Draft Economic Analysis of Critical Habitat Designation for the Hawaiian Monk Seal

January 2011

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Acronyms and Abbreviations

APPS	The Act to Prevent Pollution from Ships
CAA	Clean Air Act
CERCLA	The Comprehensive Environmental Response, Compensation and Liability Act
Council	Western Pacific Regional Fishery Management Council
CWB	Hawaii Department of Health, Clean Water Board
CZMA	Coastal Zone Management Act
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FEP	Hawaii Archipelago Fishery Ecosystem Plan
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
HCP	Habitat Conservation Plan
HDOT	Hawaii Department of Transportation
HMS	Hawaiian Monk Seal
HRC	Hawaii Range Complex, U.S. Department of Defense
HRS	Hawaii Revised Statutes
HRC EIS/OEIS	*Final Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS): Hawaii Range Complex (HRC)*. May 2008.
INRMP	Integrated Natural Resources Management Plan
MHI	Main Hawaiian Islands
NAAQS	National Ambient Air Quality Standards
NDSA	Naval Defensive Sea Area
NEPA	National Environmental Policy Act
NMFS	NOAA's National Marine Fisheries Service
NOAA	The National Oceanic and Atmospheric Administration
NOS	NOAA's National Ocean Service
NPDES	National Pollutant Discharge Elimination System
NWHI	Northwestern Hawaiian Islands
PMNM	Papahanaumokuakea Marine National Monument
PMRF	Pacific Missile Range Facility

OCRM	Office of Ocean and Coastal Resource Management, within NOS
Secretary	Secretary of the U.S. Department of Commerce
Recovery Plan	*Recovery Plan for the Hawaiian Monk Seal (Monachus schauinslandi) Revision*. August 2007
RHA	Rivers and Harbors Act
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USMC	U.S. Marine Corps

EXECUTIVE SUMMARY: DRAFT ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR THE HAWAIIAN MONK SEAL

This report examines the potential economic impacts of a proposal by the National Marine Fisheries Service (NMFS) to revise the designation of critical habitat for the Hawaiian monk seal (HMS). Section 7 of the Endangered Species Act (ESA) specifically requires federal agencies to insure that any action that is funded authorized, or carried out by the agency is not likely to jeopardize listed species or result in the destruction or adverse modification of critical habitat of that species. Economic impacts from a critical habitat designation may materialize on many levels, insofar as the designation would result in federal agencies taking appropriate actions to insure that their activities are not likely to adversely modify or destroy the critical habitat's essential features. The findings from this report will inform NMFS about the economic impacts of the designation. NMFS will, in turn, use this information in the decision making process, outlined under section 4(b)(2) of the ESA, regarding weighing the economic and other benefits of excluding areas from the designation against the benefits of designating them. NMFS will outline the results of the decision-making process in the 4(b)(2) report.

Approach

The primary objective of this report is to provide NMFS with appropriate economic information for satisfying the requirements of Section 4(b)(2) of the ESA. Thus, it provides information about the probable economic impacts of the proposed designation and about the potential economic benefits of excluding particular areas from the designation versus including them. It focuses solely on economic impacts and does not address other types of impacts.

The report focuses on describing the potential, incremental, future impacts of including in the revised designation the sixteen areas identified in the proposed rule. This approach entails comparing two scenarios of expected economic conditions—one with and one without the revised designation—and the difference between the two represents the incremental effect of the revised designation. This analysis provides an overview of costs that may be considered coextensive with the listing of the species or with the current critical habitat designation, and it discusses other baseline protections, however, the primary goal of this report is to identify the incremental impacts attributable to the proposed critical habitat designation for the Hawaiian monk seal.

Identifying the proposed designation's potential economic impacts and preparing the report entailed completing these steps:

- Identify the geographic area for the analysis and the essential features of those areas. This information comes from NMFS' biological report to designate HMS critical habitat, which identifies the essential features and analyzes how each of the identified areas meets the definition of

critical habitat set forth in Section 3 of the ESA.

- Identify the economic activities that might impact the identified essential features. Each activity is identified and the threat to the essential features is discussed.
- Estimate the baseline level of protection afforded Hawaiian monk seals by area and activity type. Baseline protection can come from federal and state legislation and regulations.
- For each identified type of activity, establish the extent of the activity that may be affected by the proposed critical habitat designation. Information for each type of activity was sought from federal agencies that might fund, authorize, or carry out the activity; NMFS' records of past involvement with the activity; interviews with knowledgeable individuals; and a review of publicly available documents and data.
- Estimate the potential economic impacts of Hawaiian monk seal conservation efforts by economic activity type and sum these impacts by area.

Sections II and III of the report describe in greater detail the background material, framework for the analysis, and the findings.

Results

NMFS has identified these eight activities of concern because they have the potential to be affected by the proposed designation of critical habitat for the HMS:

A. In-Water and Coastal Construction
B. Dredging and Disposal of Dredged Materials
C. Energy Projects
D. Activities that Generate Water Pollution
E. Aquaculture
F. Fisheries
G. Oil-Spill and Vessel-Grounding Response Activities
H. Military Activities

Efforts to identify the extent of each activity and how it might be affected by HMS critical habitat secured limited relevant information for determining the designation's potential economic impacts, as it would be the first critical habitat designation involving marine and coastal resources in the developed Main Hawaiian Islands (MHI), and the agencies that might be affected by the designation have little or no experience with the issues and processes that such a designation would trigger. Many of these agencies observed that site- and project-specific modifications would have to be identified to estimate the designation's economic impacts.

The activities of concern are already subject to multiple environmental laws and regulations, including the ESA, other federal and state legislation, and executive orders, which afford the proposed critical habitat a high level of baseline protection. These baseline protections, including stipulations regarding water quality and animal disturbance, are best reflected in compliance with best management practices or as conditions of permits for the various activities. These laws and regulations would not, however, provide full protection for the critical habitat proposed for the HMS because the extent to which future activities have the potential to adversely modify or destroy the proposed critical habitat remains uncertain. Uncertainties arise from insufficient information to identify the scope and numbers of emerging projects (e.g. energy projects, or aquaculture), determine clearly the exact modifications necessary so that future projects would avoid adversely modifying critical habitat, and predict how the increasing HMS population in the MHI may influence future management decisions or projects. The current baseline protections appear to indicate that the proposed designation would have little incremental impact on the eight activities of concern, with the most likely impact being a short-term increase in section 7 consultations to familiarize federal agencies and others with the requirements that would accompany the designation of critical habitat for the HMS. This is especially the case with in-water and coastal construction, and the disposal of dredged materials. The potential for larger impacts exists if future research or information should establish a connection between point-source water pollution or commercial fisheries, and the essential features of HMS critical habitat.

Review of past section 7 consultations in comparison with a map of the proposed critical habitat areas provides the best proxy for estimating the potential type and frequency of the actions in areas covered by the proposed designation. This review provides a basis for estimating a range of additional administrative costs associated with future consultations and provides information for a discussion regarding costs associated with potential modifications for projects that may overlap with the proposed critical habitat.

At this time, the available information suggests that, if the proposed designation had been in place in 2009, the additional consultation costs solely attributable to the designation for proposed in-water and coastal construction projects requiring a permit from the U.S. Army Corps of Engineers (USACE) would have been about $30,950 per year. With a newly established programmatic consultation between USACE and NMFS, however, costs would be different. Adoption of the proposed designation would result in re-initiation of the programmatic consultation so that it addresses concerns associated with HMS critical habitat. The estimated administrative costs for the re-initiation are about $17,450. Once completed, if future projects resemble those of 2009, the annual consultation cost would fall to about $9,400. The average annual cost over the five-year duration of the programmatic consultation would be about $12,890. Actual costs likely will fall between this amount and $30,950, but they fall below or above this range. The information currently available is insufficient to determine if the proposed designation would have any other economic impacts or, if so, their extent.

I. INTRODUCTION AND BACKGROUND

The National Marine Fisheries Service (NMFS) is revising the critical habitat for the Hawaiian monk seal (HMS), under the provisions of the Endangered Species Act (ESA). This report examines the potential economic impacts of the proposed revised critical habitat designation. Section 7 of the ESA requires federal agencies to insure that any action that is funded authorized, or carried out by the action agency is not likely to jeopardize listed species or result in the destruction or adverse modification of critical habitat of that species. Economic impacts from the proposed critical habitat designation may materialize insofar as it would result in federal agencies taking appropriate actions to insure that their activities are not likely to adversely modify or destroy the critical habitat's essential features. The findings from this report will inform the NMFS with regards to the economic impacts of the designation. They also will be utilized in the decision-making process, outlined under Section 4(b)(2) of the ESA, to weigh the economic and other benefits of excluding areas from the designation against the benefits of designating the areas as critical habitat. NMFS describes this process and its results in a separate, Section 4(b)(2) report.

Under the provisions of the ESA, the Secretary of Commerce, acting through NMFS, designated critical habitat for the HMS in 1986, with revisions in 1988. In July, 2008, NMFS was petitioned to expand critical habitat for the HMS in areas previously designated in the Northwest Hawaiian Islands (NWHI) as well as to designate areas in the main Hawaiian Islands (MHI). NMFS determined in its 12-month finding that the petition was warranted based on new information available regarding monk seal foraging as well as the apparent recolonization of the MHI by seals. In accordance with section 4(3)(A)(ii) of the ESA, NMFS has begun to move forward with the revision process. With the end product of a proposed rule in mind, this economic report will aid NMFS in meeting the requirements of section 4(b)(2) of the ESA, which states:

> The Secretary shall designate critical habitat, and make revisions thereto, under subsection (a)(3) on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat. The Secretary may exclude any area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species concerned.

This report identifies and analyzes the potential economic impacts of the proposed revision to the designation of critical habitat for the HMS. This introduction and background provides information on HMS critical habitat, the proposed revisions to designated critical habitat for the HMS, and the significant activities that might affect the proposed critical habitat.

A. Overview of Hawaiian Monk Seal Critical Habitat

The HMS has been listed, under the ESA, as an endangered species since November 23, 1976. The *Recovery Plan* for the HMS (p. v) observes that the species "is in crisis: the population is in a decline that has lasted 20 years and only around 1200 monk seals remain.[1] Modeling predicts the species' population will fall below 1000 animals in the next five years."

Critical habitat for the HMS was first established in the NWHI in 1986. It included "all beach areas, sand spits and islets, including all beach crest vegetation to its deepest extent inland, lagoon waters, inner reef waters, and ocean waters out to a depth of 10 fathoms around Kure Atoll, Midway Islands (except Sand Island and its harbor), Pearl and Hermes Reef, Lisianski Island, Laysan Island, Gardner Pinnacles, French Frigate Shoals, Necker Island, and Nihoa Island" (51 FR 16047, April 30, 1986). In 1988, critical habitat for the HMS was extended to include "all beach areas, sand spits and islets, including all beach vegetation to its deepest extent inland, lagoon Monk seal in NWHI waters out to a depth of 20 fathoms around the following: Kure Atoll; Midway Islands, except Sand Island and its harbor; Pearl and Hermes Reef; Lisianski Island; Laysan Island; Maro Reef; Gardner Pinnacles; French Frigate Shoals; Necker Island; and Nihoa Island"(53 FR 18988, May 26, 1988; 50 CFR 226.201).

On July 9, 2008, NMFS received a petition to revise critical habitat for the HMS. The petition requested the current designation be "expanded to include key beach areas, sand spits and islets, including all beach crest vegetation to its deepest extent inland, lagoon waters, inner reef waters, and ocean waters out to a depth of 200 meters around the main Hawaiian Islands, and to extend critical habitat designation in the Northwestern Hawaiian Islands to Sand Island and ocean waters out to a depth of 500 meters." On October 3rd, 2008, NMFS published a "90-day finding" in the *Federal Register* announcing that the petition to expand critical habitat for the HMS may be warranted.[2] On June 12th, 2009, NMFS published a "12-month finding" in the *Federal Register* announcing that new information regarding monk seal foraging and recolonization of the MHI warranted a revision to critical habitat and announced its intention to move forward with the revision of critical habitat for the HMs.[3] The next step in this process is the publication of a proposed rule describing the agency's decisions regarding areas proposed for critical habitat. After considering information it receives from the public on the proposed rule, NMFS will develop and publish a final rule.

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[1] National Marine Fisheries Service. 2007. *Recovery Plan for the Hawaiian Monk Seal (Monachus schauinslandi) Revision*. August. Retrieved 5 June 2010 from www.nmfs.noaa.gov/pr/pdfs/recovery/hawaiianmonkseal.pdf.

[2] Available at http://www.fpir.noaa.gov/Library/PRD/Critical%20Habitat/HMS%2090-day%20finding%2010-3-08.pdf.

[3] Available at http://www.fpir.noaa.gov/Library/PRD/Critical%20Habitat/HMS_12-month_finding_6-12-09.pdf.

B. Proposed Revisions to Designated Critical Habitat for the Hawaiian Monk Seal

In accordance with the ESA and guidance from joint regulations by NMFS and the U.S. Fish and Wildlife Service (USFWS), the essential features of critical habitat for the HMS were determined and described based on its biology and life history. Table 1 summarizes the essential features. These features describe the habitat and features essential to the conservation of the species, that may in turn require special management considerations or protections. Following the determination of the essential features and in accordance with critical habitat criteria, NMFS identified specific areas within the geographical area occupied by the species that contain at least one essential feature that may require special management considerations or protections. Additionally, in accordance with Section 3(5)(A)(ii) of the ESA, NMFS considered the possibility of designating specific areas outside the geographical area occupied by the species, but determined that there is insufficient evidence to indicate that areas within the present range would be inadequate for conservation of the species. Further details regarding these determinations may be found in the *Draft Biological Report*, or the proposed rule in the *Federal Register*.

Table 1. Essential Features of Critical Habitat for the Hawaiian Monk Seal

1. Areas with characteristics preferred by Hawaiian Monk Seals for pupping and nursing.
2. Shallow, sheltered aquatic areas adjacent to locations preferred by HMS for pupping and nursing.
3. Marine areas from shoreline to 500 meters in depth preferred by juvenile and adult Hawaiian Monk Seals for foraging.
4. Areas with low levels of anthropogenic disturbance.
5. Areas with adequate prey quantity and quality.
6. Significant areas used by Hawaiian Monk Seals for hauling out, resting, or molting.

For the revision of critical habitat for the HMS, NMFS identified critical habitat in sixteen specific areas. These specific areas include the expansion of marine habitat to a depth on 500 m for the ten areas previously identified as critical habitat in the NWHI as well as the inclusion of Sand Island at Midway Atoll, but not including Midway Harbor at Sand Island. Specific areas of critical habitat will also include six areas within the MHI. Table 2 lists the sixteen areas and provides additional information on locations NMFS has determined do not meet the criteria for inclusion due to the low quality or lack of essential features within these sites. Appendix A contains maps illustrating the location of proposed marine critical habitat for the HMS.

