



NOAA FISHERIES

PROPOSED ACTION: Issuance of an Incidental Harassment Authorization to Take Marine Mammals Incidental to Conducting Seabird and Shorebird Monitoring and Research Activities in the Eastern Massachusetts National Wildlife Refuge Complex

TYPE OF STATEMENT: Environmental Assessment

LEAD AGENCY: U.S. Department of Commerce
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LOCATION: Eastern Massachusetts National Wildlife Refuge Complex

ABSTRACT: This Environmental Assessment analyzes the environmental impacts of the National Marine Fisheries Service, Office of Protected Resources' proposal to issue an Incidental Harassment Authorization, pursuant to section 101(a)(5)(D) of the Marine Mammal Protection Act, to the U.S. Fish and Wildlife Service Eastern Massachusetts National Wildlife Refuge Complex for the take of small numbers of marine mammals incidental to conducting seabird and shorebird monitoring and other research activities in the Eastern Massachusetts National Wildlife Refuge Complex.

DATE: February 2017

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LIST OF ACRONYMS AND ABBREVIATIONS

CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
dB	decibel
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
ft	feet
FR	Federal Register
hr	Hour
HZ	Hertz
IHA	Incidental Harassment Authorization
km	Kilometer
m	meter
mi	miles
MMPA	Marine Mammal Protection Act
MSFCMA	Magnuson-Stevens Fishery Conservation Management Act
NAO	NOAA Administrative Order
NCCOS	NOAA National Centers for Coastal Ocean Science
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NWFSC	Northwest Fisheries Science Center
NWR	National Wildlife Refuge
OMB	Office of Management and Budget
OPR	Office of Protected Resources
PTS	Permanent hearing threshold shift
SAR	NMFS Marine Mammal Stock Assessment Report
TTS	Temporary hearing threshold shift
USFWS	US Fish and Wildlife Service

Chapter 1 Introduction and Purpose and Need

1.1 BACKGROUND

The Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1631 et seq.) prohibits the incidental taking of marine mammals. The incidental take of a marine mammal falls under three categories: mortality, serious injury or harassment (i.e., injury and behavioral effects). Harassment¹ is any act of pursuit, torment or annoyance that has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment) or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns (Level B harassment). Disruption of behavioral patterns includes, but is not limited to, migration, breathing, nursing, breeding, feeding or sheltering. However, there are exceptions to the prohibition on take in Section 101(a)(5)(D) of the MMPA that gives the National Marine Fisheries Service (NMFS) the authority to authorize the incidental but not intentional take of small numbers of marine mammals by harassment provided certain determinations are made and statutory and regulatory procedures are met. Refer to Chapter 2 for details regarding this exception and NMFS' Incidental Harassment Authorization (IHA) criteria.

NMFS also promulgated regulations to implement the provisions of the MMPA governing the taking and importing of marine mammals, 50 Code of Federal Regulations (CFR) Part 216 and produced Office of Management and Budget (OMB)-approved application instructions (OMB Number 0648-0151) that prescribe the procedures necessary to apply for permits. All applicants must comply with these regulations and application instructions in addition to the provisions of the MMPA.

1.1.1. USFWS's Incidental Take Authorization Request

On March 16, 2016, NMFS received an application from the U.S. Fish and Wildlife Service Eastern Massachusetts National Wildlife Refuge Complex (USFWS) for the taking of marine mammals incidental to seabird and shorebird monitoring and research activities within the Eastern Massachusetts National Wildlife Refuge Complex (Complex). NMFS determined that the application was adequate and complete on December 29, 2016.

The USFWS proposes to conduct seabird and shorebird monitoring and research activities over a varying number of days for each project. The proposed activities would occur April 1, 2017 through November 30, 2017.

1.1.2. Marine Mammals in the Action Area

The proposed construction project could adversely affect the following marine mammal species under our jurisdiction:

¹ As defined in the MMPA for non-military readiness activities (Section 3 (18)(A))

- Gray seal (*Halichoerus grypus grypus*)
- Harbor seal (*Phoca vitulina concolor*)

1.2. Purpose and Need

1.2.1. Description of the Proposed Action

NMFS proposes to issue an IHA to the USFWS pursuant to Section 101(a)(5)(D) of the MMPA and 50 CFR Part 216. The IHA will be valid from April 1, 2017 – March 31, 2018, and authorizes takes, by Level B harassment, of marine mammals incidental to the project activities. The impact of the vessel landings, monitoring and research activities, and human presence have the potential to cause marine mammals within the Complex to be behaviorally disturbed, thus warrants an IHA from NMFS. NMFS proposed action is a direct outcome of the USFWS's request for an IHA to take marine mammals.

1.2.2. Purpose

The purpose of our proposed action is to authorize take of marine mammals incidental to the USFWS's proposed monitoring and research activities in the Complex. The IHA, if issued, would provide an exception to the USFWS from the take prohibitions contained in the MMPA. To authorize the incidental take of small numbers of marine mammals, NMFS evaluates the best available scientific information to determine whether the take would have a negligible impact on marine mammals or stocks and whether the activity would have an unmitigable impact on the availability of affected marine mammal species for subsistence use. NMFS cannot issue this IHA if it cannot make those findings in the affirmative. In addition, we must prescribe the permissible methods of taking and other means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat, paying particular attention to rookeries, mating grounds, and other areas of similar significance. If appropriate, we must prescribe means of effecting the least practicable impact on the availability of the species or stocks of marine mammals for subsistence uses. IHAs must also include requirements or conditions pertaining to the monitoring and reporting.

1.2.3. Need

U.S. citizens seeking to obtain authorization for the incidental take of marine mammals under NMFS jurisdiction must submit such a request (in the form of an application). On December 16, 2016, the USFWS submitted an adequate and complete application demonstrating both the need and potential eligibility for an IHA under the MMPA. NMFS now has a corresponding duty to determine whether and how to authorize take of marine mammals incidental to the activities described the USFWS's application. NMFS' responsibilities under section 101(a)(5)(D) of the MMPA and its implementing regulations establish and frame NMFS' proposed action.

Any alternatives considered under NEPA must meet the agency's statutory and regulatory requirements. Our described purpose and need guide us in developing reasonable alternatives for consideration, including alternative means of mitigating potential adverse effects.

1.3. The Environmental Review Process

In accordance with the Council on Environmental Quality (CEQ) Regulations and Agency policies for implementing the National Environmental Policy Act (NEPA), NMFS, to the fullest extent possible, integrates the requirements of NEPA with other regulatory processes required by law or by agency practice so that all procedures run concurrently, rather than consecutively.

This includes coordination within National Oceanic Atmospheric Administration (NOAA), (e.g., the Office of the National Marine Sanctuaries) and with other regulatory agencies (e.g., the U.S. Fish and Wildlife Service), as appropriate, during NEPA reviews prior to implementation of a proposed action to ensure that requirements are met. Regarding the issuance of IHAs, we rely substantially on the public process required by the MMPA for preparing proposed IHAs to develop and evaluate relevant environmental information and provide a meaningful opportunity for public participation when we prepare corresponding NEPA documents. We fully considered public comments received in response to the publication of proposed IHA during the corresponding NEPA review process.

1.3.1. National Environmental Policy Act

NEPA requires federal agencies to examine the environmental impacts of their proposed actions within the United States and its territories. A NEPA analysis is a detailed public document that provides an assessment of the potential effects a major federal action may have on the human environment, which includes the natural and physical environment. Major federal actions include activities that federal agencies fully or partially fund, regulate, conduct or approve. Since NMFS issuance of an IHA would allow for the taking of marine mammals, consistent with provisions under the MMPA and incidental to the applicant's activities, we consider this to be a major federal action subject to NEPA; therefore, NMFS analyzes the environmental effects associated with authorizing incidental takes of protected species and prepares the appropriate NEPA documentation.

