 acres
SEAL ISLAND NATIONAL WILDLIFE REFUGE	122.28 acres
THACHER ISLAND NATIONAL WILDLIFE REFUGE	17.04 acres

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

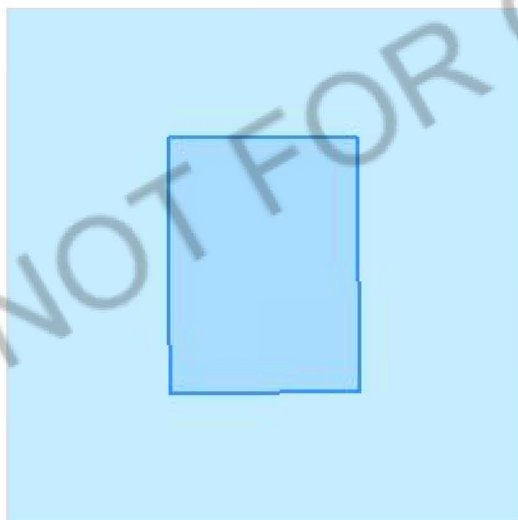
Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location



Local office

Maine Ecological Services Field Office

☎ (207) 469-7300

📠 (207) 902-1588

MAILING ADDRESS

P. O. Box A

East Orland, ME 04431

PHYSICAL ADDRESS

306 Hatchery Road

East Orland, ME 04431

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

-
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
Roseate Tern <i>Sterna dougallii dougallii</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2083	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>

- Nationwide conservation measures for birds

<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\) list](#) or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
<p>Black-legged Kittiwake <i>Rissa tridactyla</i></p> <p>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds elsewhere
<p>Great Shearwater <i>Puffinus gravis</i></p> <p>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds elsewhere
<p>Red Phalarope <i>Phalaropus fulicarius</i></p> <p>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds elsewhere

Roseate Tern *Sterna dougallii*

Breeds May 10 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Wilson's Storm-petrel *Oceanites oceanicus*

Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

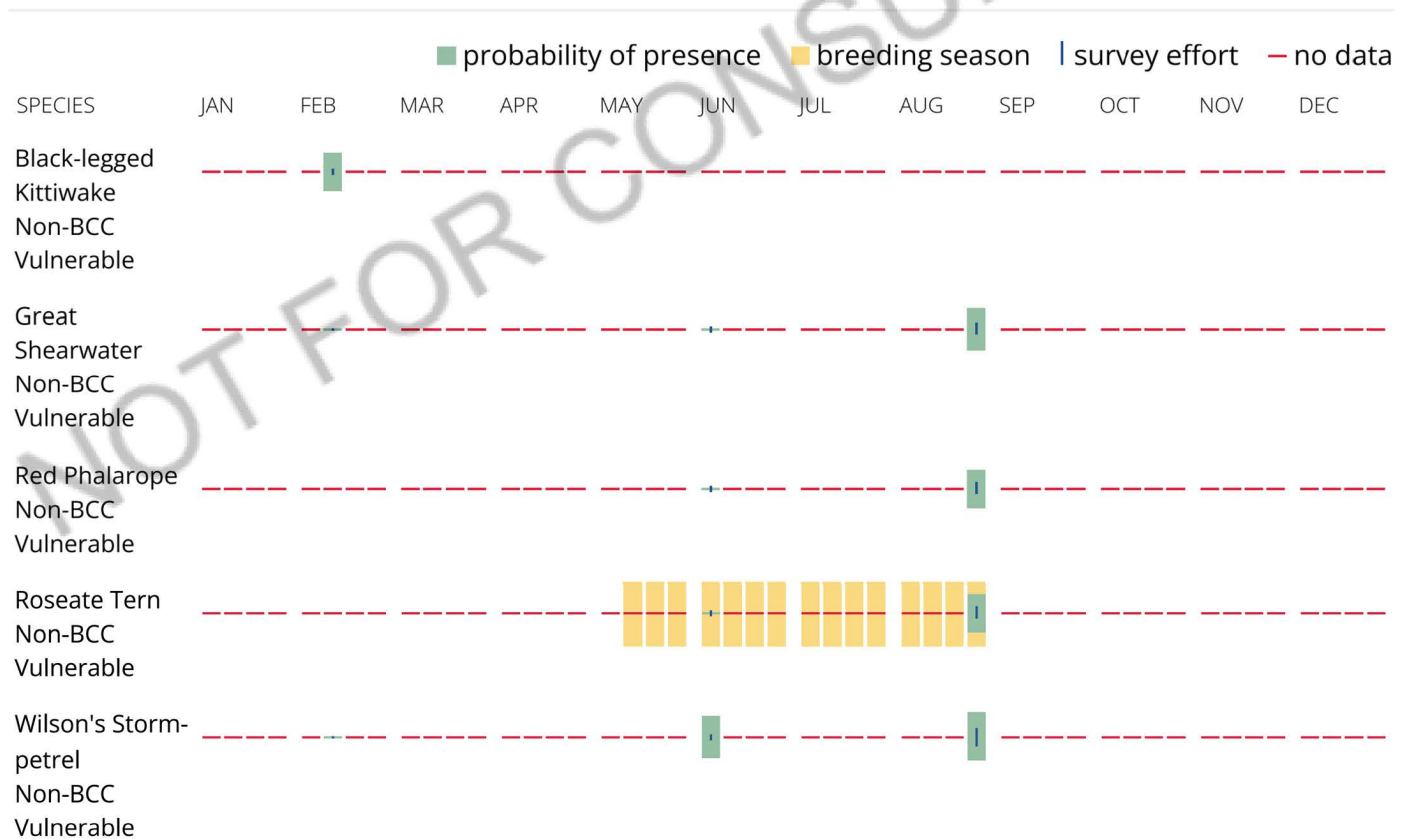
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (-)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

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Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

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Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.