Table 2 The Proposed Revision of the Designation Includes 16 Specific Areas

In the Northwest Hawaiian Islands:

The proposed designation of HMS critical habitat includes all beach areas, sand spits and islets, including all beach crest vegetation to its deepest extent inland, lagoon water, inner reef waters and ocean waters out to a depth of 500m around the following:

1. **Kure Atoll**
2. **Midway Islands**
   Not including: Midway Harbor located at Sand Island
3. **Pearl & Hermes Reef**
4. **Lisianski Island**
5. **Laysan Island**
6. **Maro Reef**
7. **Gardner Pinnacles**
8. **French Frigate Shoals**
9. **Necker Island**
10. **Nihoa Island**

II. In the Main Hawaiian Islands:

The proposed designation of HMS critical habitat includes terrestrial and marine components for each of the islands. The Critical Habitat Review Team has identified areas not included in the designation because they offer poor habitat for Hawaiian monk seals to haul out or forage, due to the biological and physical features of the habitat. These areas include certain types of hardened shorelines, such as extensive seawalls, rock revetments or other man-made shorelines; sheer cliffs; areas of lava flow; large commercial harbor areas; and some larger bays.

Terrestrial habitat: all shorelines from the waters' edge to 5 m inland from the upper reaches of the wash of the waves, other than storm or seismic waves, at high tides during the season in which the highest wash of the waves occurs, usually evidenced by the edge of the vegetation growth or the upper limit of debris (except those portions of the areas that have been identified as not included in the designation)

Marine habitat: all areas from the water's edge through to the 500 m bathymetric depth contour (except those areas listed as not included in the designation)

11. **Kaula Island**
12. **Niihau Island**
13. **Kauai Island**
    Areas not included on Kauai:
    - KA1. Hanalei Bay and Pier
    - KA2. Kikiaola Harbor
    - KA3. Kilauea Pt. cliff area
    - KA4. Kauai – Na Pali coast sheer cliff region
    - KA5. Nawiliwili Harbor
    - KA6. Port Allen Harbor

Table 2 The Proposed Revision of the Designation Includes 16 Specific Areas, cont.

KA7. Waikaea Canal

KA8. Wailua Ramp

14. Oahu Island

Areas not included on Oahu:

OA1. Area from Pearl Harbor to Ft. DeRussey (includes areas listed below)

a. Ala Wai Harbor

b. Keehi Harbor/Lagoon

c. Kewalo Basin

d. Honolulu Harbor

e. Pearl Harbor

f. Sand Island Launch Ramp Facility

g. Waikiki Beach Waters (aka Kapua Channel moorings)

OA2. Haleiwa Harbor

OA3. Hawai Kai Harbor and Maunalua Ramp

OA4. Kalaeloa Barbers Point Harbor and Koolina Harbor

OA5. Kaneohe Bay and Heeia Kea Harbor

OA6. Pokai Bay (Waianae small Boat Harbor)

15. Maui County (including the islands of Kahoolawe, Lanai, Maui, and Molokai)

Areas not included on Lanai Island:

LA1. Lanai pali

LA2. Manele Harbor

LA3. Kamalapau Harbor

Areas not included on Maui Island:

MA1. Hana Wharf and Ramp

MA2. Kahului Harbor and ramp

MA3. Kihei Ramp

MA4. Lahaina Harbor

MA5. Maalaea Harbor

MA6. Mala Wharf and Ramp

Areas not included on Molokai Island:

MO1. Haleolono Harbor

MO2. Kaunakakai Pier

MO3. Kalaupapa Harbor

MO4. Molokai northshore cliffs

16. Hawaii Island:

Areas not included on Hawaii Island:

HA1. Hilo Harbor (includes areas listed below)

a. Reed!s Bay

b. Wailoa Sampan Basin and Boat Harbor

HA2. Honokohau Boat Harbor

HA3. Kailua-Kona Wharf

Table 2	The Proposed Revision of the Designation Includes 16 Specific Areas, cont.
	HA4. Kawaihae Harbor
	HA5. Keauhou Boat Harbor
	HA6. Mahukona Harbor
	HA7. Kau Coast including lava flow area (current active flow areas)

C. Significant Activities that May Require Consultation and Modification

The regulations (50 C.F.R. § 424.29) adopted by NOAA to implement section 4(b)(2) of the ESA state, "The Secretary shall identify any significant activities that would either affect an area considered for designation as critical habitat or be likely to be affected by the designation, and shall, after proposing designation of such an area, consider the probable economic and other impacts of the designation upon proposed or ongoing activities." This statement indicates that the first step in describing the economic impacts of the proposed revision to the designation entails identifying "any significant activities" that would affect the critical habitat in an area being proposed for designation

NMFS has identified the economic activities shown in Table 3 as those that, if funded, authorized, or carried out by a federal agency, may require consultation and/or potential modifications to avoid destruction or adverse modification of the proposed HMS critical habitat. The potential for consultation on and modification of these activities of concern is the basis for assessing the potential economic impacts of the proposed designation and for weighing the benefits of designation against those of exclusion for particular areas. Sections III and IV describe these potential impacts in more detail.

Table 3.	Activities of Concern that May Require Consultation and Modification
A.	In-Water and Coastal Construction
B.	Dredging and Disposal of Dredged Materials
C.	Energy Projects
D.	Activities the Generate Point-Source Water Pollution
E.	Aquaculture
F.	Fisheries
G.	Oil-spill and Vessel-Grounding Response Activities
H.	Military Activities

II. Framework for the Economic Analysis

This section describes the objectives of the economic analysis, the baseline incorporated in the no-action scenario, and the types of economic impacts addressed in the analysis.

A. Analytical Objectives

The sixteen areas included in the proposed revision to critical habitat for the HMS represent a biological assessment, based on the best available science, of terrestrial and marine areas that are essential to the conservation of the species. Before taking action on the proposed rule to designate these areas as critical habitat for the HMS, the Secretary must "consider the probable economic and other impacts of the designation on proposed or ongoing activities" (50 C.F.R. § 424.29). Section 4(b)(2) of the ESA gives the Secretary discretion to exclude from the designation a particular area that satisfies the biological requirements only if he or she determines that the benefits of excluding it outweigh the benefits of including it in the designation, and that excluding the area would not lead to the extinction of the species. Four categories of impacts are applicable to making this determination: the impacts on the conservation of the HMS, as well as the economic impacts, national security impacts, and other impacts the Secretary considers relevant.

The primary objective of this report is to provide NMFS with appropriate economic information for satisfying the requirements of Section 4(b)(2) of the ESA. Thus, it provides information about the probable economic impacts of the proposed designation and about the potential economic benefits of excluding particular areas from the designation versus including them. It focuses solely on economic impacts and does not address the other types of impacts.

This report also provides information to satisfy the requirements of Executive Order 12866 Regulatory Planning and Review. This order directs federal agencies to assess the economic impacts of a regulatory action, consistent with this general guidance:

> "In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environment, public health and safety, and other advantages; distributive impacts; and

equity), unless a statute requires another regulatory approach."[4]

B. Baseline for the Economic Analysis

If the Secretary designates an area as critical habitat for the HMS, federal agencies subsequently must insure that the actions they take, fund, or authorize are not likely to destroy or adversely modify that habitat. Designation would not directly affect activities of non-federal agencies, businesses, landowners, and individuals that do not have a federal nexus. The restrictions on actions with a federal nexus might affect the economy in three distinct but related ways, by altering: (1) the value of goods and services available for consumption or investment, with an decrease being a cost and an increase a benefit; (2) the levels of jobs, incomes, and other variables related to economic activity for workers and businesses; (3) the distribution of benefits, costs, and economic activity among different groups.

Information in the report will be used both in making a decision to implement the proposed designation and in the weighing process, outlined in the 4(b)(2) report, for weighing the benefits of excluding an area against the benefits of including it in the designation. The benefits of exclusion equal the costs of designation that would be avoided if an area were excluded from the designation. Therefore, this analysis focuses on the incremental economic costs of the proposed designation. Despite the focus on incremental costs, this analysis also provides information on the potential economic benefits, to provide a complete portrait of the potential economic impacts of the designation. The weighing process may then consider both the gross benefits of exclusion (equal to the avoided gross costs of designation) as well as the net benefits of exclusion (equal to the net costs of designation), as appropriate. The net costs of designation equal the gross costs minus the benefits.

The report focuses on describing the incremental, future impacts of including in the revised designation the sixteen areas identified in the proposed rule. This approach entails comparing two scenarios of expected economic conditions—one with and one without the revised designation—and the difference between the two represents the incremental effect of the revised designation. The scenario without the revised designation constitutes the analytical baseline, sometimes called the no-action scenario. It incorporates protections already extended to the HMS resulting from its listing as an endangered species under the ESA, and from prior designation of critical habitat in the NWHI. It also includes protections from other federal, state, and local regulations, including collateral protections, resulting from protections under the ESA afforded sea turtles and other listed species, that overlap with the range of the HMS.

The baseline also incorporates reasonably anticipated protections of HMS critical habitat resulting from laws other than the ESA. These include the Marine

[4] Retrieved 19 February 2010 from www.whitehouse.gov/OMB/inforeg/eo12866.pdf.

Mammal Protection Act, the Clean Water Act, Magnuson-Stevens Fishery Conservation and Management Act, Oil Pollution Act, National Marine Sanctuaries Act, and Coastal Zone Management Act, as well as state laws governing the management of shoreline terrestrial areas and near-shore marine areas. The baseline also includes actions taken to protect habitat for marine turtles and cetaceans in the NWHI and MHI. These actions are described in further detail in the next sections of the report and in Appendix B.

The with-vs.-without approach is not the same as an alternative, the before-after approach. The latter would entail comparing economic conditions before the revised designation with those that would exist afterward, and attributing the difference to the revised designation. This approach would not yield an accurate depiction of the incremental impacts of the revised designation insofar as it would not account for other events affecting the economy and, hence, could attribute to the revised designation impacts stemming from other factors.

The focus on the incremental economic impacts of the proposed revision to the designation of critical habitat for the HMS is consistent with recent judicial statements regarding the appropriate scope of the analysis.[5] For some elements of the analysis, however, information is available to describe the impacts arising cumulatively from all actions taken under the ESA to protect the HMS: the listing of the HMS as an endangered species, the previous designation of critical habitat for the species, the development and implementation of the *Recovery Plan*, and the proposed revision to the designation. Such information addresses judicial concern that the economic analysis should describe the consequences of all actions taken to conserve the species under the ESA rather than just the incremental impacts of the proposed revision to the designation.[6] The analysis focuses primarily, however, on describing the incremental effects of the proposed revision.

Whenever appropriate information is available, the analysis quantifies the potential economic consequences of designating critical habitat for the HMS and expresses them in monetary terms. When sufficient information is lacking, it describes the consequences in quantified but not monetized terms, if possible, or in qualitative terms. This approach seeks to provide NMFS and the public with as thorough a description of the potential economic consequences as the available information allows, and is consistent with guidance in Executive Order 12866.

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[5] *Cape Hatteras Access Preservation Alliance v. Department of Interior*, 344 F. Supp. 2d 108 (D.D.C.); *Center for Biological Diversity v. United States Bureau of Land Management*, 422 F. Supp. 2d 1115 (N.D. Cal. 2006).

[6] *New Mexico Cattle Growers Association. v. United States Fish and Wildlife Service*, 248 F.3d 1277 (10th Cir. 11 May 2001). "[W]e conclude Congress intended that the FWS conduct a full analysis of all of the economic impacts of a critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes."

1. Baseline Protections from Federal Laws and Actions

The *Recovery Plan* describes a variety of federal laws and actions that provide protection to the HMS and its habitat. The HMS is a not only a federally designated endangered species protected by the provisions of the ESA, but also a marine mammal, protected under the Marine Mammal Protection Act (16 U.S.C. Section 1361 et seq.). Both of these acts stipulate protections specific to the HMS. A variety of federal laws and actions, including these, provide baseline protection to the HMS and its habitat:

- The Endangered Species Act (Sections 7, 9, 10 absent the proposed revision to critical habitat)
- Marine Mammal Protection Act
- The Antiquities Act (specifically the creation of the Northwestern Hawaiian Islands Marine National Monument)
- The National Marine Sanctuaries Act
- Federal Power Act (16 U.S.C 800 1920, as amended)
- The Act to Prevent Pollution from Ships (33 U.S.C. Section 1901 et seq.).
- The Clean Water Act (33 U.S.C. 1251 et seq.).
- The Clean Air Act (42 U.S.C. 7401 et seq.)
- The Oil Pollution Act (33 U.S.C. Section 2701 et seq., 46 U.S.C. Section 3703a.).
- The Resource Conservation and Recovery Act (42 U.S.C. Section 6901 et seq.).
- The Coastal Zone Management Act (16 U.S.C. Section 1451 et seq.).
- The Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. Section 9601 et seq.).
- The Magnuson-Stevens Fishery Conservation and Management Act.
- The National Environmental Policy Act (42 U.S.C. 4321 et seq.)
- Executive Order Adopting and Implementing the *Final Recommendations of the Interagency Ocean Policy Task Force, July 19, 2010*

Particularly significant are the conservation benefits the HMS may realize from actions, other than the proposed designation of critical habitat, taken under the ESA to protect other species, the Marine Mammal Protection Act, the Antiquities Act, and the National Marine Sanctuaries Act. The following discussion summarizes them; additional information is provided in the appendix.

Endangered Species Act. Protections are provided to the HMS under sections 7, 9, and 10 of the ESA.

Section 7 of the ESA requires federal agencies to consult with NMFS to insure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of the listed species' critical habitat. Costs of

consultations under what is known as the jeopardy standard, along with impacts of project modifications resulting from consideration of this standard, are considered baseline impacts. These jeopardy standards are considered during consultations throughout the entire range of the Hawaiian monk seal. Additionally, because the proposed designation is a revision to critical habitat, baseline habitat protections exist in the NWHI from the 1988 designation. Costs of consultations related to the 1988 designation of critical habitat in the NWHI, along with impacts of project modifications resulting from considerations related to the 1988 critical habitat designation in the NWHI are considered to be baseline impacts.

Section 9 of the ESA prohibits the "take" of an endangered species. Specifically "take" is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct." The economic impacts associated with this section manifest themselves in sections 7 and 10.

Section 10(a)(1)(B) allows NMFS to issue permits to nonfederal entities (e.g. a landowner, business, or local government) for exceptions to the section 9 prohibitions of the ESA, but through this exception process the nonfederal entity, in turn, establishes a conservation plan that will provide benefits to the species. Specifically, under section 10 of the Act, an entity must develop a conservation plan (known as a Habitat Conservation Plan, or HCP) for a listed animal species to meet the conditions for issuance of an incidental take permit in connection with the development and management of a property or area, or some other activity, that incorporates the species or its critical habitat.[7] The requirements posed by the HCP may have economic impacts associated with the goal of insuring that the effects of incidental take are adequately minimized and mitigated. The development and implementation of HCPs are considered a baseline protection for the species and habitat unless the HCP is determined to be precipitated by the designation of critical habitat, or the designation influences stipulated conservation efforts under HCPs.

Additional measures taken to conserve other species listed as endangered or threatened throughout the range of the HMS may yield benefits for the HMS and its habitat. This is especially true for species listed under the ESA or identified as a species of concern whose habitat overlaps with the HMS habitat. Table 4 identifies some species listed in the Hawaiian Islands.

[7] USFWS and NOAA. 1996. *Habitat Conservation Planning and Incidental Take permit Processing Handbook.* November 4. Retrieved 25 August 2010 from earip.tamu.edu/GuidanceDocs/HCPHandbook.pdf.