1.3.2. Scoping and Public Involvement

The NEPA process is intended to enable NMFS to make decisions based on an understanding of the environmental consequences and take actions to protect, restore, and enhance the environment. An integral part of the NEPA process is public involvement. Early public involvement facilitates the development of an EA and informs the scope of issues to be addressed in the EA. Although agency procedures do not require public involvement prior to finalizing an EA, NMFS determined that the publication of the proposed IHA was the appropriate step to involve the public in order to understand the public concerns for the proposed action, identify significant issues related to the proposed action and obtain the necessary information to complete an analysis.

The Draft EA and Federal Register notice of the proposed IHA, combined with our preliminary determinations, supporting analyses, and corresponding public comment period were instrumental in providing the public with information on relevant environmental issues and offering the public a meaningful opportunity to provide comments to us for consideration in both the MMPA and NEPA decision-making processes. We posted the USFWS's application on our website concurrently with the release of the Federal Register notice of the proposed IHA and the draft EA. That notice described, in detail, the USFWS's activities, the marine mammal species that may be affected by the activities, and the anticipated effects on marine mammals. During the 30-day public comment period, NMFS received comments from the Marine Mammal Commission. The Marine Mammal Commission recommended that NMFS issue the IHA, subject to inclusion of the proposed mitigation, monitoring, and reporting measures.

1.4. Other Environmental Laws or Consultations

NMFS must comply with all applicable federal environmental laws, regulations, and Executive Orders (EO) necessary to implement a proposed action. NMFS evaluation of and compliance with environmental laws, regulations and EOs is based on the nature and location of the applicants proposed activities and NMFS proposed action. Therefore, this section only summarizes environmental laws and consultations applicable to NMFS issuance of an IHA to the USFWS. There are no other environmental laws, regulations, EOs, consultations, federal permits or licenses applicable to NMFS issuance of an IHA to the USFWS.

1.4.1 Magnuson-Stevens Fishery Conservation and Management Act

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. 1801 et seq.), Federal agencies are required to consult with the Secretary of Commerce with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency which may adversely affect essential fish habitat (EFH) identified under the MSA.

NMFS has not designated any Habitat Areas of Particular Concern (HAPC) within the action area and determined that the effects of monitoring and research activities would not occur in the surrounding water column and thus would not impact EFH or fish populations.

1.4.2 Endangered Species Act

The Endangered Species Act (ESA) established protection over and conservation of threatened and endangered species (T&E) and the ecosystems upon which they depend. An endangered species is a species in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered within the near future throughout all or in a significant portion of its range. The USFWS and NMFS jointly administer the ESA and are responsible for the listing of species (designating a species as either threatened or endangered) and designating geographic areas as critical habitat for threatened and endangered (T&E) species. The ESA generally prohibits the "take" of an ESA-listed species unless an

exception or exemption applies. The term “take” as defined in section 3 of the ESA means to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Section 7(a)(2) requires each federal agency to ensure that any action it authorizes, funds or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species. When a federal agency’s action may affect a listed species, that agency is required to consult with NMFS and/or the USFWS under procedures set out in 50 CFR Part 402. NMFS and USFWS can also be action agencies under section 7. Informal consultation is sufficient for species the action agency determines are not likely to be adversely affected if NMFS or USFWS concurs with the action agency’s findings, including any additional measures mutually agreed upon as necessary and sufficient to avoid adverse impacts to listed species and/or designated critical habitat.

NMFS issuance of an IHA is a federal action that is also subject to the requirements of section 7 of the ESA. As a result, we are required to ensure that the issuance of an IHA to the USFWS is not likely to jeopardize the continued existence of any T&E species or result in the destruction or adverse modification of critical habitat for these species. There are no marine mammal species that are listed under the ESA that could potentially occur in the action area and there is no designated critical habitat in the action area; therefore, ESA consultation is not necessary.

1.5. Document Scope

This EA was prepared in accordance with NEPA (42 USC 4321, et seq.) and CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508). The analysis in this EA addresses potential impacts to the human environment and natural resources, specifically marine mammals and their habitat, resulting from NMFS’ proposed action to authorize incidental takes associated with the USFWS’s activities. We analyze direct, indirect, and cumulative impacts related to authorizing incidental take of marine mammals under the MMPA. The scope of our analysis is limited to the decision for which we are responsible (i.e. whether or not to issue the IHA). This EA is intended to provide focused information on the primary issues and impacts of environmental concern, which is our issuance of the IHA authorizing the take of marine mammals incidental to the USFWS’s activity, and the mitigation and monitoring measures to minimize the effects of that take. For these reasons, this EA does not provide a detailed evaluation of the effects to the elements of the human environment listed in Table 1 below.

Table 1. Components of the human environment not affected by our issuance of an IHA.

Biological	Physical	Socioeconomic / Cultural
Amphibians	Air Quality	Commercial Fishing
Humans	Essential Fish Habitat	Military Activities

Non-Indigenous Species	Geography	Oil and Gas Activities
Seabirds	Land Use	Recreational Fishing
	Oceanography	Shipping and Boating
	State Marine Protected Areas	National Historic Preservation Sites
	Federal Marine Protected Areas	National Trails and Nationwide Inventory of Rivers
	National Estuarine Research Reserves	Low Income Populations
	National Marine Sanctuaries	Minority Populations
	Park Land	Indigenous Cultural Resources
	Prime Farmlands	Public Health and Safety
	Wetlands	Historic and Cultural Resources
	Wild and Scenic Rivers	
	Ecologically Critical Areas	

In summary, the analysis herein supports our initial determinations that, with the incorporation of the proposed monitoring and mitigation measures, the issuance of the IHA to the USFWS would not result in any significant direct, indirect, or cumulative impacts. Based on our analysis, the limited harassment from the proposed activities would allow adequate time for the marine mammals to recover from potentially adverse effects. Furthermore, the analysis indicates that the cumulative effects of the project on its own or in combination with other activities are not expected to occur.

Chapter 2 Alternatives

2.1. Introduction

As described in Chapter 1, the National Marine Fisheries Service (NMFS) Proposed Action is to issue an Incidental Harassment Authorization (IHA) to authorize the take of small numbers of marine mammals incidental to the USFWS's proposed monitoring and research activities. NMFS Proposed Action is triggered by the USFWS's request for an IHA per the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq.*). In accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) Regulations, NMFS is required to consider alternatives to the Proposed Action. This includes the no action and other reasonable courses of action associated with authorizing incidental take of protected species. The evaluation of alternatives under NEPA assists NMFS with ensuring that any unnecessary impacts are avoided through an assessment of alternative ways to achieve the purpose and need for our Proposed Action that may result in less environmental harm. To warrant detailed evaluation under NEPA, an alternative must be reasonable along with meeting the stated purpose and need for the proposed action. For the purposes of this Draft EA, an alternative will only meet the purpose and need if it satisfies the requirements under section 101(a)(5)(D) the MMPA. Therefore, NMFS applied the following screening criteria to the alternatives to identify which alternatives to carry forward for analysis. Accordingly, an alternative must meet the following criteria to be considered "reasonable."

The MMPA requires NMFS to prescribe the means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat. In order to do so, we must consider the USFWS's proposed mitigation measures, as well as other potential measures, and assess how such measures could minimize impacts on the affected species or stocks and their habitat. Our evaluation of potential measures includes consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, we expect the successful implementation of the measure to minimize adverse impacts to marine mammals; (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and (3) the practicability of the measure for applicant implementation.

Any additional mitigation measure proposed by us beyond what the applicant proposes should be able to or have a reasonable likelihood to accomplish or contribute to the accomplishment of one or more of the following goals:

- Avoidance or minimization of marine mammal injury, serious injury, or death, wherever possible;
- A reduction in the numbers of marine mammals taken (total number or number at biologically important time or location);
- A reduction in the number of times the activity takes individual marine mammals (total number or number at biologically important time or location);

- A reduction in the intensity of the anticipated takes (either total number or number at biologically important time or location);
- Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base; activities that block or limit passage to or from biologically important areas; permanent destruction of habitat; or temporary destruction/disturbance of habitat during a biologically important time; and
- For monitoring directly related to mitigation, an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

2.2. Description of the USFWS's Proposed Activities

The USFWS proposes to conduct monitoring and research activities within the Complex over various days throughout the season. We presented a general overview of the USFWS's project in our proposed IHA (82 FR 3738; January 12, 2017). We incorporate those descriptions and those found in the USFWS's request for incidental take authorization (2016) by reference in this EA and briefly summarize them here.

2.2.1. Specified Time and Specified Area

The USFWS's activities (vessel landing, research activities (cannon nets, installation of signage), and human presence) would occur between April 1 and November 30, 2017. The proposed IHA, if issued, would be effective from April 1, 2017 through March 31, 2018.

The activity locations within the Complex are described below.

1. ***Monomoy NWR*** (41.590348, -69.987432): This site refers to the Atlantic side of South Monomoy Island at Monomoy NWR. Seals use most of the ocean-facing beach of this island as a haul-out site. See Figure 1 of the USFWS's application.
2. ***Nantucket NWR*** (N 41.391754, W -70.050568): This site refers to Nantucket NWR located on the northeast tip of Nantucket Island. The point itself is the primary haul-out site for this location. See Figure 2 of the USFWS's application.
3. ***Nomans NWR*** (N 41.264267, W -70.812228): This site refers to Nomans Land Island NWR located off the coast of Martha's Vineyard. Seals here haul-out on the northeast peninsula, and sporadically along the northern shoreline. The rocks around the island are sometimes utilized as well. See Figure 3 of the USFWS's application.
4. ***Cape Cod National Seashore nearby beaches*** (see Figure 4 of the USFWS's application):

Coast Guard Beach (N 41.842333, W -69.943834): This site refers to one of the beaches located at the Cape Cod National Seashore in Eastham, MA. The seals here haul-out on the J-bars that form on the beach.

North Beach Island (N 41.669441, W -69.942765): This site refers to an island located at the Cape Cod National Seashore in Chatham, MA. The seals here haul-out on the sandbars on the southwest end of the island.

High Head (N 42.066108, W -70.111318): This site refers to a beach located at the Cape Cod National Seashore in Truro, MA.

Jeremy Point (N 41.884300, W -70.069532): This site refers to Jeremy Point located on the Cape Cod bayside at the Cape Cod National Seashore in Wellfleet, MA. The seals here haul-out on the sand flats in the waters around the point.

Provincetown Harbor (N 42.022342, W -70.178662): This site refers to the west end of the harbor in Provincetown. This is a new haul-out as of fall 2015 and has only been observed a few times by the Provincetown Center for Coastal Studies (CCS) (L. Sette, CCS, personal communication).

Detailed Description of Monitoring and Research Activities

The project includes the following elements:

- Vessel Operations
- Research Activities
- Human presence

Detailed descriptions of these activities are provided below.

A description of each activity, based on location, is presented below. A summary of this information can also be found in Table 2.

1. Shorebird and Seabird Nest Monitoring and Research

Monomoy NWR

On January 10, 1986, the Service listed the Atlantic Coast population of piping plovers as threatened under the provisions of the U.S. Endangered Species Act (ESA) of 1973. Currently, Monomoy NWR serves as a nesting site for six percent of the breeding piping plover pairs in Massachusetts. Therefore, management and protection of the piping plover is one of the priority programs for the refuge. Many other avian species benefit from piping plover management, including the state-listed species of concern least tern and American oystercatcher. Monomoy NWR has a great responsibility to follow the guidelines provided for management in the revised 1996 recovery plan for the species (USFWS 1996). The primary objective of the recovery program is to remove the Atlantic Coast piping plover population from the List of Endangered and Threatened Wildlife and Plants by: (1) achieving well-distributed increases in numbers and productivity of breeding pairs, and (2) providing for long-term protection of breeding and

wintering plovers and their habitat. Actions needed to achieve these objectives include: (1) manage breeding piping plovers and habitat to maximize survival and productivity, (2) monitor and manage wintering and migration areas to maximize survival and recruitment into the breeding population, (3) undertake scientific investigations that will facilitate recovery efforts, (4) develop and implement public information and education programs, and (5) review progress towards recovery annually and revise recovery efforts as appropriate (USFWS 1996).

The piping plover recovery efforts at the Complex correspond closely to management recommendations in the Piping Plover Recovery Plan. In order to monitor the productivity (number of chicks fledged per pair) of piping plovers at Monomoy NWR, it is necessary to identify suitable nesting habitat for the species. At Monomoy, piping plovers generally select areas that are sandy with some cobble on the beach face and occasionally nest in dense vegetation or behind primary dunes. The same can be said for least terns and American oystercatcher pairs, which also nest on South Monomoy Island. These nesting areas are adjacent to known gray seal haul-out sites.

Piping plovers begin returning to their Atlantic Coast nesting beaches in mid-March. The first nest is generally laid in mid-April and eggs will continue to be present on the beach until late July. During this time, nests are located by USFWS staff by looking for a number of signs; continuous presence of adult birds, courtship and territorial behavior in a certain area, large concentrations of tracks, and scrapes. Methods for finding nests include waiting for a disturbed bird to return to its nest or covering probable nesting areas by searching the ground for signs of nests and zig-zagging the whole area to make sure the entire habitat is covered. Methods for finding nests can sometimes lead to seal disturbance. Nests are visited 4-5 times a week and confirmation of adult presence and incubation is confirmed at a distance when possible to prevent disturbance. Nests hatch after 28 days of incubation and chicks will remain with one or both parents until they fledge at 25 days of age. Depending on the date of hatching, flightless chicks may be present on refuge beaches from mid-May until late August. Chicks are monitored until they fledge and may move hundreds of yards from the nest site to feed. Feeding areas include intertidal areas along the ocean and sound sides of South Monomoy Island as well as washover areas.

Similar activities are performed when searching and monitoring American oystercatchers nests and broods. No American oystercatcher pairs nested near seal haul out sites in 2015, but have nested on the ocean side of South Monomoy Island in previous years. In 2001, the American oystercatcher was warranted special attention from the U.S. Shorebird Conservation Plan after the population severely declined to under 11,000 individuals. Monomoy NWR has the largest concentration of nesting American oystercatchers on Cape Cod and nesting success at this site is important to the survival of the species. The nesting season occurs from the end of April until mid-August. Monomoy NWR also serves as an important staging site for resting migrants, and bands are often read and reported to the American Oystercatcher Working Group. Staging American oystercatcher will sometimes roost near seal haul-out sites.

Least terns nest in small groups around South Monomoy Island. Productivity is not measured throughout the season, but nesting pairs are censused during a 2-3 day period in mid-June. Least terns are censused using the line-sweep method throughout the extent of the nesting colonies and checked by staff weekly to gauge productivity.

USFWS staff install symbolic fencing (sign posts with “area closed” and “beach closed” informational signs) around nest sites of piping plovers, American oystercatchers, and least terns to inform the public about the bird’s presence and protect critical habitat from human disturbance. These areas are adjacent to known seal haul out sites and are regularly monitored throughout the season.