Table 4. Marine Mammals, Threatened and Endangered Species and Species of Concern with Marine and Coastal Habitats1

Common Name	Scientific Name	Regulatory Status[a]
Marine Mammals		
Blue whale	*Balaenoptera musculus*	E
Blainville's Beaked Whale	*Mesoplodon densirostris*	
Bryde's Whale	*Balaenoptera edeni*	
Cuvier's Beaked Whale	*Ziphius cavirostris*	
Dwarf Sperm Whale	*Kogia simus*	
False Killer Whale	*Pseudorca crassidens*	
Fin whale	*Balaenoptera physalus*	E
Humpback Whale	*Megaptera novaeanglia*	E
Killer Whale	*Orcinus orca*	
Longman's Beaked Whale	*Indopacetus pacificus*	
Melon-Headed Whale	*Peponocephala electra*	
Minke Whale	*Balaenoptera acutorostrata*	
North Pacific Right Whale	*Eubalaena japonica*	E
Pygmy Killer Whale	*Feresa attenuata*	
Pygmy Sperm Whale	*Kogia breviceps*	
Sei whale	*Balaenoptera borealis*	E
Short-Finned Pilot Whale	*Globicephala macrorhynchus*	
Sperm whale	*Physeter macrocephalus*	E
Sea Turtles		
Green Turtle	*Chelonia mydas*	T
Hawksbill Sea Turtle	*Eretmochelys imbricata*	E
Leatherback sea turtle	*Dermochelys coriacea*	E
Loggerhead sea turtle	*Caretta caretta*	E
Pacific ridley sea turtle	*Lepidochelys olivacea*	E
Birds		
Hawaiian Duck (Koloa)	*Anas wyvilliana*	E
Hawaiian Goose (Nene)	*Branta sandviciensi*	E
Short-Tailed Albatross	*Phoebastria albatrus*	E
Black-footed Albatross	*Phoebastria nigripes*	T (State only) BOCC
Laysan Albatross	*Phoebastria immutabilis*	BOCC
Hawaiian Stilt	*Himantopus mexicanus knudseni*	E
Newell's Shearwater	*Puffinus auricularis newelli*	T
Hawaiian Dark-Rumped Petrel	*Pterodroma phaeopygia sandwichensia*	E
Other		
Nama	*Nama sandwicensis*	SOC
Hawaiian Hoary Bat	*Lasiurus cinereus*	E

Source: NMFS, USACE.

Marine Mammal Protection Act. This legislation makes it unlawful to "take" a marine mammal.[8] Take includes direct action, such as harassment, hunting, capturing, or killing, that is harmful to a whale, dolphin, seal, or other marine mammal. Harassment includes any act of pursuit, torment or annoyance which has the potential to injure an animal or to disrupt its behavioral patterns, such as migration, breathing, nursing, breeding, feeding or sheltering. The penalty for participating in this behavior and causing this result can be as high as $20,000 and a year in prison, as set forth at Section 1375. Exceptions can be made only through permits/regulations for take incidental to commercial fishing, nonfishing activities (e.g. military exercises), scientific research, and public display. The HMS is designated as "depleted" under the MMPA and receives these protections.

The Antiquities Act of 1906. This act gives the President of the United States authority to, by executive order, restrict the use of particular public land owned by the federal government. The Papahānaumokuākea Marine National Monument (PMNM) was created by Presidential proclamation in accordance with the Antiquities Act, on June 15, 2006. The monument encompasses 140,000 square miles and ten islands and atolls of the NWHI. The area was originally proclaimed the Northwestern Hawaiian Islands Marine National Monument in 2006 and renamed Papahānaumokuākea in 2007. A partnership of the Department of Commerce, the Department of the Interior, and the State of Hawaii manages the area. The U.S. Fish and Wildlife Service administers the Hawaiian Islands National Wildlife Refuge, with an area of about 254,000 acres in the monument. Activites in the monument are managed through a permit system and regulations on entry and behavior aim to meet conservation efforts as well as prevent the introduction and spread of species that would disrupt the ecosystem.

This monument, created in 2006, reserves all lands and interests in lands owned or controlled by the government of the United States in the NWHI, including emergent and submerged lands and waters, out to a distance of approximately 50 nautical miles from the islands.[9] The outer boundary of the Monument is approximately 100 nautical miles wide and extends approximately 1200 nautical miles around coral islands, seamounts, banks, and shoals. The area includes the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve, the Midway Atoll National Wildlife Refuge/Battle of Midway National Memorial, and the Hawaiian Islands National Wildlife Refuge.

The national monument provides the highest form of marine environmental protection under federal law. In providing this protection, the management plans for the national monument include: preserving access for Native Hawaiian cultural activities; providing for carefully regulated educational and scientific activities; prohibiting unauthorized access to the monument; phasing

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[8] 16 U.S.C. Section 1372.

[9] FR 36443, June 26, 2006.

out commercial fishing; and banning other types of resource extraction and dumping of waste. Therefore, the Antiquities Act provides protections to the HMS and their habitat by establishing the means for the conservation and management of the Northwestern Hawaiian Islands under the Papahānaumokuākea Marine National Monument.

Marine Protection, Research, and Sanctuaries Act of 1972 (The National Marine Sanctuaries Act). This act authorizes the Secretary of Commerce to designate and manage areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archeological, educational, or esthetic qualities as national marine sanctuaries. The Act prohibits behavior that results in the destruction of or injury to any sanctuary resource managed under a law or regulation for a given sanctuary.[10] The penalty for this behavior may be as high as $100,000 and vessel forfeiture as set forth at Section 1437, as well as liability for damage and response and damage assessment costs, as set forth at Section 1443. A portion of the area being proposed for designation as critical habitat for the HMS lies within the Hawaiian Islands Humpback Whale National Marine Sanctuary, and, therefore the HMS may derive baseline protections from that resource being protected by law from injury or destruction.

2. Baseline Cost Estimates

Tables 5 and 6 indicate the baseline costs that likely would be incurred by federal and state agencies for conservation of the HMS, absent adoption of the proposed rule. The data come from the agencies' responses to solicitations from the U.S. Fish and Wildlife Service (USFWS), and cover annual expenditures, from 1996 through 2007, that have occurred because of the HMS's status as an endangered species under the ESA. Table 5 shows that the combined annual federal and state expenditures, measured in 2009 dollars, averaged $2.2 million over the period, with federal agencies incurring 99 percent of the costs. Costs increased until 2001, then stabilized, with total annual costs averaging about $2.8 million. Table 6 shows the breakdown of costs, by agency, in 2007. All costs were incurred by federal agencies that year, and NOAA incurred about 85 percent of the total. The concentration of costs within NOAA has been true over the years. It was the only agency to report costs for 1996–98. The Coast Guard has reported costs since 1999, the National Park Service since 2002, the Marine Corps since 2004, and the Army Corps of Engineers in 2007. The Navy did not report any costs.

The *Recovery Plan* roughly indicates the total time and direct costs required to accomplish conservation goals for the HMS. In making its calculation, it assumes recovery could occur within 54 years (from 2007) with an estimated total cost of $378,425,000, or about $7 million per year. The plan explicitly recognizes the high level of uncertainty surrounding all these numbers, stating

[10] 16 U.S.C. 1436.

Table 5. Federal and State Expenditures on the Hawaiian Monk Seal, Related to Its Status as an Endangered Species, 1996–2007

Fiscal Year	Federal[a]	State[a]	Total[a]
1996	$1,388,058	$0	$1,388,058
1997	$864,848	$0	$864,848
1998	$2,114,582	$0	$2,114,582
1999	$1,501,267	$544	$1,501,811
2000	$1,648,186	$17,756	$1,665,942
2001	$2,716,718	$17,402	$2,734,121
2002	$2,717,383	$16,799	$2,734,181
2003	$2,561,323	$18,519	$2,579,841
2004	$2,661,862	$0	$2,661,862
2005	$2,500,817	$0	$2,500,817
2006	$3,028,870	$0	$3,028,870
2007	$3,178,376	$0	$3,178,376
Average	$2,240,191	$5,918	$2,246,109

Source: U.S. Fish and Wildlife Service. *Federal and State Endangered and Threatened Species Expenditures Fiscal Year*, various years.

[a] 2009 dollars.

that they reflect "the best case scenario (which is extremely improbable given recent trends) …. Realistically, the population is not expected to recover in the foreseeable future. In the future, if more is learned about the causes for the current continuing decline, it should be possible to make more informative projections about the time to recovery, and its expense." (p. x) The *Recovery Plan* also estimates that activities directly related to recovery over the first five years following adoption of the plan would entail costs of almost $36 million. Table 7 shows a breakdown of these costs by type of activity and by year. These cost estimates come from 2007, when the *Recovery Plan* was last revised, which was prior to the petition-induced process that generated the current proposal for revising the HMS critical habitat. Hence, the cost estimates from the *Recovery Plan* represent the overall costs of conservation for the HMS, absent costs associated with this proposed designation.

Table 6. Federal Expenditures, by Agency, on the Hawaiian Monk Seal, Related to Its Status as an Endangered Species, 2007

Agency	Expenditures (2009 dollars)
Army Corps of Engineers	$34,141
Coast Guard	$177,641
Fish and Wildlife Service	$230,503
Marine Corps	$575
National Park Service	$7,345
NOAA	$2,728,170
Total	$3,178,376

Source: U.S. Fish and Wildlife Service. *Federal and State Endangered and Threatened Species Expenditures Fiscal Year 2007*.

Table 7. Estimated Cost for First Five Years of Recovery Efforts Outlined in the HMS *Recovery Plan* ($ thousand)

	FY 01	FY 02	FY 03	FY 04	FY 05	Subtotal	Total
Crucial Threats							
1. Food limitation	1,920	1,900	1,900	1,900	1,900	9,520	
2. Entanglement	1,260	1,260	1,260	1,260	1,260	6,300	
3. Shark predation	300	300	300	300	300	1,500	
Subtotal – Crucial Threats							17,320
Serious Threats							
4. Infectious diseases	605	585	585	585	585	2,945	
5. Habitat loss	250	50	50	0	0	350	
6. Fishery interaction	200	200	200	200	200	1,000	
7. Male aggression[a]	-	-	-	-	-	0	
8. Human disturbance	800	800	800	800	800	4,000	
Subtotal – Serious Threats							8,295
Moderate Threats							
9. Biotoxins	250	125	125	75	75	650	
10. Vessel groundings	0	0	0	0	0	0	
11. Contaminants	50	0	0	0	0	50	
Subtotal – Moderate Threats							700
Essential Long-term Recovery Actions							
12. Monitoring & Research	1,550	1,600	1,650	1,550	1,550	7,900	
13. MHI Management Plan	200	200	150	150	150	850	
14. Implement Recovery Plan	170	170	170	170	170	850	
Subtotal – Essential Long-term Recovery Actions							9,600
Total All Actions	**7,555**	**7,190**	**7,190**	**6,990**	**6,990**	**35,915**	**35,195**

Source: *Recovery Plan for the Hawaiian Monk Seal.* p. x.

[a] All included in other costs.

C. Types of Economic Costs and Benefits

The following discussion addresses the potential direct economic costs and benefits of the proposed designation, and the potential indirect, or ancillary costs and benefits.

1. Potential Direct Economic Costs

The proposed designation may directly result in two types of economic costs. One includes the incremental, additional administrative costs associated with section 7 consultations to consider the potential for federal agencies' proposed actions to result in destruction or adverse modification of HMS critical habitat. The other includes the costs associated with modifying proposed actions, or projects, to insure that the federal actions would not result in destruction of adverse modification of the habitat.

Potential Administrative Costs: Section 7 Consultations. Section 7 of the ESA allows for interagency cooperation to insure that any action funded, authorized (permitted), or carried out by a federal agency is not likely to jeopardize a listed species or to destroy or adversely modify critical habitat. A section 7 consultation is the process in which the action is reviewed to insure these requirements are met. Parties involved in section 7 consultations for the HMS include NMFS, a federal action agency (the federal action, such as permit or other authorization, provides the "federal nexus" requiring consultation), and in some cases, a state or private entity involved in the project or activity. In some cases NMFS could also serve as the federal action agency, in which case the consultation would be conducted internally between regions, divisions, or offices.

Consultations are required for activities that involve a federal nexus and may affect the species, regardless of whether critical habitat is designated. The designation of additional critical habitat for the HMS may, however, increase the effort for consultations where the project or activity in question may adversely modify critical habitat. Administrative efforts for consultation may, therefore, result in both baseline and incremental impacts on administrative costs.

In general, three different scenarios associated with the designation of critical habitat may trigger incremental consultation costs:

- **Additional effort to address adverse modification in a new consultation** - New consultations taking place after adoption of the proposed critical habitat designation may require additional effort to address critical habitat issues above and beyond those issues associated with jeopardy to the species. In this case, only the additional administrative effort required to consider critical habitat is considered an incremental impact of the designation.
- **Re-initiation of a consultation to address adverse modification –** In some circumstances there is a time lapse between the time a

consultation is completed and the time a project is finished (for example, the construction of a large development may complete consultation years before the project is constructed), or a consultation may cover an on-going activity, such as commercial fishing. In such circumstances, the proposed designation may result in re-initiation of consultations that have already been completed on a project or activity to address potential effects on the critical habitat being proposed. In this scenario, the costs of reinitiating the consultation, including all associated administrative and project modification costs, are considered incremental impacts of the designation.

- **Incremental consultation resulting entirely from critical habitat designation –** The proposed critical habitat designation may trigger additional consultations that may not occur absent the designation. Such consultations may occur, for example, for an activity for which adverse modification of critical habitat may be an issue, while jeopardy is not. These consultation may also result from the new information about the potential presence of the species provided by the designation, or be triggered in critical habitat areas that are not occupied by the species. All associated administrative and project modification costs of incremental consultations are considered incremental impacts of the designation.

The administrative costs of consultations vary, depending on the specifics of the project. Projects that are complex in nature with many associated potential impacts require additional administrative efforts to meet project and ESA goals. One way to address this variability is to show a range of possible costs of consultation. Table 8 presents estimates for project-level consultations and programmatic informal consultations for each of these three situations: (1) the incremental cost of addressing habitat-related issues in a consultation (2) the incremental costs of re-initiating a consultation and (3) a consultation initiated solely to address habitat-related issues stemming from adoption of the proposed rule. The project-level consultations can involve four-levels of effort. For projects not covered by an existing programmatic consultation, the lowest administrative costs occur for those involving technical assistance, and rise for those involving informal consultation and formal consultation. A programmatic consultation is a consultation that addresses multiple actions or projects of an agency on a program-wide or regional basis. Administrative costs associated with projects that fall under a programmatic consultation are then considered to be incorporated into the cost of the single programmatic consultation. Thus, for the purposes of determining costs, the administrative costs of a project covered by an existing programmatic consultation are not individualized.

The costs reported in Table 8 may understate the actual costs federal agencies incur to address the issues associated with consultations. A 2008 assessment of consultation costs found that NOAA Fisheries did not fully measure the amount

Table 8. Examples of Administrative Costs of a Section 7 Consultation, by Type of Consultation, 2009 dollars

	NMFS	Federal Action Agency	Third Party	Biological Assessment	Total
Additional Effort to Address Adverse Modification in a New Consultation					
Technical Assistance	$150	$250	N/A	N/A	$400
Informal Consultation	$600	$1,250	N/A	$500	$2,350
Formal Consultation	$1,300	$1,500	$900	$1,200	$4,900
Programmatic Consultation	$4,000	$3,300	N/A	$1,400	$8,700
Re-Initiating Consultation to Address Adverse Modification					
Technical Assistance	$250	$550	N/A	N/A	$800
Informal Consultation	$1,200	$2,500	N/A	$1,000	$4,700
Formal Consultation	$2,650	$3,000	$1,750	$2,400	$9,800
Programmatic Consultation	$8,000	$6,650	N/A	$2,800	$17,450
Incremental Consultation Resulting Entirely from Critical Habitat Designation					
Technical Assistance	$550	$1,050	N/A	N/A	$1,600
Informal Consultation	$2,400	$5,000	N/A	$2,000	$9,400
Formal Consultation	$5,300	$6,000	$3,500	$4,800	$19,600
Programmatic Consultation	$16,000	$13,300	N/A	$5,600	$34,900

Source: Entrix. 2009. *Draft RIR/4(b)(2) PreparatoryAssessment/IRFA for the Critical Habitat Designation of Cook Inlet Beluga Whale.* NOAA Fisheries Service, Alaska Region, Division of Protection Resources. November 17. p. 4-3. The figures reflect similarities in cost-of-living allowances for federal employees in Alaska and Hawaii.

of time federal agencies spend preparing for the official consultation process.[11] The extent of the cost underestimate is unknown and the assessment observes that, as agencies have gained experience with the consultation process, "concerns about the time spent in preconsultation have lessened."

Data from consultations initiated in 2009 provide a point of reference for estimating the number of consultations that adoption of the proposed rule would trigger. During the year, NMFS participated in 41 consultations that considered the HMS. Of these consultations, three were initiated in areas of the NWHI covered by the 1988 designation, and 38 considered proposed actions in the MHI. All of these consultations considered jeopardy-related concerns. Most of them—24—involved actions in areas that do not qualify as critical habitat or in areas proposed for exclusion. Only 14 involved actions in the areas currently being proposed.[12] Of these:

[11] U.S. Government Accountability Office. 2008. *Endangered Species Act: Many Recommendations Have Been Implemented, but Some Issues Remain Unresolved.* Memorandum GAO-09-225R Endangered Species Act to U.S. Representatives Nick J. Rahall, II, Peter DeFazio, and Jay Inslee.

[12] One project was identified as possibly overlapping with critical habitat, but boundary lines were uncertain. Despite the uncertainty, this project was incorporated into the list of projects overlapping with the proposed critical habitat designation.

- 11 were initiated by the Army Corps of Engineers, and one each by the U.S. Coast Guard, Navy, NMFS, and the USDA Natural Resources Conservation Service.
- Six were located on Oahu, four on Hawaii, two on Maui, and one on Kauai. One fisheries-related consultation considered actions located throughout the island chain.
- One of the projects required consultation that involved only technical assistance; the other 13 required informal consultation.

This information suggests that, if future conditions remain the same as in 2009, federal agencies annually will consult with NMFS on 41 projects that might affect the HMS, but fewer than half—14—of the proposed projects would involve consideration of critical habitat-related concerns triggered by the proposed designation of critical habitat for the HMS. These concerns would be addressed in new consultations. Based on the 2009 scenario, one of these 14 consultations would require only technical assistance, with administrative costs attributable to the designation similar to those shown in the top section of Table 8: about (1 x $400 =) $400 per year. The remainder would require informal consultation and the annual administrative cost would be about (13 x $2,350 =) $30,550. The total, incremental annual costs attributable to the designation would be the sum, about $30,950. This estimate is based on the assumption that the number of consultations that NMFS addresses remains the same or similar to the year 2009.

The recent addition of a programmatic consultation within the Pacific Islands region is likely to alter this scenario. On August 6, 2010, NMFS and the USACE established a programmatic consultation to streamline the consultation effort necessary for addressing ESA-related concerns for in-water and near-shore activities routinely permitted by the USACE's Honolulu District. This programmatic consultation is in place to cover actions that may require technical assistance or informal consultation. The programmatic consultation does not reduce the number of actions addressed, instead, after an initial effort, it streamlines the process and reduces the effort necessary for these routine consultations, resulting in administrative time and cost savings.[13] The agencies will renew the programmatic consultation every 5 years.

If the proposed designation of critical habitat for the HMS is adopted, the agencies would re-initiate the programmatic consultation to address critical habitat-related concerns; the middle section of Table 8 indicates the total administrative costs could be about $17,450. This amount would be spread over the five years the programmatic consultation will be in place, before it is renewed, giving an annual cost of ($17,450 ÷ 5 =) $3,490. It includes the costs associated with proposed projects reviewed under the programmatic consultation during the period. Administrative costs were again estimated

[13] Additional information regarding activities covered by the programmatic consultation is discussed under Section III of this report.

using 2009 patterns, but with the assumption that the programmatic consultation remains in place unaltered. If the pattern of consultations experienced in 2009 persists in the future, there will be 14 proposed projects per year that involve consideration of critical habitat-related concerns triggered by the proposed designation. Of these NMFS determined that 10 of these projects could have been covered by the programmatic consultation; the costs of these 10 projects would then be considered combined under the single cost of the re-initiating the programmatic consultation. The other four would involve informal consultations, with incremental administrative costs attributable to the proposed designation of (4 x $2,350 =) $9,400. The total, incremental annual costs attributable to the designation would be the sum, about ($3,490 + $9,400 =) $12,890.

The actual impact of the programmatic consultation on the administrative costs remains to be determined, and the full cost savings may not be realized. Thus, the future, incremental administrative costs attributable to the proposed designation likely would fall between the two estimates: $12,890 and $30,950 per year.

If future proposed actions do not resemble those of 2009, the administrative costs of consultations resulting from adoption of the proposed designation could be higher or lower.

Potential Project-Modification Costs: Consultation under Section 7 of the ESA, over concern that a proposed action funded, permitted, or carried out by a federal agency could destroy or adversely modify critical habitat designated for the HMS, may delay implementation of the proposed action, lead to a change in the action to reduce the adverse impact, or mitigate for impacts that cannot be avoided. If changes would occur because of jeopardy-related concerns about the action, then only the costs of incremental, additional changes arising from habitat-related concerns would be attributable to the designation. If the changes would occur solely because of the designation, then all costs associated with the changes would be attributable to the designation. The examination of proposed actions often are addressed in the context of a proposed project, which may involve discrete activities, such as construction, or a more diffuse activity, such as fishing.

The essential features of HMS habitat are not distributed evenly across the entire area. Pupping beaches and preferred haul out areas, for example, may or may not be present at the site of a future project. Consequently, the location and scope of a project, and its site-specific potential impacts on essential habitat features likely will play the largest roles in determining whether a given action would or would not adversely modify HMS critical habitat, and the steps required to avoid the impact. NMFS has, however, identified broad categories of potential modifications that may result due to impacts to a specific essential feature. NMFS anticipates that no single modification would apply to every project, but some projects impacting several features may require several modifications to insure that the activity does not adversely modify critical habitat. Table 9 briefly describes the categories of potential project

Table 9. Potential Project Modifications, Based on the Presence of Essential Features of Critical Habitat for the Hawaiian Monk Seal

Essential Features 1 & 2:[a]
Preferred Pupping Beaches and Marine Areas Adjacent to Pupping Beaches

- Date restrictions, project time constraints or area constraints
- Limitations on the size, and numbers of heavy equipment brought into the area
- Increased monitoring efforts regarding seal behavior and response to disturbance
- Increased education efforts for the public
- Increased education efforts for the project personnel
- Monitoring efforts to identify impacts to benthic community or prey species

Essential Feature 4:[a]
Preferred Haul-Out Areas

- Date restrictions, project time constraints or area constraints
- Limitations on the size, and numbers of heavy equipment brought into the area
- Monitoring efforts regarding seal behavior and response to disturbance
- Increased education efforts for the public
- Increased education efforts for the project personnel

Essential Features 3 & 5:[a]
Marine Foraging Areas & Prey Quantity and Quality

- Monitoring efforts to identify impacts to benthic community or prey species
- Monitoring efforts regarding seal foraging behavior
- Area constraints

Essential Features 6:[a]
Areas with Low Levels of Anthropogenic Disturbance

- Date restrictions, project time constraints or area constraints
- Limitations on the size, and numbers of heavy equipment brought into the area
- Limitations on access to and from the area
- Increased monitoring efforts regarding seal behavior and response to disturbance
- Increased education efforts with regards to crew access and response

[a] Numbers for Essential Features refer to Table 1. Essential Features were grouped when potential project modifications were of a similar nature.

modifications. The list is not exhaustive and does not include in the discussion specific modifications that may be entirely dependent upon the scope of a project or the intended activity. Projects that are complex in nature, with many associated potential impacts, may require additional modifications to meet project and ESA goals of not adversely modifying the habitat.

The entries in Table 9 suggest that the proposed designation may result in

delays for the implementation of future projects, especially for projects involving construction in or near critical habitat areas. Such delays may directly increase a project's cost. The prices of inputs to highway and street construction, for example, have increased about 2 percent per year for the ten years preceding the middle of the last decade, rose more rapidly for a few years, then slowed during the recent recession.[14] Cost escalation resulting from future delays, if any, stemming from the proposed designation, may fall within this range. Delay may escalate the cost of other types of projects at a different rate, or, perhaps, have no effect at all on the cost.

2. Potential Indirect Economic Costs

Indirect costs are those that result from the direct costs; they often occur later in time or farther away, but are still reasonably foreseeable. In particular, they would arise if the proposed designation led to the modification of a proposed project so it would not adversely modify the critical habitat being proposed, and the changes in the project lowered the benefits that society would realize from the project. Representatives of federal and state agencies raised concern about four types of indirect costs: time delays, project modifications, uncertainty, and stigma. All may diminish over time, as people, businesses, and communities become more familiar with designation, its processes, and its impacts.

Time-Delay Indirect Costs. Construction and other projects are generally undertaken because of an expectation that, when completed, they will generate economic benefits. If the proposed designation of critical habitat for the HMS should result in delaying the project, the economic benefits would be lost during the delay period. For example, a delay in a highway-improvement construction project that would speed traffic may cause motorists to forgo the benefits of the shorter driving times that the project promises.

Project-Modification Indirect Costs. Most project modifications are considered a direct impact to parties involved in the section 7 consultation, as they are responsible for incurring the expenses associated with procuring materials or goods associated with the implementation of the modification. Indirect costs would materialize, however, if a project modification altered the project's ability to deliver economic benefits when completed. For example, if the highway-improvement construction described above were shortened so that it would not impinge on critical habitat for the HMS, the project would not deliver the full reductions in driving times that otherwise would occur, and motorists would not realize the foregone benefits.

Regulatory-Uncertainty Indirect Costs. Most people and businesses, and communities prefer to avoid uncertainty, and realize a reduction in their economic well-being when something imposes additional uncertainty on them. Implementation of the proposed designation may, for at least awhile, create

[14] U.S. Bureau of Labor Statistics. Various months. "Highway and Street Construction." *PPI Detailed Report: Mining, Manufacturing, Services, Agriculture, Utilities, Construction."*

uncertainty about how it will affect future proposed projects. This additional uncertainty may cause households, businesses, or communities to take steps to avoid the uncertainty. For example, a business wanting to invest in a new retail outlet near one terminus of the proposed highway project described above may, conclude that the designation of critical habitat would create too much uncertainty about the timing and scale of the project and decide to invest at a less productive site elsewhere. The reduction in returns on the investment would be an indirect costs of the designation.

The interview process with other federal and state agencies revealed another type of potential indirect impact stemming from uncertainty about the proposed designation. Representatives of these agencies generally agreed that the public poorly understands the reason for designating critical habitat, and what effect the designation would have on individuals, businesses, communities, and the state. In particular, they anticipated that most people will not understand that the designation would affect only actions funded, authorized, or carried out by federal agencies that would destroy or adversely modify critical habitat for the HMS. Consequently, some may mistakenly believe the designation would impose regulatory constraints on the actions of individuals, businesses, or state agencies that do not have a federal nexus, and some may incorrectly believe it would restrict all federal activities in or near the designated areas. Because of the poor understanding of what it entails, the interviewees anticipated that the proposed designation likely would cause both federal and state agencies to incur additional costs responding to the public's concerns and clarifying the confusion.

Uncertainty-related indirect costs associated with the designation may diminish as consultations are completed and additional information becomes available on the effects of critical habitat on specific activities.

Stigma-Related Indirect Costs. The proposed designation may reduce the benefits individuals and businesses derive from properties and actions affected by the proposed designation, but not linked to any consultation, because of perception that the designation changes the stigma associated with specific uses of land and water resources. For example, the designation might induce individuals and businesses to move their activities into or away from areas included in the designation. A land developer may, for example, focus elsewhere, based on a perception that the designation will infringe on private property rights in or near designated areas, or stigmatize developments adjacent to critical-habitat areas. An indirect economic effect would be attributable to the designation only to the extent that it would be triggered by the designation, *per se*, rather than stem from other factors.

In some cases, some people, because of their distaste for the regulations associated with critical habitat, may perceive that the designation of critical habitat for the HMS results in limitations, greater than those already described, on activities in and uses of the designated areas or, perhaps, of nearby areas. The stigma they attribute to these areas may cause people or businesses to forgo the benefits associated with these activities or uses. For example, another

business may choose not to invest in a retail outlet near the critical habitat adjacent to the highway project described above, fearing that customers would avoid it if they perceived that then outlet was harmful to the critical habitat.

3. Potential Direct Economic Benefits

The proposed designation of critical habitat for the HMS may yield direct economic benefits by inducing modifications that reduce the costs of projects, or providing services desired by those who place a value on conservation of the HMS. Project-cost savings would materialize if the designation results in a reduction in the project's costs. With the hypothetical highway-improvement construction project described above, where the designation would result in truncating the project so it would not intrude on critical habitat, for example, cost savings resulting from the truncation would be a direct economic benefit.

Direct benefits would materialize to the extent that society places a value on the proposed designation's contribution to conservation of the HMS. The designation is intended to make a contribution that otherwise would not be realized. Section 3 of the ESA defines critical habitat as areas that are "essential" for the conservation of the species, indicating that the proposed designation of additional areas as critical habitat for the HMS will yield contributions to conservation that otherwise would not occur. NMFS has not quantified the contributions to conservation of the HMS likely to result from the proposed designation. It has, however, determined that all of the areas that qualify as critical habitat have the potential to contribute to conservation of the HMS. The proposed rule will increase the amount of designated critical habitat. This addition is necessary because the smaller amount previously designated is not sufficient to meet the ESA's conservation goal for the HMS.

Information from several sources supports the conclusion that the designation's contributions to HMS conservation will have economic value. A survey of Hawaiian households, conducted in 1984, found that, on average, they expressed a willingness to pay a lump sum of about $177, in 2009 dollars, to prevent the loss of the HMS.[15] If this number applies to the 400,000+ households in the state, then the total amount they would be willing to pay to prevent extinction is about $75 million.

Some tourists also place a value on conserving the HMS and its habitat. This conclusion is supported by discussions with representatives of the tourism/resort industry. Managers of the Sheraton Resort in Kauai, for example, report that, when they arrive, many tourists express interest in seeing one or more seals during their stay, and the resort has posted an informational sign at the entrance and instituted weekly educational sessions, with attendance

[15] Samples, K.C. and J.R. Hollyer. 1990. "Contingent Valuation of Wildlife Resources in the Presence of Substitutes and Complements." in R. Johnson and G. Johnson (eds), *Economic Valuation of Natural Resources: Issues, Theory, and Applications.* Boulder, CO:Westview Press.

sometimes exceeding 30 visitors.[16] They describe the tourists aware of and seeking to see a seal as those who generally fall into the category called eco-tourism. One assessment concludes that, globally, about 20—25 percent of tourists fall into this category.[17] Lifeguards at beaches frequented by tourists in Kauai substantiate this figure, reporting that about one-quarter of the tourists seem interested in seeing a seal, and, if a seal has hauled out on the beach, they go see it and take pictures. Accordingly, it seems reasonable to estimate the number of eco-tourists using the lower bound from the range cited above, 20 percent.