Nantucket NWR

Similar biological activities are carried out on Nantucket NWR as Monomoy NWR. Piping plover, least tern, and American oystercatcher are known species to use Nantucket NWR and nearby lands for nesting from the end of April until mid-August. Beach nesting birds are monitored following similar methods and protocols as Monomoy NWR and areas of nesting are posted with closed signs. Signs are placed at least 150 feet from known seal haul-out areas on Nantucket NWR, which predominately occurs at the north tip of the Refuge. These posts help protect those areas from public disturbance. Nesting beach birds generally do not nest within the closed area for seals, but instead nest adjacent to the haul outs. If need be, staff will briefly enter the closed area to check nests, but otherwise stay outside of the closed area, greater than 150 feet from seal haul outs. Seabirds and shorebirds do not nest on the Complex every year; in 2015, no beach birds nested on Nantucket NWR.

Nomans Land Island NWR

Nomans NWR is closed to the public and is only visited 1-3 times a year by USFWS staff. During these visits, the presence of shorebirds and seabirds are noted for record. Shorebirds and seabirds are inventoried by scoping suitable nesting and feeding habitat on the island. The greatest potential for disturbance occurs in safe boat landing zones, because these areas often overlap with hauled out seals. Every precautionary measure is taken to reduce disturbance to seals on Nomans Land Island NWR, but staff will land a boat or walk within 50 yards of seal haul outs if safety reasons prevail. A 25 foot Parker is used to travel to and from Nomans NWR.

2. Roseate Tern Staging Counts and Resighting

Monomoy NWR

On November 2, 1987, the Service listed the northeastern breeding population of the roseate terns as federally endangered. Monomoy NWR serves as an important nesting and staging site for the species. Monomoy NWR has a great responsibility to follow the guidelines provided for management in the Roseate Tern Recovery Plan for the Northeast population (USFWS 1998).

The primary objective of the roseate tern recovery program is to promote an increase in breeding population size, distribution, and productivity so as to warrant reclassification to threatened status and eventual delisting. Actions needed to attain this objective include: (1) oversee breeding roseate terns and their habitat to help increase survival and productivity including the physical maintenance, expansion, and enhancement of nesting habitat; (2) develop a management plan for monitoring wintering and migration areas; (3) secure unprotected sites through acquisition and easements; (4) develop outreach materials and implement education programs; (5) conduct scientific investigations that will facilitate recovery efforts; (6) review progress of recovery annually and revise recovery efforts as needed (USFWS 1998). While breeding roseate terns prefer nesting habitat far from seal haul out sites, migrating terns use areas adjacent to the beach edge. Cape Cod and the surrounding islands as a whole serves as an important staging ground for common and roseate terns. In fact, the entire northeast population of roseate terns stage in this area prior to migrating to Central and South America. The USFWS conduct staging tern counts to document the importance of Monomoy NWR relative to other sites and to record changes in use over time by gathering baseline data on the numbers of roseate terns staging on the Complex and adjacent beaches as well as the causes and duration of disturbances to staging terns. This is in compliance with the recovery plan to conduct scientific investigations that will facilitate recovery efforts (USFWS 1998).

In August, USFWS staff traverse areas of suitable staging habitat, including sand flats and open sand beaches, and make quick estimates of the number of staging terns. The terns are counted using binoculars and spotting scopes from a distance that does not disturb the birds. Color bands, field readable bands, and any tagged or banded birds are identified for reporting purposes. Observations on behavior and disturbance are also documented. Depending on the size of the flock, these surveys can last anywhere between one to three hours.

Nantucket NWR

Staging tern counts are carried out on Nantucket NWR following similar methods and protocols mentioned for Monomoy.

Nomans Land Island NWR

Staging tern counts are not performed on Nomans NWR.

3. Red Knot Stopover Study

Monomoy NWR and Nearby Beaches in Chatham, Orleans, and Eastham

On December 11, 2014, the USFWS listed the rufa subspecies of the red knot as federally threatened under the ESA. As noted in the State of the Birds 2014 report, the knot's status is representative of the steep declines represented in shorebirds that migrate long distances (NABCI 2014). Threats to shorebirds have become more diverse and widespread in recent decades,

requiring coordinated conservation efforts across their vast ranges. Protection of breeding, migration, and wintering habitat is critical to this species' recovery (Niles *et al.*, 2008).

Southeastern MA, Monomoy NWR and surrounding beaches in Chatham, Orleans, and Eastham in particular, likely provide one of the most important areas for adult and juvenile red knots during their southward migration (Koch and Paton 2009, Harrington *et al.* 2010a, Harrington *et al.* 2010b). Research has shown that this region supports red knots bound for different winter destinations, including red knots wintering as far south as Patagonia (Harrington *et al.*, 2010b). Currently, there is little information on migration routes, and no information on wintering sites of juvenile red knots.

The red knot stop over study is not conducted on Nantucket NWR or Nomans NWR.

4. *Northeastern Beach Tiger Beetle Census*

In August of 1990, the USFWS listed the northeastern beach tiger beetle as threatened under the ESA. Currently northeastern beach tiger beetle can be found at only two sites north of the Chesapeake Bay: one on the south shore of Martha's Vineyard and one on South Monomoy Island and Nauset/South Beach in Chatham, MA (USFWS 1994, USFWS 2015). Searches on Monomoy in the 1980s failed to locate the northeastern beach tiger beetle, but the structure of the habitat seemed favorable, making Monomoy the leading candidate as an introduction site. The first beetle larvae transplant occurred in May 2000. Since 2004, tiger beetle larvae have not been transferred to Monomoy (USFWS 2015). However, through continued adult tiger beetle monitoring, the annual presence of tiger beetles has been documented on the refuge. Annual monitoring confirms successful survival and production of tiger beetles through all stages of life, and gives a firm indication of a new self-sustaining population at Monomoy NWR.

Northeastern beach tiger beetle live their entire life on the beach, and prefer medium to medium-coarse sand. Adults occur on the beach from June through September and often congregate around the water's edge on warm days (USFWS 2011). On Monomoy NWR, the population occurs in habitat on the Atlantic side of South Monomoy Island on the water's edge and in the wrack line. Several index counts of the tiger beetle population are completed by USFWS staff during July and August each year. Counts are conducted by slowly walking the water's edge at a width of 2-3 people across and tallying adults seen on the surface of the beach until the extent of suitable habitat is covered.

Northeastern beach tiger beetle surveys are not conducted on Nantucket NWR or Nomans Land Island NWR.

5. *Coastal Shoreline Change Survey*

Since 2011, Monomoy has participated in a long-term coastal shoreline monitoring project in collaboration with Rutgers's University and the National Park Service protocol. The annual

shoreline surveys are conducted twice a year to gain a finer understanding of the rate of shoreline change and to provide baseline information for sea level rise. Two 1-day surveys are conducted at most sites, one in the spring and one in the fall. Surveys are only conducted in the fall at Monomoy NWR, typically between September and November, consequent to the large number of seals using the area in the spring. To document accurate data on shoreline change, a handheld Trimble device is used to GPS the neap high tide swash line around the ocean-facing extent of South Monomoy Island by walking the beach at a normal pace. The survey takes approximately one day to complete.

Shoreline surveys are not conducted on Nantucket NWR or Nomans NWR.

Table 2. Site location and duration of the five projects in the Eastern Massachusetts National Wildlife Refuge.

Activity	Time of Year	Site Location & Duration		
		Monomoy NWR	Nantucket NWR	Nomans NWR
Shorebird and Seabird Monitoring & Research	April-August	17 weeks	17 weeks*	1-3 days/year
		2 days/ week	2 days/month	~1 hours/day
Roseate Tern Staging Counts & Resighting	mid July-September	3 weeks 1-2 days/week	6-8 weeks 2 days/month	N/A
Red Knot Stopover Study	August-October	Two trapping windows 5-10 days in combination with CACO beaches	N/A	N/A
Northeastern Beach Tiger Beetle Census	July-September	1-3 days/year 6-8 hours/day	N/A	N/A
Coastal Shoreline Change Survey	September-October	Once/year 8 hour day	N/A	N/A

*Shorebird and Seabird Monitoring & Research on Nantucket is contingent on the presence of nesting beach birds. In 2015, no shorebirds or seabirds nested on Nantucket NWR.