Table 10 presents the total number of tourists and their expenditures in 2009, by island, as well as estimates of the number of eco-tourists and their expenditures. Overall, the figures indicate that about 1.6 million visitors, with expenditures of almost $2 billion per year might be associated with a concern for the conservation of the HMS. Insofar as eco-tourists perceive it as a desirable action, the proposed designation of critical habitat for the HMS presumably would reinforce the enjoyment they derive from a visit to the islands, all else equal. The extent of its influence has not been determined, however, and there is no reliable evidence suggesting that the proposed revision to the designation would affect visitation and expenditure rates in the future.

Table 10. Estimated Number of Tourists and Their Annual Expenditures in Hawaii: Total and Eco-Tourists, 2009

	Visitors		Expenditures ($mil.)	
Island	**Total[a]**	**Eco-Tourists[b]**	**Total[a]**	**Eco-Tourists[b]**
Oahu	4,032,198	806,440	5,032	1,006
Kauai	931,425	186,285	1,032	206
Maui	1,893,800	378,760	2,472	494
Molokai	48,707	9,741	25	5
Lanai	61,334	12,267	63	13
Big Island	1,223,019	244,604	1,245	249
Total	8,190,483	1,638,097	9,869	1,973

Source: ECONorthwest

[a] Hawaii Tourism Authority. 2010. "December 2009 Island Highlights." *Monthly Visitor Statistics; December 2009 News Release*. 26 January.

[b] Assumes 20 percent of visitors are eco-tourists.

[16] Angela Vento, General Manager, and Denise Jones, Housekeeping Manager, Sheraton Kaua'i Resort, personal communication. 2010. 5-6 February.

[17] Giannecchini, J. 1993. "Ecotourism: New Partners, New Relationships." Conservation Biology. Vol. 7. p. 429-432.

Additional direct economic benefits likely would accrue to some people—in Hawaii and elsewhere—through channels that do not involve interaction with the seals. A broad body of research regarding threatened and endangered species suggests many people would enjoy an economic benefit as the proposed designation diminishes the probability that the HMS will go extinct.[18] Some of this benefit would arise because many people place a value, which economists call existence value, on knowing that a species, such as the HMS, continues to exist. Some of the benefit would arise because some people place a value, which economists call bequest value, on preserving a species for the enjoyment of future generations. Some people likely place an option value on conserving the HMS and its habitat so that, if they choose to see or otherwise interact with the seals in the future, they will be able to do so.

3. Potential Indirect Economic Benefits

Indirect economic benefits from the proposed designation could materialize through its impacts on projects and activities or on the ability of natural resources to provide things of value other than critical habitat for the HMS.

Time-Related Indirect Benefits. Indirect economic benefits might materialize if the designation results in acceleration of consultation of projects. For example, if the designation were to induce a federal action agency to consolidate into one consultation multiple consultations that otherwise would occur over a protracted period, the projects might be completed sooner. The expedited completion of projects would yield indirect economic benefits insofar as the projects would more quickly produce services, net revenues, or other benefits for the project sponsors and the general public.

Project-Modification Indirect Benefits. If implementation of the proposed designation reduces the costs of a project, the sponsoring entity likely would use the savings to undertake additional projects. If, for example, the designation truncates a highway-improvement construction project so it doesn't intrude on critical habitat, the entity building the highway might use the cost savings to improve another highway elsewhere. The benefits arising from this other project would result indirectly from the designation.

Regulatory-Uncertainty Indirect Benefits. Although the proposed designation may initially increase uncertainty for projects and activities associated with the critical habitat areas, it might reduce uncertainty over time. It might, for example, resolve uncertainty about what types of activities would be allowed to occur, or not, at a specific site. NMFS conducts each section 7 consultation on a case-by-case basis and issues a biological opinion on formal consultations based on species-specific and site-specific information. As a result, federal agencies

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[18] Richardson, L. and J. Loomis. 2009. "The Total Economic Value of Threatened, Endangered and Rare Species: An Updated Meta-Analysis." *Ecological Economics*. 1535-1548. A discussion of these benefits specific to the HMS is illustrated in the picture/science book, Ching, P. 1994. *The Hawaiian Monk Seal*. University of Hawaii Press.

and affiliated private parties who consult with NMFS under section 7 may face uncertainty concerning whether project modifications will be recommended by NMFS and what the nature of these modifications will be. This uncertainty may diminish over time, as the initial consultations following the designation of critical habitat clarify the regulatory concerns about the potential impacts on HMS habitat of different types of activities. Indirect economic benefits would materialize if this additional clarity reduces the uncertainty associated with future decisions by project sponsors and federal agencies regarding these activities.

Indirect Benefits Related to Conservation Preferences. Although some may fear that the designation of critical habitat for the HMS might stigmatize activities perceived to be harmful to the habitat and properties perceived to lie under a regulatory cloud, the reverse also may occur. Activities perceived beneficial to critical habitat for the HMS may be viewed more favorably, and properties adjacent to and managed in a manner consistent with critical habitat may experience added demand. Some tourists, for example, may prefer to do business with (and, perhaps, be willing to pay extra for the services of) tour operators and beach hotels that demonstrate and advertise their support for the conservation of HMS critical habitat.

Conservation-Related Indirect Benefits. To the extent that the proposed designation yields incremental improvements in habitat quality and, hence, incremental contributions to the conservation of the HMS, it also might yield indirect economic benefits by reducing the costs of other conservation activities and by increasing the value of services ancillary to those the HMS derives from the habitat. The reduced costs might occur, for example, if the designation leads to elimination of a contaminant from the environment, allowing recovery efforts to avoid the costs of testing for the contaminant's presence in and effects on the HMS population. The cost savings would be indirect economic benefits of the designation.

Improvements in HMS critical habitat resulting from the designation might enable the habitat to provide ancillary services with greater value than otherwise would exist. The designation might result in sufficient improvements in the quality of water in areas used by swimmers and surfers that these users place a higher value on their recreational experience, for example. If so, then the increase in the value of the recreational services derived from the habitat area would be an indirect benefit of the designation. A set of studies conducted early last decade supports the conclusion that many people place an economic value on services derived from reefs included in the proposed designation, and the value would increase if the designation yields improvements to these services. They examined the value residents of and visitors to Hawaii place on environmental conservation, in the context of an investigation into economic

issues associated with marine managed areas.[19] Interviews of divers, snorkelers, and individuals who did not directly use reef resources found that more than 74 percent indicated they would be willing to pay something extra for reef conservation. For this entire group, the average willingness to pay was $3.15, in 2009 dollars, per experience; for just the divers and snorkelers, the average was $4.23 per experience. About 55 percent of the Hawaii residents included in the survey indicated a willingness to pay for conservation of the reef resources, but the percentage was higher for non-residents: 79 percent for residents of the mainland U.S., and 63–80 percent for residents of other countries. Although this research did not focus on conservation of the HMS, *per se*, its findings suggest that many residents and visitors would indirectly receive economic benefits from the designation if it yields incremental improvements in reef conservation.

[19] Cesar, H., P van Beurkering, and A. Friedlander. 2004. *Assessment of Economic Benefits and Costs of Marine Managed Areas in Hawaii*. NOAA Coastal Ocean Program, Hawaii Division of Aquatic Resources, and Department of Business, Economic Development & Tourism.

III. Activities Potentially Affected by the Proposed Designation

NMFS has identified several types of activity that, under certain conditions, may have the potential to destroy or adversely modify proposed critical habitat for the HMS. The activities are listed in Table 3, above. If the requisite conditions should materialize for a proposed activity that would be funded, authorized, or carried out by a federal agency, the agency, called an action agency, may consult with NMFS to determine the nature of the potential threat to the critical habitat and to identify appropriate steps to protect the habitat. These steps might entail modifying the activity to reduce its impact on critical habitat, mitigating impacts that cannot be avoided, or developing a reasonable and prudent alternative to the activity. This section describes each type of activity, the threat to critical habitat it poses, the federal nexus associated with it, the extent of the activity in the critical habitat, the baseline protections already in place that may afford protection for critical habitat, and the potential impacts of the proposed designation on the activity

A. In-Water and Coastal Construction

1. Description of the Threat

NMFS has determined that in-water and coastal construction are potential threats to the essential features of critical habitat for the HMS in specific areas 12-16 (Niihau – Hawaii) in the MHI, as well as in specific areas 1, 2, 5, and 8 (Kure, Midway Islands, Laysan, and French Frigate Shoals) in the NWHI. These activities are more likely to take place in the MHI than in the NWHI; activities in the NWHI would probably occur only in association with maintenance of existing structures, necessary facilities, or camps.

Construction activities pose potential threats to the essential habitat features in four potential ways: 1) coastal construction may reduce the amount or value of available haul-out area in preferred HMS habitat; 2) in-water construction may reduce the numbers of available prey; 3) in-water construction may reduce the amount or value of available shallow, sheltered, marine habitat adjacent to preferred pupping areas utilized by moms and pups; and 4) activities associated with construction and related activities may increase the potential for anthropogenic disturbance, thus making monk seals avoid or abandon preferred haul-out areas or pupping areas.

Actions associated with coastal and in-water construction that could impact HMS critical habitat include, but are not limited to, construction or repair of shoreline structures and facilities, such as breakwaters, docks, piers, pilings, bulkheads and boat ramps. Actions could also include transportation projects, such as road widening, bridge reconstruction, or harbor restoration. Construction in or affecting streams may also have the potential to impact nearshore marine water quality. Increased sedimentation may reduce the viability of prey species for the HMS; increased chemicals or waste materials,

including toxic organic and inorganic chemicals, may be toxic to prey species or a source of contaminants for bioaccumulation in HMS through the food chain.

2. Federal Nexus

The federal nexus for in-water and coastal construction projects may materialize when projects are funded, permitted, or carried out by any federal agency. Most often the potential nexus for such projects would materialize via the U.S. Army Corps of Engineers (USACE) and the U.S. Department of Transportation. USACE has regulatory authority to issue permits under Section 10 of the Rivers and Harbors Act of 1899 and under Section 404 of the Clean Water Act. Under Section 10 of the Rivers and Harbors Act, the USACE has authority over work in or over navigable waters of the U.S. or for work which affects the course, location, condition or capacity of such waters. Activities requiring a Section 10 permit include construction of piers, wharves, bulkheads, dolphins, marinas, ramps, floats, intake structures and cable or pipeline crossings, dredging and excavation and artificial reefs. Section 404 of the Clean Water Act requires approval from the USACE before discharging dredged or fill material into the waters of the U.S. Projects that might require a Section 404 permit include deposition of fill or dredged material in waters or wetlands; site-development fill for residential, commercial or recreational developments; construction of revetments, groins, breakwaters, levees, dams, dikes, and weirs; pile driving; establishing sandy beaches; or placement of riprap and road fill. The USACE also may engage more directly in construction projects by supporting and carrying out the construction of facilities for the military, as well as civil works projects. The latter include maintenance dredging, improvements to harbors, projects to restore ecosystems and provide environmental services, and programs to reduce damage from future floods.

Two agencies within the U.S. Department of Transportation provide funding or permits to the Hawaii Department of Transportation (HDOT) for in-water and coastal construction projects that might affect HMS critical habitat. The Federal Highway Administration (FHWA) funds bridgework, roadwork, and ferry terminal maintenance. The Federal Aviation Administration permits aircraft/airport repairs and maintenance, and HDOT receives federal funding for several airports that extend into shoreline areas being considered for designation as critical habitat for the HMS: Kalaupapa (Molokai), Kalaeola (Oahu), Port Allen and Lihue, (Kauai), and Kahului (Maui).

3. Extent of the Activity within the Critical Habitat Study Area

The U.S. Army Corps of Engineers and the Hawaii Department of Transportation most often initiate consultation on in-water and coastal construction projects, and the following discussion focuses on these two agencies. Similar impacts would materialize for consultations initiated by other agencies, such as the Department of Defense, Coast Guard, or U.S. Fish and Wildlife Service, that initiate consultations less frequently.

a. U.S. Army Corps of Engineers

The USACE would provide a federal nexus for in-water and coastal construction and related activities that it undertakes or sponsors and for those that it authorizes through its regulatory permit authority.

The USACE has completed construction projects throughout the MHI and it may undertake future projects that might result in adverse modification of the proposed critical habitat for the HMS. Currently, however, the Honolulu District office is unable to specify the nature, location, and timing of such projects.

The Civil Works branch of the Honolulu District of the USACE has indicated that it currently is in the process of investigating and developing about five civil-works projects that, if implemented, may have the potential to adversely affect one or more of the critical habitat areas being proposed for designation, but it has not specified the projects.[20] A list of civil-works projects provided by the USACE, however, suggests that these projects may include: the North Kohala Navigation Improvement Project on Hawaii Island (improvement or construction of boat-launching facilities and navigational improvements); the Launiupoko Shore Protection project on Maui (protect shore adjacent to Launiupoko Park); and the Barbers Point Harbor Project on Oahu (offshore entrance channel, inshore channel, inshore basin, and wave absorbers).[21] Such projects usually take several years to move from concept to completion, and progress through the process depends on multiple factors, including assessments of their technical and financial feasibility and the availability of adequate funding. The USACE also anticipates that future maintenance and repair work may adversely modify the critical habitat being proposed.

When it has determined that doing so is feasible and appropriate, the USACE uses dredged material to replenish beaches.[22] For example, it has placed sand dredged from Honolulu Harbor to prevent beach erosion and expand a public park as part of the Sand Island shore protection project on Oahu. The Honolulu District is also responsible for the cleanup of Formerly Used Defense Sites throughout Hawaii, and for the restoration of facilities still in use. Restoration activities might entail cleanup or removal of hazardous and toxic wastes, such as polychlorinated biphenyls; removal or abatement of exposure to asbestos and lead paint; removal of underground storage tanks; cleanup and removal of explosive ordnance and chemical weapons. The Honolulu District has not identified any foreseeable projects that it anticipates might result in adverse modification of critical habitat being proposed for the HMS.

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[20] Athline Clark. Environmental Coordinator/Project Manager, USCOE, Honolulu District. Personal Communication. 25 May 2010.

[21] USACE, Honolulu District. 2010. *Civil Works Projects List: Resource Agency Line Item Review.* 12 May.

[22] USACE, Honolulu District. 2010. *About the Honolulu District.* January 22. Retrieved 11 May 2010 from http://www.poh.usace.army.mil/aboutUs.htm.

The USACE also routinely receives applications for permits that would enable applicants to undertake construction and related activities. The Honolulu District currently is unable to estimate the number of permit applications it likely will receive for projects that might result in adverse modification of the critical habitat being proposed for the HMS. Hence, in the discussion of potential impacts, below, NMFS extrapolated from its history of past consultations.

Absent information from the USACE regarding the extent of the USACE's in-water and coastal construction activities within the critical habitat study area, NMFS examined its history of past consultations for relevant information. The discussion, below, of the potential impacts of the proposed designation on these activities provides the results of this investigation.

b. Hawaii Department of Transportation

In recent years, about 44 percent of the annual revenues the HDOT uses for the construction, repair, and maintenance of roads, highways, and bridges have come from federal sources, which also account for about 14 percent of the revenues the department uses to acquire capital equipment and operate the state's mass transit system.[23] Over the past decade, the department has received, on average, more than $150 million of federal funding per year for improvements to the state's roads, highways, and bridges. Some of these lie in or near areas being proposed for designation as terrestrial critical habitat for the HMS, raising the possibility that construction, repair, and maintenance activities on the facilities might adversely modify the habitat's essential features.

The HDOT is unable to identify locations where specific projects may overlap with the proposed critical habitat. The possibilities are illustrated, however, by a six-year Highways Modernization Plan released in January, 2009.[24] Figure 1 shows the location of projects included in the six-year plan.[25] It calls for shoreline protection projects in these locations:

- Oahu: Kamehameha Highway, in the vicinity of Hauula, Ka'a'awa, and Kawailoa Beach.
- Kauai: East Kauai.
- Maui: Honoapiilani Highway, Kahului Beach Road, and North Kihei Road.
- Island of Hawaii: East Hawaii.

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[23] TRIP. 2009. *Future Mobility in Hawaii: Meeting the State's Need for Safe and Efficient Mobility.* September. Retrieved 5 June 2010 from http://www.tripnet.org/Hawaii_Report_Sep_ 2009.pdf

[24] Hawaii Department of Transportation. 2009. State Unveils Comprehensive Six-Year Highways Modernization Plan. 22 January. Retrieved 5 June 2010 from http://hawaii.gov/dot/news/state-unveils-comprehensive-six-year-highways.

[25] Hawaii Department of Transportation. Highways Modernization Plan. Retrieved 4 July 2010 from http://hawaii.gov/dot/highways/modernization.

The potential overlap, if any, between these projects and the areas being proposed for designation as critical habitat for the HMS has not been identified by the HDOT. Representatives of the HDOT have raised the possibility that the designation might lead to consultation and, perhaps, modification of plans to place concrete or other materials that would harden the seaward side of a shoreline roadway, operate machinery on beaches adjacent to a roadway, or alter the alignment of a proposed shoreline roadway.[26] Absent information regarding the potential effects on specific projects, however, it is not possible to determine what impacts, if any, the proposed designation of critical habitat for the HMS would have on the economic costs and benefits associated with the HDOT's highway-construction activities.

The Hawaii Department of Transportation receives federal funding for several airports that extend into shoreline areas being considered for designation as critical habitat for the HMS: Kalaupapa (Molokai), Kalaeola (Oahu), Port Allen and Lihue, (Kauai), and Kahului (Maui). In discussions with the NMFS, the HDOT requested information regarding potential impacts to activities at these sites but it was not able to identify any activities planned for these areas. Areas of overlap identified appeared to be located in areas that are unlikely to have construction activities associated with them, due to the proximity to the runways. The HDOT recognized that these areas are likely to remain clear of structures to meet requirements necessary for landing aircraft. Based on information provided by the HDOT, NMFS was not able to identify additional potential impacts to the HDOT as result of the proposed designation of critical habitat for the HMS at these sites.

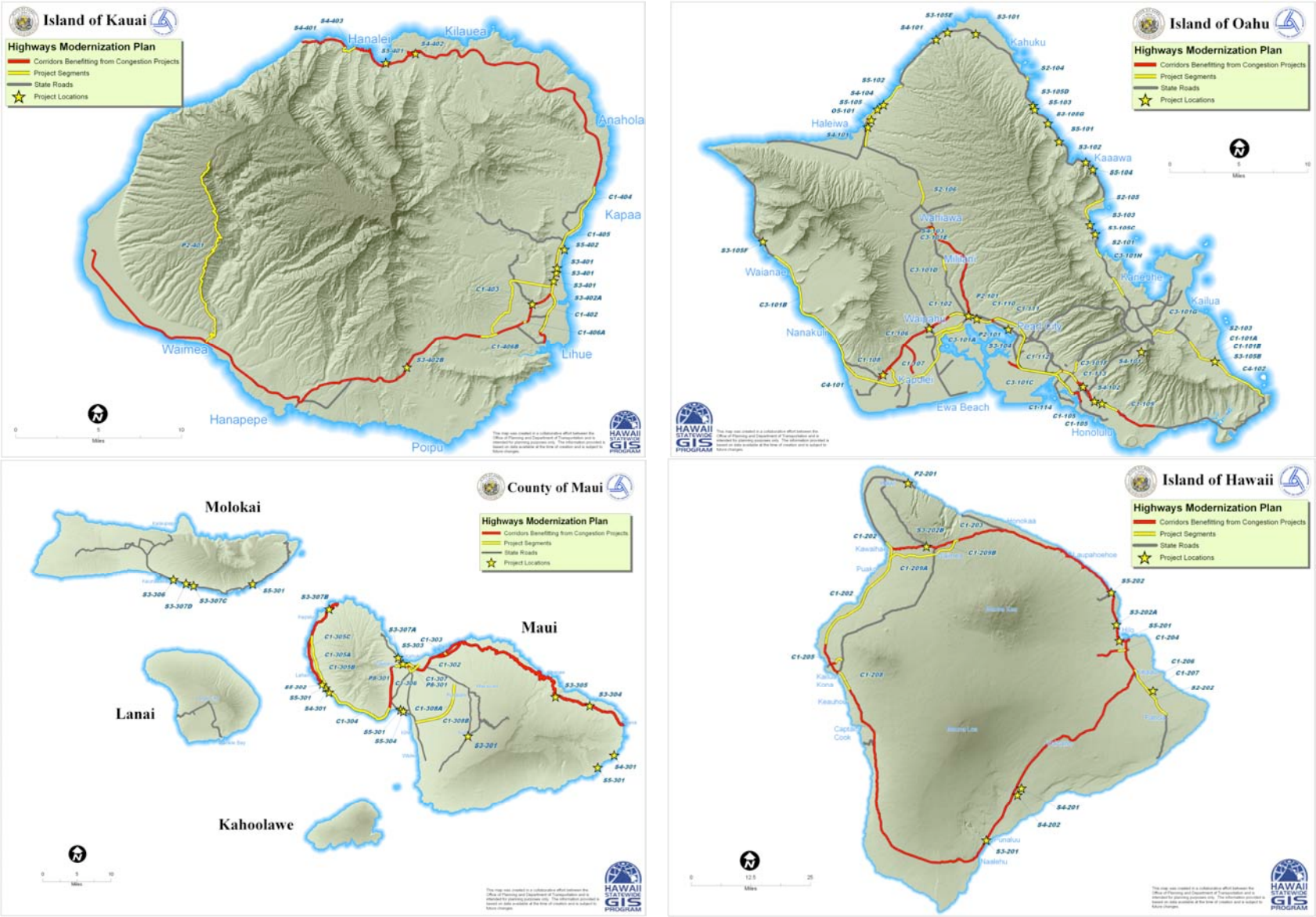
4. Baseline Protections

The discussions in Section II.B. and the appendix describe the federal laws and actions that provide baseline protection for the proposed HMS critical habitat that might be adversely modified by potential in-water and coastal construction projects. Additional protection is provided through a programmatic general permit, issued in 2005 by the USACE to the State of Hawaii, through the Department of Land and Natural Resources, for small-scale, beach nourishment and restoration projects, applicable throughout the state. The general permit aims to discourage hard shoreline armoring and encourage beach-restoration projects. This aim is consistent with Hawaii's statutory (HRS 201A-2) objectives for beach protection:

- Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion.

[26] Susan Papuga and David Shimokawa, Hawaii Department of Transportation. Personal communication. Various dates.

Figure 1. Proposed Projects in the Highways Modernization Plan



- Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities.
- Minimize the construction of public erosion-protection structures seaward of the shoreline.

The general permit is integrated with another from the USEPA, under two distinct federal regulatory programs. One is the USACE's regulatory authority regarding the discharge of dredge spoils or other material into the waters of the U.S., under Section 404 of the Clean Water Act. The other is USEPA's authority, which it has delegated to the Hawaii Department of Health, Clean Water Branch (CWB), regarding the discharge of a pollutant into the waters of the U.S., under Section 401 of the Clean Water Act. State regulations related to the general permit stipulate that "No activity will be authorized under this permit which is likely to adversely affect a federally listed threatened or endangered species or a species proposed for such a designation, including the destruction or modification of its designated critical habitat, a recognized sanctuary or refuge."[27] It is likely that measures taken to discourage hardened shorelines, and to encourage and promote the protection of Hawaii's natural shorelines will provide some measure of protection for HMS critical habitat, especially for available haul-out areas.

For an activity in Hawaii covered by a general permit, a sponsor must provide written notification of activity before it begins, in accordance with reporting requirements established by the USACE. The Honolulu District of the USACE has developed Regional Conditions to provide additional protection for Hawaii's aquatic environment. Table 11 reports two of these Regional Conditions: #12, which applies to protect threatened and endangered species, and #13, which requires a project sponsor to adopt best management practices to minimize the degradation of water quality and impacts to fish and wildlife resources. These conditions may provide baseline protection to critical habitat for the HMS.

5. Potential Economic Impacts of Critical Habitat Designation on In-Water and Coastal Construction

At this point in time there is insufficient information to determine the proposed designation's potential impacts on these activities. NMFS, however, anticipates that, if the proposed designation results in project modifications, these likely would include:

- Date restrictions, project time constraints or area constraints.

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[27] Department of Land and Natural Resources. 2005. *Instructions for General Application Category I Small Scale Beach Nourishment Projects (SSBN).* May. Retrieved 11 May 2010 from http://hawaii.gov/dlnr/occl/documents-forms/applications-forms/SSBNguide-CatI.doc/at_download/file.

Table 11. Baseline Protections Incorporated by the Honolulu District into Regional Conditions of USACE Nationwide Permits for In-Water Construction

REGIONAL CONDITION 12 (Endangered Species)

1) A survey of the project area shall be performed just prior to commencement or resumption of construction activity to ensure that no protected species are in the project area. If protected species are detected, construction activities shall be postponed until the animal(s) voluntarily leave the area.
2) If any listed species enters the area during conduct of construction activities, all activities shall cease until the animal(s) voluntarily depart the area.
3) All on-site project personnel shall be apprised of the status of any listed species potentially present in the project area and the protections afforded to those species under Federal laws.
4) Any incidental take of marine mammals shall be reported immediately to NOAA Fisheries! 24-hour hotline at 1-888-256-9840. Information reported must include the name and phone number of a point of contact, location of the incident, and nature of the take and/or injury. Note: Conditions 12.1-12.4 pertain to projects within waters that may support listed marine mammals and/or sea turtles. Additional requirements may be designated by the Corps as appropriate for specific projects
5) Pursuant to the Endangered Species Act, any take of federally protected species (other than marine mammals) must be reported to the U.S. Fish and Wildlife Office of Law Enforcement in Honolulu.

REGIONAL CONDITION 13 (Standard Best Management Practices)

The following measures (as applicable) shall be incorporated into projects to minimize the degradation of water quality and impacts to fish and wildlife resources:

1) Turbidity and siltation from project-related work shall be minimized and contained to the immediate vicinity of the project through the appropriate use of effective silt containment devices and the curtailment of work during adverse tidal and weather conditions.
2) The work shall be conducted in the dry season or when any affected stream has minimal or no flow, to the extent practicable. The work shall be discontinued during flooding, intense rainfall, storm surge, or high surf conditions where runoff and turbidity cannot be controlled. Shoreline work will be done during low tides as much as possible.
3) Dredging/filling in the marine/aquatic environment shall be scheduled to avoid coral spawning and recruitment periods.
4) Dredging and filling in the marine/aquatic environment shall be designed to avoid or minimize the loss of special aquatic sites (coral reefs, wetlands, riffle-pool complexes, etc.) and compensatory mitigation shall be implemented for the unavoidable loss of special aquatic sites.
5) All project-related materials and equipment (dredges, barges, backhoes etc) to be placed in the water shall be cleaned of pollutants prior to use.
6) No project-related materials (fill, revetment rock, pipe etc.) shall be stockpiled in the water (intertidal zones, reef flats, stream channels, wetlands etc.).
7) All debris removed from the marine/aquatic environment shall be disposed of at an approved upland or ocean dumping site.
8) No contamination (trash or debris disposal, alien species introductions etc.) of adjacent marine/aquatic environments (reef flats, channels, open ocean, stream channels, wetlands etc.) shall result from project-related activities.
9) Fueling of project-related vehicles and equipment shall take place away from the water and a contingency plan to control petroleum products accidentally spilled during the project shall be developed. Absorbent pads and containment booms shall be stored on-site, if appropriate, to facilitate the clean-up of accidental petroleum releases.
10) Any under-layer fills used in the project shall be protected from erosion with suitable material (such as precast concrete armor or mat units) as soon after placement as practicable.
11) Any soil exposed near water as part of the project shall be protected from erosion (with suitable material such as plastic sheeting, filter fabric etc.) after exposure and stabilized as soon as practicable (with vegetation matting, hydroseeding etc.).
12) Silt fences, silt curtains, or other diversion or containment structures shall be installed to contain sediment and turbidity at the work site (a) parallel to and within 10 feet of the toe of any fill, or soil exposed within 25 feet of a standing or flowing waterbody, if the fill site has a downslope or surface connection to the waterbody; and (b) adjacent to any fill placed or soil exposed within a standing or flowing waterbody. All silt fences, curtains, and other structures shall be installed properly and maintained in a functioning manner for the life of the construction period where fill material and exposed soils might cause transport of sediment or turbidity beyond the immediate construction site.

Source: USACE, Honolulu District.

- Limitations on the size, and numbers of heavy equipment brought into the area.
- Increased monitoring efforts regarding seal behavior and response to disturbance.
- Increased education efforts for the public.
- Increased education efforts for the project personnel.
- Monitoring efforts to identify impacts to benthic community or prey species.
- Limitations on access to and from the area.
- Monitoring efforts regarding seal foraging behavior.

Project-modification costs likely would be incurred by the sponsor of the proposed project or activity.

a. U.S. Army Corps of Engineers

The USACE has indicated that the proposed designation would increase the time required to review permit applications, but it is unable to quantify the impact or its cost.[28] In-water construction activities occur throughout many waterways in proposed critical habitat areas. Because the specific location of future in-water construction activities are not known, this analysis assumes that past actions may be a reasonable proxy for understanding the location of future actions. A review by NMFS of the consultation history for 2009 found 13 consultations with the USACE on proposed projects that overlap with the areas being proposed as critical habitat for the HMS. If the conditions of 2009 apply in the future, the same number of proposed projects would require additional effort in consultations that would otherwise occur, to address concerns about their impact on critical habitat for the HMS. One of these would require technical assistance only, and the data in Table 8 indicates the administrative cost would be (1 x $400 =) $400. The other 12 would require informal consultation, with administrative costs of (12 x $2.350 =) $28,200. The overall, annual administrative costs would total $$28,600 per year.