2.3. Description of Alternatives

2.3.1. Alternative 1 – Issuance of an Authorization with Mitigation Measures

The proposed action constitutes Alternative 1 and is the Preferred Alternative. Under this alternative, we would issue an IHA (valid from April 1, 2017 through March 31, 2018) to the USFWS allowing the incidental take, by Level B harassment, of two species of marine mammals, subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the IHA.

MITIGATION, MONITORING, AND REPORTING MEASURES

As described in Section 1.2.1, we must prescribe the means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat. In order to do so, we must consider the USFWS's proposed mitigation measures, as well as other potential measures, and assess how such measures could benefit the affected species or stocks and their habitat. Our evaluation of potential measures includes consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, we expect the successful implementation of the measures to minimize adverse impacts to marine mammals; (2) the proven or likely efficacy of the measures to minimize adverse impacts as planned; and (3) the practicability of the measures for applicant implementation.

Any additional mitigation measure proposed by us beyond what the applicant proposes should be able to or have a reasonable likelihood to accomplish or contribute to the accomplishment of one or more of the following goals:

- Avoidance or minimization of marine mammal injury, serious injury, or death wherever possible;
- A reduction in the numbers of marine mammals taken (total number or number at biologically important time or location);
- A reduction in the number of times the activity takes individual marine mammals (total number or number at biologically important time or location);
- A reduction in the intensity of the anticipated takes (either total number or number at biologically important time or location);
- Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base; activities that block or limit passage to or from biologically important areas; permanent destruction of habitat; or temporary destruction/disturbance of habitat during a biologically important time; and
- For monitoring directly related to mitigation, an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

To reduce the potential for disturbance associated with the activities, the USFWS, in conjunction with NMFS, has proposed to implement several monitoring and mitigation measures for marine mammals. The proposed monitoring and mitigation measures include:

1. Time restrictions: The USFWS shall not operate during the months of December 2017 through March 2018 in order to avoid impacts to pinnipeds during pupping season;

2. Vessel Approach Techniques: The USFWS would ensure that its vessel approaches to beaches with pinniped haul outs would be conducted so as to not disturb marine mammals as most practicable. To the extent possible, the vessel should approach the beaches in a slow and controlled approach, as far away as possible from haul outs to prevent or minimize flushing. Staff would also avoid or proceed cautiously when operating boats in the direct path of swimming seals that may be present in the area.
3. Avoidance of Acoustic Impacts from Cannon nets: Cannon nets have a measured SL of 128 dB at one meter (estimated based on a measurement of 98.4 dB at 30 m; L. Niles, pers. comm., December 2016); however, the sound pressure level (SPL) is expected to be less than the thresholds for airborne pinniped disturbance (e.g. 90 dB for harbor seals, and 100 dB for all other pinnipeds) at 80 meters from the source. The USFWS proposes to stay at least 100 meters from all pinnipeds if cannon nets are to be used for research purposes.
4. Avoidance of Visual and Acoustic Contact with People: The USFWS would instruct its members and research staff to avoid making unnecessary noise and not expose themselves visually to pinnipeds whenever practicable. USFWS staff would stay at least 50 meters from hauled out pinnipeds, unless it is absolutely necessary to approach seals closer, or potentially flush a pinniped, in order to continue conducting endangered species conservation work. When disturbance is unavoidable, staff will work quickly and efficiently to minimize the length of disturbance. Researchers and staff will do so by proceeding in a slow and controlled manner, which allows for the seals to slowly flush into the water. Staff will also maintain a quiet working atmosphere, avoiding loud noises, and using hushed voices in the presence of hauled-out pinnipeds. Pathways of approach to the desired study or nesting site will be chosen to minimize seal disturbance if an activity event may result in the disturbance of seals. USFWS staff will scan the surrounding waters near the haul outs, and if predators (*i.e.* sharks) are seen, seals will not be flushed by USFWS staff.
5. Researchers, USFWS staff, and volunteers will be properly informed about the MMPA take prohibitions, and will educate the public on the importance of not disturbing marine mammals, when applicable. Staff at Nantucket NWR will remain present on the beaches utilized by pinnipeds to prevent anthropogenic disturbance during times of high public use (late spring-early fall). Staff at Monomoy NWR will also be present on beaches utilized by seals during the same time of year, and will inform the public to keep a distance from haul outs if an issue is noticed.

The USFWS is required to submit a draft monitoring report to NMFS Office of Protected Resources within 90 days after the conclusion of the activities. A final report shall be prepared and submitted within 30 days following resolution of any comments on the draft report from

NMFS. A description of the activities conducted by the USFWS and the monitoring protocols would be included in the report.

In our *Federal Register* notice of proposed Authorization, which we incorporate by reference, we preliminarily determined that the measures included in the proposed Authorization were sufficient to reduce the effects of the USFWS's activity on marine mammals to the level of least practicable impact. In addition, we described our analysis of impacts and preliminarily determined that the taking of small numbers of marine mammals, incidental to the USFWS's project would have a negligible impact on the relevant species or stocks and would not have an unmitigable adverse impact on affected species or stocks for taking for subsistence uses. Accordingly, this Preferred Alternative would satisfy the purpose and need of our proposed action under the MMPA— issuance of an Authorization, along with required mitigation measures and monitoring that meets the standards set forth in section 101(a)(5)(D) of the MMPA and the implementing regulations.

2.3.2. Alternative 2 – No Action Alternative

For NMFS, denial of an MMPA authorization constitutes the NMFS No Action Alternative, which is consistent with our statutory obligation under the MMPA to grant or deny permit applications and to prescribe mitigation, monitoring and reporting with any authorizations. Under the NMFS No Action Alternative, there are two potential outcome scenarios. One is that the project activities in the Complex occur in the absence of an MMPA authorization. In that case, (1) the USFWS would be in violation of the MMPA if takes occur; (2) mitigation, monitoring and reporting would not be prescribed by NMFS; and 3) mitigation measures might not be performed voluntarily by the USFWS. Another outcome scenario is the USFWS could choose not to proceed with their proposed activities.

By undertaking prescribing measures to minimize impacts on marine mammals species or stocks from incidental take through the authorization program, we can potentially lessen the impacts of these activities on the marine environment. While NMFS does not authorize the project activities, NMFS does authorize the unintentional or incidental take of marine mammals (under its jurisdiction) in connection with these activities and prescribes, where applicable, the methods of taking and other means of effecting the least practicable impact on the species and stocks and their habitats. Although the No Action Alternative would not meet the purpose and need to allow incidental takes of marine mammals under certain conditions, the CEQ's regulations require consideration and analysis of a No Action Alternative for the purposes of presenting a comparative analysis to the action alternatives.

2.4. Alternatives Considered but Eliminated from Further Consideration

NMFS considered whether other alternatives could meet the purpose and need and support the USFWS's proposed restoration project. An alternative that would allow for the issuance of an IHA with no required mitigation or monitoring was considered but eliminated from

consideration, as it would not be in compliance with the MMPA and therefore would not meet the purpose and need. For that reason, this alternative is not analyzed further in this document.

Chapter 3 Affected Environment

This chapter describes existing conditions in the proposed action areas. Complete descriptions of the physical, biological, and social environment of the action area are contained in the documents listed in Section 1.3.1 of this EA. We incorporate those descriptions by reference and briefly summarize or supplement the relevant sections for marine mammals in the following subchapters.

3.1. Physical Environment

As discussed in Chapter 1, our proposed action and alternatives relate only to the authorization of incidental take of marine mammals and not to the physical environment. Certain aspects of the physical environment are not relevant to our proposed action (see subchapter 1.3.2 - Scope of Environmental Analysis).

3.1.1. Marine Mammal Habitat

We presented information on marine mammal habitat and the potential impacts to marine mammal habitat in the *Federal Register* notice of the proposed Authorization. In summary, gray seals and harbor seals are the only pinnipeds in the Complex. Monomoy NWR is the largest haul out site for gray seals on the U.S. Atlantic seaboard, and one of only two consistent sites in Massachusetts (the other being Muskeget Island, west of Nantucket) where gray seals pup (USFWS 2015). Gray seals are known to use Monomoy NWR and Nantucket NWR land and water year round, with higher numbers accumulating during the winter and spring when pupping and molting occur. There has been a year-round gray seal breeding population on Cape Cod and the islands since the late 1990s (USFWS 2015), and pupping generally occurs from mid-December to early February (USFWS 2015). Gray seal pupping on Monomoy NWR was limited in the past but has been increasing rapidly in recent years. Gray seal pupping information for Nantucket NWR and Nomans Land Island NWR is limited, but evidence suggests that a small number of pups are born on the latter.

Harbor seals occur seasonally in the Complex, and generally arrive in early September and remain through May (Waring *et al.*, 2016). Gray seals seem to be displacing harbor seals to some extent, but the two species will haul out together, with gray seals occupying the upper beach and harbor seals staying closer to the water (D. Waring, personal communication). Pupping generally occurs between mid-May through June off the coast of Maine; however recent evidence suggests that some pupping may occur as far south as Manomet, MA, but does not occur in the project area.

3.2. Biological Environment

The primary component of the biological environment that would be impacted by the proposed action and alternatives would be marine mammals, which would be directly impacted by the authorization of incidental take. We briefly summarize this component of the biological environment here.

3.2.1. Marine Mammal Habitat

We presented information on marine mammal habitat (including prey species) and the potential impacts to marine mammal habitat in the *Federal Register* notice of the proposed Authorization. These are further described in the USFWS’s IHA application. We have concluded that the USFWS’s activities will not have any adverse impacts to marine mammal habitat.

3.2.2. Marine Mammals

We provide information on the occurrence of marine mammals most likely present in the proposed activity areas in section 1.1.2 of this EA. The marine mammals most likely to be harassed incidental to conducting the Project are: gray seals and harbor seals (Table 3). There are no marine mammal species listed as threatened or endangered under the ESA in the action areas.

Table 3. Marine Mammals Potentially Present in the Vicinity of the Complex.

Species	Stock	Regulatory Status ^{1, 2}	Stock Abundance (CV, N _{min} , most recent abundance survey) ³	PBR	Occurrence and Seasonality
Gray seal (<i>Halichoerus grypus grypus</i>)	Western North Atlantic	MMPA - NC ESA – NL	505,000 (unk; unk; unk)*	unk	Year-round presence
Harbor seal (<i>Phoca vitulina concolor</i>)	Western North Atlantic	MMPA - NC ESA – NL	75,834 (0.15; 66,884; 2012)	2,006	Occasional

¹ MMPA: D = Depleted, S = Strategic, NC = Not Classified.

² ESA: EN = Endangered, T = Threatened, DL = Delisted, NL = Not listed.

³ 2016 draft NMFS Stock Assessment Reports: Carretta *et al.* (2016).

*The Western North Atlantic stock of gray seals is comprised of the Canadian and U.S. populations. The U.S. population abundance estimate is unknown, but the Canadian population abundance estimate is 505,000. The 2016 draft SAR states that the western North Atlantic stock is equivalent to the Canada population.

3.2.2.1. Marine Mammals

Gray seal

There are three major populations of gray seals found in the world; eastern Canada (western North Atlantic stock), northwestern Europe and the Baltic Sea. The gray seals that occur in the project area belong to the western North Atlantic Stock, which ranges from New Jersey to Labrador. Current estimates of the total western North Atlantic gray seal population are not available, although portions of stock have been calculated for select time periods. Models estimate that the total minimum Canadian gray seal population is at 505,000 individuals (Waring *et al.*, 2016). Present data are insufficient to calculate the minimum population estimate for U.S. waters; however, based on genetic analyses from the Canadian and U.S. populations, all individuals were placed into one population providing further evidence that this stock is one interbreeding population (Wood *et al.*, 2011). Current population trends show that gray seal abundance is likely increasing in the U.S. Atlantic Exclusive Economic Zone (Waring *et al.*, 2016). Although the rate of increase is unknown, surveys conducted since their arrival in the 1980s indicate a steady increase in abundance in both Maine and Massachusetts (Waring *et al.*,

2016). It is believed that recolonization by Canadian gray seals is the source of the U.S. population (Waring *et al.*, 2016). Gray seals are not listed under the ESA and the stock is not considered strategic or depleted under the MMPA.

Monomoy NWR is the largest haul-out site for gray seals on the U.S. Atlantic seaboard, and one of only two consistent sites in Massachusetts (the other being Muskeget Island, west of Nantucket) where gray seals pup (USFWS 2015). Gray seals are known to use Monomoy NWR and Nantucket NWR land and water year round, with higher numbers accumulating during the winter and spring when pupping and molting occur. While gray seal pupping grounds are historically further north on Sable Island in Nova Scotia and in the Gulf of St. Lawrence in Canada, there has been a year-round breeding population on Cape Cod and the islands since the late 1990s (USFWS 2015).

Gray seals start to group up in fall and pupping generally occurs from mid-December to early February (USFWS 2015). Gray seal pupping on Monomoy NWR was limited in the past but has been increasing rapidly in recent years. By early spring, upwards of 19,000 gray seals can be found hauled out on Monomoy NWR (B. Josephson, NOAA, personal communication). While many of these seals use Monomoy NWR for breeding, others make their way to the refuge to molt. By late spring, gray seal abundance continues to taper until the fall.

Gray seal pupping information for Nantucket NWR and Nomans Land Island NWR is limited, but evidence suggests that a small number of pups are born on the latter. Aerial images and evidence do not show that pups are born on Nantucket NWR, although speculations persist (S. Wood, NOAA, personal communication). Similar trends in distribution at Monomoy NWR occur at Nomans and Nantucket NWRs, but in significantly less numbers. Gray seals are most abundant at the activity sites from late fall until spring, and less frequent during the summer months when most activity is occurring. Raw counts of gray seal counts from 2015 are summarized in Table 4.

Table 4. Raw count of the maximum number of individual gray seals using Monomoy NWR lands and surrounding waters in 2015

Gray Seals	
Month	Raw Count
January	4435
February	6047
March	16764
April	18098
May	19166
June	8764
July	978
August	1206
September	658

October	1113
November	2379
December	not calculated

Harbor seal

Harbor seals found in the project area are included in the Western North Atlantic Stock, which ranges from the Canadian Arctic to Southern New England and New York, and occasionally to the Carolinas (Waring *et al.*, 2016). Based on available counts along the Maine coast in 2012, the minimum population estimate is 75,834 (Waring *et al.*, 2016). Harbor seals are not listed under the ESA and the stock is not considered strategic or depleted under the MMPA.