A programmatic consultation, recently established between NMFS and USACE in the Pacific Islands Region will affect the level of administrative costs. This programmatic consultation will streamline the consultation effort necessary for in-water and near-shore projects and activities routinely permitted by the USACE's Honolulu District. Through the streamlined process, NMFS has oversight to confirm that each proposed project or activity complies with criteria described in the programmatic consultation. The following types of actions may fall under this programmatic consultation: 1) site preparation for above –or over-water construction; 2) survey activities; 3) marina or harbor repair & improvement; 4) piling repair & removal; 5) buoy installation & repair; 6) maintenance dredging; 7) other minor discharges and dredging excavation; 8)

[28] Athline Clark. Environmental Coordinator/Project Manager, USACE, Honolulu District. Personal communication. 25 may 2010.

utility line installation & repair; 9) outfall structure repair & replacement; 10) bank stabilization; 11) stream clearing; 12) road construction, repair, and improvement; 13) bridge repair & replacement; and 14) vessel removal. An action may be consulted on separately if it does not meet the criteria established under the programmatic consultation. Projects not covered under the programmatic consultation include: 1) blasting; 2) pile-driving, pre-drilling for pile-driving; 3) new construction dredging or in-water trenching; 4) construction of new or expanded effluent discharge systems; 5) construction of new bank stabilization structures; 6) exploration or construction within estuaries or the marine environment that cannot be conducted from a work vessel or an existing bridge, dock or wharf; and 7) any use of treated wood in marine or aquatic habitats (other than pressure-treated). The programmatic consultation does not alter the number of proposed projects or activities NMFS will review, only the administrative effort and costs associated with those it covers.

A final designation of critical habitat will trigger re-initiation of the programmatic consultation to address any concerns specific to critical habitat for the HMS. This review may cause revisions to the programmatic consultation, potentially changing the number and types of activities it covers. The data in Table 8 suggest that the administrative cost of the re-initiation will total about $17,450. NMFS has determined that, if the programmatic consultation had been in place in 2009, it would have covered all but four of the 14 proposed projects or activities that overlapped with the proposed critical habitat. The four proposed projects not covered by the programmatic consultation would each have required an informal consultation. The data in Table 8 suggest that the administrative costs would have been about $2,350 for each of these four consultations, totaling about $9,400. This information suggests that, if the proposed designation is adopted, the subsequent re-initiation of the programmatic consultation would cost about $17,450, but once it is completed, if future proposed projects and activities are similar to those of 2009, the administrative costs would be about $9,400 annually. The average annual cost over the five-year period of the programmatic consultation would be this amount plus one-fifth the re-initiation cost (about $3,490), or about $12,890. Project-modification costs, if any, would add to the total.

The incremental costs would be lower if the designation were to affect fewer consultations per year. They would be higher if it were to affect more consultations per year, or result in a higher incidence of informal or formal consultations. Such an outcome would occur, for example, if the designation resulted in a consultation that otherwise would involve technical assistance becoming, instead, an informal or formal consultation. Existing information, however, does not support an estimate of the extent to which the future incremental consultation cost attributable to the designation would be lower or higher than $400 per year, once re-initiation of the programmatic consultation is completed.

Expanding a consultation to consider concerns about a proposed construction project's impacts on the proposed critical habitat for the HMS may result in

modifications to the project to insure that it would not adversely modify the essential features of the critical habitat. Table 9 briefly describes potential modifications to construction projects that might result from the proposed designation of critical habitat for the HMS. The USACE has not presented sufficient information to identify the incremental costs of the project modifications identified, since many of these costs are assumed by the permit applicant. Information regarding these costs has also been sought from outside sources, but responses have not been received in time to be addressed in this draft report. Additional responses, if any, will be addressed in the final analysis.

b. Hawaii Department of Transportation

NMFS' records of ESA consultations conducted during the period, 2006–09, show one highway-related project in an area proposed for designation as critical habitat for the HMS. This number, however, may not accurately represent the potential overlap between highway-construction projects and critical habitat for the HMS, because some highway projects may have been addressed in consultations, but records link them to the USACE without identifying the HDOT's role. Implementation of the Highway Modernization Plan may generate more consultations over the next five-six years, but the HDOT has not provide sufficient information to estimate the number of project that might be affected by the proposed designation, or the extent of the potential incremental increase in administrative costs or project-modification costs attributable solely to the designation.

B. Dredging and Disposal of Dredged Materials

1. Description of the Threat

NMFS has identified dredging and the disposal of dredged materials, associated with both new construction and maintenance operations, as activities that may pose a threat to the essential features of the proposed HMS critical habitat. These activities may occur in conjunction with in-water construction projects described in the preceding section, or as part of distinct projects aimed at maintaining navigation channels. Specifically, dredging may adversely modify the essential features of the proposed HMS critical habitat through direct removal of prey species. The activity of dredging also may impact water quality, possibly causing increased sediment, or the re-introduction of toxic substances into the water column. Both of these potential impacts could decrease either the quality or quantity of available prey species. Dredging activity over an extensive amount of time also has the potential to cause disturbance, causing Hawaiian monk seals to abandon adjacent preferred haul-out areas.

The disposal of dredged materials also may similarly adversely modify the essential features of the proposed critical habitat by diminishing the abundance of prey in or adjacent to the disposal area, adversely affecting water quality, or causing enough disturbances to induce seals to abandon preferred areas. Threats associated with the disposal of dredged materials can occur along

shorelines, as when material is deposited to replenish a sandy beach. The expansion of sandy beaches can also, however, result in long-term improvements or expansions of haul-out areas for the monk seals.

2. Federal Nexus

Section 404 of the Clean Water Act gives the USACE permit authority to regulate dredging and other activities that discharge dredged or fill material into the waters of the U.S. Section 402 of the Clean Water Act gives the U.S. Environmental Protection Agency (USEPA) permit authority to protect marine waters from pollution. USEPA has delegated this authority to the Hawaii Department of Health's Clean Water Branch.

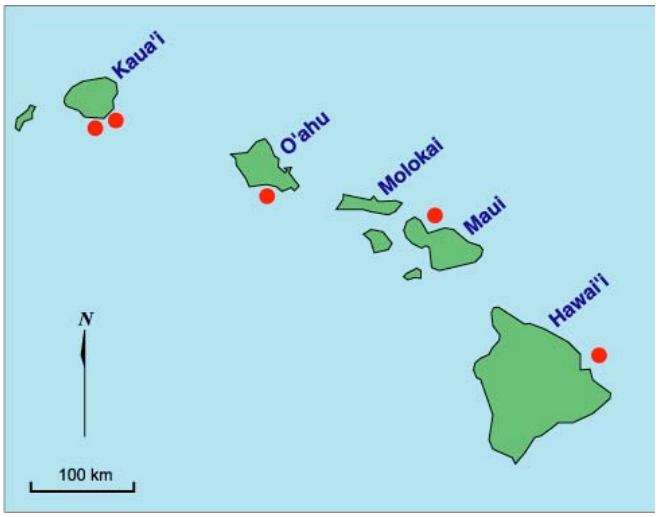
The USEPA also has federal authority under the Clean Water Act, with the aims of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. In 1974, it delegated some of its authority to the State of Hawaii, where it rests with the Department of Health's Clean Water Branch (CWB). Under Section 401 of the Clean Water Act, this delegated authority requires that any applicant for a federal license or permit to conduct construction or other activities that may result in any discharge into navigable waters must provide the licensing or permitting agency (the USACE) with a certificate from CWB that the discharge will comply with the state's water-quality standards and other water-resource protection requirements. Conditions of the Section 401 certification become conditions of the federal permit.

The USEPA also has designated the five sites, shown in Figure 2, as approved sites for the disposal of dredged materials. It retains responsibility for ensuring that disposal of materials at any of the sites satisfies the requirements of the Clean Water Act.

3. Extent of the Activity within the Critical Habitat Study Area

Potential projects of greatest concern are those that involve maintenance dredging of harbors and navigation channels, dredging intended to provide sand for the replenishment of eroded beaches, and occasional dredging to establish new marinas and other facilities in the MHI. The USACE's Honolulu District retains responsibility to maintain federally authorized depths within most of the commercial ports and several small boat harbors; the U.S. Navy conducts dredging in Pearl Harbor. The HDOT's Harbor Division conducts maintenance dredging for a small number of state-operated harbors. Some municipalities or private entities may also conduct maintenance dredging.

Figure 2. Location of Hawaiian Ocean Disposal Sites



Source: Torresan, M.E., and Gardner, J.V.,2000. *Acoustic Mapping of the Regional Seafloor Geology in and Around Hawaiian Ocean Dredged-Material Sites.* Retrieved 28 August 2010 from http://geopubs.wr.usgs.gov/open-file/of00-124/index.html.

As discussed above, the disposal of dredged materials may be a threat to critical habitat for the HMS. Disposal sites are authorized by USEPA. Five sites for ocean disposal are shown in Figure 2. Three of these disposal sites lie at depths that would be incorporated into the proposed critical habitat for the HMS, which extends down to 500 meters. The South Oahu disposal site extends from a depth of about 350 meters to about 450 meters. The depth of the Kahului disposal site, near Maui, ranges from about 320 meters on the southern boundary to about 400 meters on the north boundary. The Honolulu District of the USACE responded that the Hilo and Kahului sites have been used sparingly and mainly by the USACE and the HDOT Harbors Division. The South Oahu site has received nearly all of the material that has been deposited at the five sites. It primarily receives dredged material deposited by the Navy, the USACE, and the HDOT Harbor Division from Honolulu Harbor, Barbers Point Harbor, and Pearl Harbor. Responses form the Honolulu District indicated that most dredging for navigational purposes occurs in areas not included in the proposed designation, but expressed concern that the ocean disposal sites used for these projects may be affected by the designation.

All dredging activities should occur under a permit issued by the USACE. Between 2004 and 2009, the Honolulu District awarded four contracts for maintenance dredging of small harbors in the MHI, two on Oahu and one each on Maui and Kauai.[29] Each of these projects occurred in harbors that are not included in the proposed designation of critical habitat. Disposal of dredged material from this type of project may occur in a location that might adversely modify the essential features of areas that are being proposed for designation, but it typically occurs at upland sites.

NMFS' consultation records for the period, 2006–09, show three consultations for small beach nourishment projects within the areas being proposed for designation as critical habitat for the HMS. The projects were located on Kauai, Maui, and Hawaii Island. Each consultation was requested by the Hawaii

[29] USACE. 2010. "Dredging Program." *Navigation Data Center.* Retrieved 4 July 2010 from http://www.ndc.iwr.usace.army.mil/dredge/dredge.htm

Department of Land and Natural Resources, and involved technical assistance only.

4. Baseline Protections

The discussions in Section II.B. and the appendix describe the federal laws and actions that provide baseline protection for the proposed HMS critical habitat that might be adversely modified by future projects involving dredging and the disposal of dredged materials. Additional protection is provided through a programmatic general permit, issued in 2005 by the USACE to the State of Hawaii, through the Department of Land and Natural Resources, for small-scale, beach nourishment and restoration projects, applicable throughout the state. The general permit aims to discourage hard shoreline armoring and encourage beach-restoration projects.

The general permit integrates two distinct federal regulatory programs. One is the USACE's regulatory authority regarding the discharge of dredge spoils or other material into the waters of the U.S., under Section 404 of the Clean Water Act. The other is authority delegated by USEPA to the State of Hawaii, where it rests with the Clean Water Branch (CWB) of the Department of Health. CWB's regulatory authority derived from the USEPA has several parts, one of which applies to dredging activities. Subsection 401(a) of the Clean Water Act requires that any applicant for a federal license or permit to conduct construction or other activities that may result in any discharge into navigable waters must provide the licensing or permitting agency (the USACE) with a certificate from CWB that the discharge will comply with the state's water-quality standards and other requirements of the Clean Water Act. The objective of this requirement is to ensure that federally permitted activities, such as those that secure permits from the USACE under subsection 404 of the Clean Water Act will not adversely affect the existing uses, designated uses, and other applicable criteria established by the state. State regulations related to the general permit stipulate that "No activity will be authorized under this permit which is likely to adversely affect a federally listed threatened or endangered species or a species proposed for such a designation, including the destruction or modification of its designated critical habitat, a recognized sanctuary or refuge."[30] The standards put forth by the State of Hawaii and the certification process may be considered a baseline protection for Hawaiian monk seal critical habitat.

[30] Department of Land and Natural Resources. 2005. *Instructions for General Application Category I Small Scale Beach Nourishment Projects (SSBN).* May. Retrieved 11 May 2010 from http://hawaii.gov/dlnr/occl/documents-forms/applications-forms/SSBNguide-CatI.doc/at_download/file.

5. Potential Impacts of Critical Habitat Designation on Dredging and Disposal Activities

At this point in time there is insufficient information to determine the proposed designation's potential impacts on these activities related to dredging and disposal. NMFS, however, anticipates that, if the proposed designation results in project modifications, these likely would include:

- Date restrictions, project time constraints or area constraints.
- Limitations on the equipment brought into the area.
- Increased monitoring efforts regarding seal behavior and response to disturbance.
- Increased education efforts for the project personnel.
- Monitoring efforts to identify impacts to benthic community or prey species.
- Limitations on access to and from the area.
- Efforts to reduce concentrations of identified hazardous substances.

The sponsor of a proposed project or activity likely would incur any costs associated with these modifications.

Communications from the Honolulu District office of the USACE have expressed concerns that the proposed designation of critical habitat for the HMS would have impacts on operations at the three sites designated by the USEPA for ocean disposal of dredged materials. Much of the anticipated activity at the ocean-disposal sites involves the disposal of materials dredged by the Navy from Pearl Harbor. The Navy is scheduled to apply in 2010 for reauthorization of a five-year, general permit from the USACE to undertake maintenance and construction dredging of the Pearl Harbor Defensive Sea Area.[31] The dredging would occur in areas not included in the proposed designation of critical habitat for the HMS, but the disposal of dredged materials that are not contaminated and satisfy other criteria established by the USEPA would occur in the ocean, at the South Oahu Ocean Dredged Material Disposal Site. The Navy has consulted with NMFS on previous reauthorizations of the permit, and it likely would do so in the future, with or without the proposed designation. The data in Table 8 indicate that the incremental administrative costs arising from addressing habitat-related concerns to the consultations would be about $400 for a technical-assistance consultation, $2,350 for an informal consultation, and $4,900 for a formal consultation.

Investigations conducted elsewhere of the impacts of dredging on species listed under the ESA concluded that the impacts likely would persist for a short term and have little impact on species used to and tolerant of turbid water, although

[31] USACE, Honolulu district. 2005. "Public Notice of Re-Authorization for General Permit" Reference Number GP-2005-01. 25 August. Retrieved 4 July 2010 from http://www.poh.usace.army.mil/pa/ PublicNotices/PN20050825%20POH-2005-100.pdf.

there might be benefits from scheduling dredging and disposal activities to address the life-cycles of specific species.[32] If these concerns are addressed by the anticipated programmatic consultation covering the USACE's routine activities, the designation may have little impact.

Information provided by the USACE indicates that, in recent years, it has issued 2–6 dredging permits annually, with the disposition of dredged materials about evenly distributed between ocean disposal and beach nourishment.[33] The number located in areas being proposed for designation as critical habitat for the HMS is unknown, but most of them likely either occur in established harbors and other areas not included in the proposed designation, or involve routine dredging that would be covered by the recently established programmatic consultation between the USACE and NMFS. Information provided by the USACE regarding the designation's potential impacts is not sufficient to determine with greater specificity the nature or the extent of the potential impacts, if any.

Communications from the Hawaii Department of Land and Natural Resources expressed concerns that the proposed designation would have impacts on projects intended to replenish sandy beaches. The information provided by the department regarding these concerns, however, is insufficient to determine the potential impacts, if any.