Harbor seals occur seasonally in the Complex, and generally arrive in early September and remain through May (Waring *et al.*, 2016). Numbers of these seals increase slowly through this time period and then quickly drop off in March as they make their northward movement from southern New England to Maine and eastern Canada, where they breed in mid-May (USFWS 2015). Gray seals seem to be displacing harbor seals to some extent, but the two species will haul out together, with gray seals occupying the upper beach and harbor seals staying closer to the water (D. Waring, personal communication). Pupping generally occurs between mid-May through June off the coast of Maine; however recent evidence suggests that some pupping may occur as far south as Manomet, MA, but does not occur in the project area.

It is unclear how many harbor seals use the Complex. Harbor seals are seen infrequently and only occur seasonally. USFWS staff estimate that of all of the seals they observe in the Complex, approximately five percent are harbor seals.

3.3. Social Environment

3.3.1. Subsistence

No significant subsistence activity currently occurs within the action area.

Chapter 4 Environmental Consequences

This chapter of the EA analyzes the impacts of the two alternatives and addresses the potential direct, indirect, and cumulative impacts of our issuance of an IHA. The USFWS's application and other related environmental analyses identified previously, inform an analysis of the direct, indirect, and cumulative effects of our proposed issuance of an Authorization.

Under the MMPA, we have evaluated the potential impacts of the USFWS's program activities on the affected marine mammal species or stocks in order to determine whether to authorize incidental take of marine mammals. Under NEPA, we have determined that an EA is appropriate to evaluate the potential significance of environmental impacts resulting from the issuance of an IHA.

4.1. Effects of Alternative 1 – Issuance of an IHA with Mitigation Measures

Alternative 1 is the Preferred Alternative, under which we would issue an IHA to the USFWS allowing the incidental take, by Level B harassment only, of two species of marine mammals from April 1, 2017 through March 31, 2018, subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the IHA.

4.1.1. Impacts to Marine Mammal Habitat

No permanent impacts to marine mammal habitat are proposed to or would occur as a result of the proposed Project. The USFWS's proposed activities would not modify the existing habitat. Therefore, no restoration of the habitat would be necessary. A temporary, small-scale loss of haul out habitat may occur for pinnipeds during the installation of signs or from human presence on beaches where haul outs are located. Pinnipeds may leave the area due to these disturbances, but due to the short duration of the process, pinnipeds are expected to return to haul outs soon after monitoring and research activities are complete.

Because of the short duration of the activities and considering it is unlikely that the habitat that may be affected, we have determined that the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or marine mammal populations.

4.1.2. Impacts to Marine Mammals

We expect that behavioral disturbance or displacement and exposure to acoustic and visual disturbance that could cause harassment resulting from the activities associated with the project as having the potential to impact marine mammals and comprises the only likely source of effects to marine mammals. The level of impact on marine mammals from project activities would vary depending on the species of marine mammal, the distance between the marine mammal and the activities, and environmental conditions. Our notice of proposed Authorization and the USFWS's IHA application provide detailed descriptions of these potential effects of

proposed project activities on marine mammals. That information is incorporated herein by reference and summarized below.

Monitoring and research activities could cause pinniped behavioral modification within the vicinity of the action area through: acoustic and visual disturbance generated from the vessel, and visual disturbance from USFWS staff conducting monitoring and research activities near the haul outs. These activities are expected to be minor and are not anticipated to result in injury, serious injury, or mortality of any marine mammal species and none is proposed to be authorized.

We expect no long-term or substantial adverse effects on marine mammals, their habitats, or their role in the environment. We base our conclusion on anecdotal observations for the same activities in the proposed area in past years.

Estimated Take of Marine Mammals by Level B Incidental Harassment

As discussed above, vessel operations, research activities (cannon nets, installation of signs), and human presence in the Complex could potentially harass marine mammals in the vicinity of the USFWS’s proposed project.

Currently, NMFS uses 90 dB in air threshold for harbor seals and 100dB for all other pinnipeds (unweighted) (Table 5) to determine in-air disturbance. Research activities (i.e. cannon nets) are not expected to reach the thresholds for Level B harassment. Cannon nets could be an airborne source of noise, and have a measured SL of 128 dB at one meter (estimated based on a measurement of 98.4 dB at 30 m; L. Niles, pers. comm., December 2016); however, the SPL is expected to be less than the thresholds for airborne pinniped disturbance (e.g. 90 dB for harbor seals, and 100 dB for all other pinnipeds) at 80 meters from the source. The USFWS proposes to stay at least 100 meters from all pinnipeds if cannon nets are to be used for research purposes. Instead, we are concerned that the unexpected noise and sight of the vessel or personnel could cause the animals to flush. NMFS uses a 3-point scale (Table 6) to determine which disturbance reactions constitute take under the MMPA. Only Levels 2 and 3 (movement and flush) are considered take, whereas Level 1 is not.

Table 5. Current Level B Acoustic Exposure Criteria for Non-explosive Sound in air

Criterion	Criterion Definition	Threshold
Level B harassment (airborne)	Behavioral disruption	90 dB (harbor seals) 100dB (other pinnipeds) (unweighted)

Table 6. Disturbance scale of pinniped responses to in-air sources to determine take.

Level	Type of response	Definition

1	Alert	Seal head orientation or brief movement in response to disturbance, which may include turning head towards the disturbance, craning head and neck while holding the body rigid in a u-shaped position, changing from a lying to a sitting position, or brief movement of less than twice the animal's body length.
2*	Movement	Movements in response to the source of disturbance, ranging from short withdrawals at least twice the animal's body length to longer retreats over the beach, or if already moving a change of direction of greater than 90 degrees.
3*	Flush	All retreats (flushes) to the water.

* Only Levels 2 and 3 are considered take, whereas level 1 is not.

Expected marine mammal presence is determined by past observations and general abundance near the project area during the project work window. For all marine mammals, local densities are not available; therefore the following calculation was used: numbers of animals in the area multiplied by the number of days of project activities on which pinnipeds are expected to be present.

Table 7 outlines the number of Level B harassment takes that we propose to authorize in the IHA, the regional population estimates for marine mammals in the action area, and the percentage of each population or stock that may be taken as a result of the USFWS's activities. Both the proposed IHA notice and the USFWS's application contain complete descriptions of how these take estimates were derived. We do not expect the proposed activities to impact rates of recruitment or survival for any affected species or stock. Further, the activities would not adversely affect marine mammal habitat.

Table 7. Summary of potential marine mammal takes and percentage of stocks affected.

Species	Take Number	Stock Abundance	Percent of stock
Gray seal (<i>Halichoerus grypus grypus</i>)	39,666	505,000	7.85
Harbor seal (<i>Phoca vitulina concolor</i>)	1,983	75,834	2.61

4.2. Effects of Alternative 2 – No Action Alternative

Under the No Action Alternative, we would not issue an IHA to the USFWS. As a result, the USFWS would not receive an exemption from the MMPA prohibitions against the take of marine mammals and would be in violation of the MMPA if take of marine mammals occurs.

The impacts to elements of the human environment resulting from the No Action Alternative—conducting the project in the absence of required protective measures for marine mammals under the MMPA—would be greater than those impacts resulting from Alternative 1, the Preferred Alternative.

Alternatively, the USFWS may choose not to proceed with its activities in the absence of an MMPA authorization. In this scenario, there would be no additional impacts to marine mammals and their habitat.

4.2.1. Impacts to Marine Mammal Habitat

Under the No Action Alternative, the effects on the physical environment or on components of the biological environment that function as marine mammal habitat would result from the USFWS's planned activities, are similar to those described in Section 1.4.2. Even without mitigation measures, however, impacts to marine mammal habitat (including prey species) would be minimal and temporary for the following reasons:

- The planned activities are minor, limited to vessel approaches and human presence;
- The area of potential effect is limited in time, only occurring a few times in one month or one week for less than one year; and
- There are no ocean bottom structures of significant biological importance to marine mammals that may be present in the project area.

This Alternative would result in similar effects on the physical environment and components of the biological environment that function as marine mammal habitat as Alternative 1.

Under the scenario in which the USFWS chose not to proceed with its activities in the absence of an MMPA authorization, there would be no additional impacts to marine mammal habitat.

4.2.2. Impacts to Marine Mammals

Under the No Action Alternative, the USFWS's planned project activities could result in increased amounts of Level B harassment to marine mammals, although no takes by injury, serious injury or mortality would be expected even in the absence of mitigation and monitoring measures. While it is difficult to provide an exact number of takes that might occur under the No Action Alternative, the numbers would be expected to be larger than those presented in Table 7 above, because the USFWS would not be required to follow mitigation measures designed to minimize flushing by pinnipeds in the Complex.

If the activities proceeded without the protective measures and reporting requirements required by a final IHA under the MMPA, the direct, indirect, and cumulative effects on the human or natural environment of not issuing the IHA would include the following:

- Increases in the number of behavioral responses and potential takes to species, because of the lack of mitigation measures required in the IHA. Thus, the incidental take of marine mammals would likely occur at higher levels than we have already identified and evaluated in our *Federal Register* notice on the proposed Authorization; and

- We would not be able to obtain the monitoring and reporting data needed to assess the anticipated impact of the activity upon the species or stock and to increase knowledge of the species, as required under the MMPA.

Under the scenario in which the USFWS chose not to proceed with its activities in the absence of an MMPA authorization, there would be no additional impacts to marine mammals.

4.3. Unavoidable Adverse Impacts

The USFWS's application, our notice of a proposed IHA, and the other environmental analyses identified previously summarize unavoidable adverse impacts to marine mammals or to the populations to which they belong or on their habitats occurring in the proposed project area. We incorporated those documents by reference.

We acknowledge that the incidental take authorized would potentially result in unavoidable adverse impacts including marine mammal behavioral responses and alterations in the distribution of local populations as a result of the project. However, we do not expect the USFWS's activities to have adverse consequences on the annual rates of recruitment or survival of marine mammals in Massachusetts waters, and we do not expect the marine mammal populations in that area to experience reductions in reproduction, numbers, or distribution that might appreciably reduce their likelihood of surviving or recovering in the wild. We expect that the numbers of individuals of all species taken by harassment would be small (relative to species or stock abundance) and that the proposed project and the take resulting from the proposed project activities would have a negligible impact on the affected species or stocks of marine mammals.

4.4. Cumulative Effects

NEPA defines cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR §1508.7). Cumulative impacts can result from individually minor but collectively significant actions that take place over a period of time.

This cumulative effects analysis focuses on activities that may temporally or geographically overlap with the USFWS's activities and would most likely impact the marine mammals present in the proposed areas. We consider the impact of the USFWS's presence and effects of conducting activities in the proposed action areas to be insignificant when compared to other human activities in the area.

Past, present, and reasonably foreseeable impacts to marine mammal populations include the following: climate change; marine pollution; disease; increased vessel traffic, and fisheries interactions. These activities account for cumulative impacts to regional and worldwide

populations of marine mammals, many of which are a small fraction of their former abundance. However, quantifying the biological costs for marine mammals within an ecological framework is a critical missing link to our assessment of cumulative impacts in the marine environment and assessing cumulative effects on marine mammals (Clark *et al.*, 2009). Despite these regional and global anthropogenic and natural pressures, the project is not likely to add an increment of disturbance that would cumulatively result in significant adverse impacts to marine mammals or their habitats.

The proposed project would add another, albeit localized and temporary, activity in Massachusetts. This activity would be limited to a small area in the Complex. This section provides a brief summary of the human-related activities affecting the marine mammal species in the action area.

4.4.1. Climate Change

Climate change is a reasonably foreseeable condition that may result in cumulative effects to marine mammal species. The 2007 Intergovernmental Panel on Climate Change concluded that there is strong evidence for global warming and associated weather changes, and humans have “very likely” contributed to the problem through burning fossil fuels and adding other “greenhouse gases” to the atmosphere (IPCC 2007). This study involved numerous models to predict changes in temperature, sea level, ice pack dynamics, and other parameters under a variety of future conditions, including different scenarios for how human populations respond to the implications of the study.

Global climate change could significantly affect the marine resources of Massachusetts. Possible impacts include temperature and rainfall changes, potentially rising sea levels, and changes to ocean conditions. These changes may affect the coastal marine ecosystem in the proposed project area by increasing the vertical stratification of the water column and changing the intensity and rhythms of coastal winds and upwelling. Such modifications could cause ecosystem regime shifts as the productivity of the regional ecosystem undergoes various changes related to nutrients input and coastal ocean process.

It is not clear how governments and individuals would respond to the effects of climate change, or how much future efforts would reduce greenhouse gas emissions. Although the intensity of climate change would depend on how quickly and deeply humanity responds, the models predict that the climate changes observed in the past 30 years would continue at the same or increasing rates for at least 20 years. Although we recognize that climate change is a concern for the sustainability of the entire ecosystem, it is unclear at this time the full extent to which climate change would affect marine mammals. However, given that the USFWS’s project is temporary in nature, the immediate project is not likely to result in a significant increase in vessel traffic or add an incremental disturbance that would cumulatively result in significant adverse impacts to marine mammals due to climate change.

4.4.2. Marine Pollution

Marine mammals are exposed to contaminants via the food they consume, the water in which they swim, and the air they breathe. Point and non-point source pollutants from coastal runoff, at-sea disposal of dredged materials and sewage effluent, marine debris, and potential hazardous material releases from commercial vessels and on-shore users are all lasting threats to marine mammals in the project area. The long-term impacts of these pollutants, however, are difficult to measure.

The persistent organic pollutants (POPs) tend to bioaccumulate through the food chain; therefore, the chronic exposure of POPs in the environment is perhaps of the most concern to high trophic level predators such as pinnipeds.

The project activities would be temporary and are not anticipated to cause increased exposure of POPs to marine mammals in the project vicinity due to the small scale and localized nature of the activities.

4.4.3. Disease

Disease is common in many marine mammal populations and has been responsible for major die-offs worldwide, but such events are usually relatively short-lived. The USFWS's project activities are not expected to affect the disease rate among marine mammals in the project vicinity.

4.4.4. Increased Vessel Traffic

Local charter, commercial passenger vessels, private boats, or rental boats may transit to areas within the Complex. While marine mammals might be exposed to vessel traffic disturbance, any disturbance to a particular individual would be limited in space and time. The USFWS's project will not include significant additional vessel traffic; therefore, there is limited potential for measurable effects to marine mammals in the project area.

4.4.5. Fisheries Interactions

State-managed commercial and sport fisheries are a reasonably foreseeable non-federal activity that may result in cumulative effects to species in Massachusetts. None of the activities would be directed at commercial fishing or would likely have any impact on commercial fishing in the action area. No significant direct impacts are expected from the action of issuing an IHA for the incidental take, by Level B harassment only, of small numbers of marine mammals to the USFWS. No significant indirect impacts are expected from the USFWS conducting monitoring and research activities in the Complex.

4.4.6. Conclusion

Based on the summation of activity in the area provided in this section, NMFS determined that the incremental impact of an Authorization for the proposed Seabird and Shorebird Monitoring

and Research at the Eastern Massachusetts National Wildlife Refuge Complex would not be expected to result in a significant cumulative impact to the human environment, taking into account past, present, and reasonably foreseeable future activities. The potential impacts to marine mammals, their habitats, and the human environment in general are expected to be minimal, based on the limited and temporary footprint of the proposed project and the mitigation and monitoring requirements of the IHA.

Chapter 5 List of Preparers and Agencies Consulted

Agencies Consulted

No other persons or agencies were consulted in preparation of this EA.

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