NMFS recognizes that, under appropriate circumstances, expansion of sandy beaches can enhance the essential features of critical habitat for the HMS, but beach-replenishment activities might adversely modify other essential features. Impacts on the abundance of prey or extended replenishment activities, for example, might induce monk seals to abandon preferred foraging or haul-out areas. The nature and extent of these impacts may be brief or long-lasting, depending on the project's scope and extent. Determining the specifics of the designation's potential impacts on beach-replenishment activities likely would involve a detailed assessment of a project's specific location, timing, and duration. It may also require additional monitoring to develop a better understanding of long-term impacts.

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[32] Maryland Environmental Service. 2003. *Biological Assessment on the Potential Impacts of Dredging and Dredged material Placemetn Operations on Shortnose Sturgeon in the Chesapeake Bay, Maryland.* USACE, Baltimore District. October. Retrieved 4 July 2010 from http://el.erdc.usace.army.mil/tessp/pdfs/2003NABBA-draft.pdf.

[33] Farley Watanabe. Archaeologist, USACE, Honolulu District. Personal communication. 16 August 2010.

C. Energy Projects

1. Description of Threat

Energy projects are associated with construction activities but are considered separately here due to the variation in the types of projects (among and between the various types of energy projects), the unknowns regarding the future use of such energy, as well as the uncertainty associated with potential impacts. The potential development of facilities to generate electricity from Hawaii's ocean resources is receiving attention from state and local governments, private industry and academic researchers. Energy projects and associated activities having the potential to overlap with the proposed HMS critical habitat may include those that seek to generate electricity from ocean thermal energy, wave energy, and wind energy. Projects anticipated in the area likely would require the construction or placement of a structure in the marine environment, anchoring of the structure to the ocean floor, the installation of cables to conduct electricity ashore, and periodic maintenance.

NMFS has determined that energy projects may alter ecosystem dynamics and affect the proposed critical habitat. In general, the anticipated energy projects pose a potential threat to the essential features of critical habitat for the HMS in several ways, similar to those associated with other in-water and coastal construction projects. Energy projects may have additional effects, but little is known about these projects and how their effects differ from those of other types of projects. Depending on their location and scope, future energy projects may impact the essential features of the proposed HMS critical habitat in these ways: 1) in-water construction may reduce the numbers of available prey, by reducing available prey habitat or by reducing the quality of prey habitat; 2) in-water construction may reduce the amount or value of available shallow, sheltered marine habitat adjacent to preferred pupping areas utilized by moms and pups; and 3) activities associated with construction and related activities may increase the potential for anthropogenic disturbance, thus making monk seals avoid or abandon preferred haul-out areas or pupping areas.

While it is clear that the structures and activities associated with these projects may have an impact on the essential features of the proposed critical habitat, variation in project design, anticipated energy production, and environmental conditions at a specific location will all play a role in defining the scope of these impacts. Uncertainties regarding the variation between projects, designs, locations, and structure make it difficult to define the potential impacts, or to determine the specific, potential project modifications that might be necessary to avoid the impacts. Consequently, NMFS has determined that it most likely will address the nature of the potential threat on a project-specific basis.

2. Federal Nexus

Consultation for energy projects may materialize through various permitting authorities. A recent assessment of permitting requirements indicates that a

project to generate electricity from wave energy would require these permits associated with federal legislation::[34]

Federal Energy Regulatory Commission (FERC): a preliminary permit and a federal hydroelectric license.

USACE: Section 404 permit (Clean Water Act), and Section 10 Permit (Rivers and Harbors Act).

USEPA (through the Hawaii Clean Water Board): Section 401 water quality certification (Clean Water Act).

U.S. Coast Guard: Private Aids to Navigation permit.

NOAA Office of Ocean and Coastal Resource Management (through the Hawaii Coastal Zone Management Program: Section 307 coastal zone consistency certification (Coastal Zone Management Act and Ocean Resources Management Act)

Projects to generate electricity from offshore wind energy likely would require similar permits. In addition, projects seeking to generate electricity from the ocean's thermal energy would have to acquire a license from NOAA under the Ocean Thermal Energy Conversion Act of 1980. NMFS has the authority to issue permits under the MMPA, which may provide another avenue for consultation. All potential marine energy projects likely would require consultation with NMFS under section 7 of the ESA regarding the potential impacts on all listed species, including the HMS.

Projects located on submerged federal lands, more than three nautical miles offshore, will require leases, easements, and rights-of-way from the Bureau of Ocean Energy Management, Regulation and Enforcement (previously the Minerals Management Service). FERC will have authority for licensing energy-generating facilities, regardless of location.

3. Extent of the Activity within the Critical Habitat Study Area

Hawaii's Department of Business, Economic Development & Tourism cites Hawaii's ocean energy potential as significant and interest in utilizing that energy at a commercial level has existed for years. Attention focuses primarily on generating electricity from the ocean's thermal energy, wave and tidal energy, and wind energy. Projects seem most likely to emerge in the marine portion of the critical habitat proposed in the specific areas of the MHI: #11 Kaula Island, #12 Niihau Island, #13 Kauai Island, #14, Oahu Island, #15, Maui County, and #16 Hawaii Island. (*see* Table 2).

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[34] Oregon Wave Energy Trust. 2009. *Wave Energy Development in Oregon: Licensing and Permitting Requirements.* July. Retrieved 9 July from http://www.oregonwave.org/wp-content/uploads/Licensing-and-Permitting-Study.pdf.

Some of projects have been introduced in experiments and planning within the MHI, but not at a commercial level. Experiments with ocean thermal energy in Hawaii included a mini-facility off Keahole point in 1979, a converted Navy tanker off the coast of Kona in 1980, and research at the Natural Energy Laboratory of Hawaii Authority in the 1990s. Projects in the planning and preliminary, unfinanced stages reveal an interest in placing a demonstration project off the shores of Oahu around Barbers Point feeding into Naval facilities at Pearl Harbor and a separate, commercial project near the Kahe power plant. Current plans indicate both projects likely would have the energy harness structure anchored offshore, outside the 500 meter, maximum depth of the proposed critical habitat for the HMS, but power cables and construction activities supporting the projects probably would overlap with the proposed critical habitat.

The Hawaii National Marine Renewable Energy Center, at the University of Hawaii, facilitates commercialization of devices that convert wave energy to electricity and aims to accelerate development and testing of technologies that convert ocean thermal energy to electricity. The center is primarily funded by the Energy Efficiency & Renewable Energy Office of the U.S. Department of Energy.[35]

Testing of the feasibility of converting wave energy to electricity has been underway off Oahu's windward coast, near Kaneohe Marine Base, since 2004. FERC has issued a preliminary permit for another wave-energy generator off Pauwela point, on Maui. Onshore wind-energy projects also have the potential to affect the marine environment in the MHI, with some projects in the design phase considering laying cable to deliver electricity from both Lanai and Molokai to Oahu.

Although the on-going experiments and planning provides anecdotal evidence of the possibilities, projects undergoing scoping in the preliminary permit phase may not be constructed for a variety of reasons unrelated to the critical habitat for the HMS. Current information is insufficient to determine the full scale and scope of future energy projects that might have impacts on the critical habitat being proposed for the HMS.

4. Baseline Protections

Anticipated energy projects have the potential to affect a wide range of species—including the HMS, sea turtles, cetaceans, coral reef communities, and marine fish—that are the focus of protection efforts by federal and state agencies, as well as by private entities, such as commercial and recreational fishing stakeholders. This range of efforts offers widespread, baseline protection for the essential features of the critical habitat being proposed for the HMS. The discussions in Section II.B.2 and the appendix describe the federal laws and

[35] Hawaii National Marine Renewable Energy Center. "Mission." Retrieved 28 August 2010 from http://hinmrec.hnei.hawaii.edu/about/mission/.

actions that generally provide baseline protection; additional protection is provided by the required federal permits and licenses, described above.

5. Potential Impacts of Critical Habitat Designation on Activities Related to Energy Projects

Since energy projects were not proposed in the areas, in the NWHI, currently designated as critical habitat, NMFS has yet to make specific recommendations about project modifications for energy projects that may be required to mitigate potential adverse impacts on HMS critical habitat. Historically, NMFS' efforts in the Pacific Islands Region to mitigate impacts on habitat have addressed nearshore concerns, such as those associated with coral, reef and essential fish habitat, and have not addressed concerns regarding the laying of electric cables across or through extensive areas of marine habitat. Modifications for the construction-related aspects of future energy projects may parallel those anticipated for other construction activities, as described above. Modifications for the placement of electric cable sfor such projects, however, have not been addressed. NMFS has concluded that the magnitude of impacts on the habitat with regards to these energy projects are unknown at this time and will have to be evaluated on a project-specific basis. NMFS, however, anticipates that, if the proposed designation results in project modifications, these likely would include:

- Date restrictions, project time constraints or area constraints.
- Limitations on the size, and numbers of heavy equipment brought into the area.
- Increased monitoring efforts regarding seal behavior and response to disturbance.
- Increased education efforts for the public.
- Increased education efforts for the project personnel.
- Monitoring efforts to identify impacts to benthic community or prey species.
- Limitations on access to and from the area.
- Monitoring efforts regarding seal foraging behavior.

The sponsors of proposed projects likely would the costs, if any, associated with these modifications.

D. Activities that Generate Water Pollution

1. Description of Threat

NMFS has identified water pollution as a threat to the critical habitat being proposed for the HMS, particularly in the specific areas #13-16 of the MHI (Kauai, Oahu, Maui County, and Hawaii Island) that have experienced greater levels of development. Efforts to manage water quality distinguish between pollution from point and nonpoint sources. Point source pollution involves the discharge of wastewater from a pipe or other point source into a waterway.

Nonpoint source pollution comes from diffuse sources, such as polluted runoff from farmland or roadways, and dust and other materials blowing out to sea.

Water pollution, whether from point or nonpoint sources, has the potential to degrade the quality of the water and adversely modify the essential features of the critical habitat by reducing the quantity or quality of available prey species. While pollutants may reduce the viability and numbers of prey species, they may also reduce the quality of the available prey resources. Some pollutants in the marine environment are known to have dynamic consequences including causing bioaccumulation of compounds in predators that have been linked to immunological response in some species.

2. Federal Nexus

The primary statutory authority for controlling water pollution is the Clean Water Act (33 USC § 1251 et. seq), which aims to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Toward these ends, it provides regulatory and non-regulatory tools to significantly reduce the direct and indirect discharge of pollutants. Authority for implementing and enforcing the Clean Water Act rests with the U.S. Environmental Protection Agency (USEPA), but, for waters in the state's jurisdiction, it delegated this authority in 1974 to the State of Hawaii, where it rests with the Clean Water Branch (CWB) of the Department of Health. CWB is required to maintain its programs consistent with minimum statutory and regulatory requirements.

Subsection 402 of the Clean Water Act requires all facilities that discharge pollutants into waters of the United States from any point source, such as a pipe or major drain, to obtain a National Pollutant Discharge Elimination System (NPDES) permit.[36] Clearing, grading, and other construction activities that increase the likelihood of erosion may be required to install best management practices to reduce the amount of sediment reaching water bodies. Any NPDES permit must contain limitations to reflect the application of available treatment technologies, as well as any more stringent limitations needed to ensure compliance with water quality standards.

USEPA maintains oversight responsibility for the CWB's actions under the Clean Water Act, but it does not bear direct responsibility for CWB's issuance of NPDES permits. Hence, the issuance of a permit by CWB is not an action subject to consultation under section 7 of the ESA. Instead, consideration of the potential impacts of a proposed NPDES permit on the proposed critical habitat for the HMS would occur in accord with a memorandum of agreement between

[36] Pollution from nonpoint sources enter water bodies from diffuse sources, as when runoff from a field carries pollution into a stream. Federal programs to control pollution from nonpoint sources do so with voluntary and may involve incentives, but typically do not involve mandatory requirements.

USEPA and NMFS.[37] It calls for NMFS to provide CWB with information about designated critical habitat for the HMS and for CWB to provide NMFS with copies of draft permits, with USEPA taking appropriate actions to ensures timely sharing of information on permits that may raise issues regarding impacts to critical habitat. If NMFS and USEPA are concerned that a proposed NPDES permit would have more than a minor detrimental impact on the critical habitat, either or both will contact CWB to discuss identified concerns. If unable to resolve the concerns, NMFS will contact the regional office of USEPA in a timely manner and USEPA will coordinate with NMFS and CWB to ensure that the permit will comply with all applicable requirements of the Clean Water Act, including Hawaii's water quality standards, and will discuss appropriate measures protective of the critical habitat. For proposed NPDES permits that would have more than minor with detrimental effects on the critical habitat, NMFS and USEPA will work with CWB to reduce the detrimental effects stemming from the permit. Where CWB and NMFS and are unable to resolve the issues, USEPA may, in appropriate cases, object to and federalize the permit where consistent with its authority under the Clean Water Act. USEPA, however, has no authority to require changes to a permit already issued by CWB and existing permits are not subject to section 7 consultations. In general, NPDES permits can be in effect for no more than five years without being renewed.

In contrast with point source pollution, which involves a regulatory permit process, federal involvement with nonpoint source pollution typically involves encouraging the adoption of pollution-reduction practices, such as ecosystem restoration or development of settling basins that catch polluted runoff before it reaches a waterway. Section 319 of the Clean Water Act, for example, authorizes USEPA to issue grants to Hawaii to assist it in developing and implementing a program to control nonpoint sources of water pollution by assessing nonpoint source pollution problems and causes within the state, and adopting and implementing a management program to control the nonpoint source pollution,. Also, section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 provides guidance to states and territories on the types of management measures that should be included in their Coastal Nonpoint Pollution Control Programs to receive federal approval and implementation funding.

These types of programs may require consultation on the associated management plan or program initiative to insure that program-supported activities do not impact a listed species and its habitat. In this case the federal agency issuing funds would undergo consultation. Recipients of funding are less likely to undergo consultation individually because funding is often restricted to the actions outlined by the management plan or program. The

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[37] USEPA, USFWS, and NMFS. 2001. "Memorandum of Agreement Between the Environmental Protection Agency, Fish and Wildlife Service and National Marine Fisheries Service Regarding Enhanced Coordination Under the Clean Water Act and Endangered Species Act." *Federal Register*. February 22. Volume 66, Number 36. Pp. 11201-11217. Retrieved 18 August 2010 from http://www.epa.gov/fedrgstr/EPA-WATER/2001/February/Day-22/w2170.htm.

discussion in Appendix B, on the laws and regulations that provide baseline protection for HMS critical habitat, presents additional information.

3. Extent of the Activity within the Critical Habitat Study Area

Facilities with point source discharges likely to have a substantial impact on the quality of surface waters are required to apply for individual NPDES permits. These include, for example, discharges of pollutants from specific outfalls or pipes from factories, mines, other industrial facilities or municipal wastewater treatment plants, or from construction sites, sewer overflow points, and concentrated animal feeding operations to receiving waters. CWB issues about 30 individual permits annually.

Many types of activities and emissions are covered by a general NPDES permit.[38] It authorizes common and necessary activities that likely discharge pollutants, but the discharge is determined to be insignificant or benign or there is little or no alternative to the activities and discharge. Activities covered by the general permit must secure authorization from CWB, but they are not required to obtain an individual permit. The general permit covers discharges of 1) storm water associated with industrial activities; 2) storm water associated with construction activities, including excavation, grading, clearing, demolition, uprooting of vegetation, equipment staging, and storage areas that result in the disturbance of equal to or greater than one acre of total land area; 3) treated effluent from leaking underground storage tank remedial activities; 4) once-through cooling water less than one million gallons per day; 5) hydrotesting water; 6) dewatering effluent; 7) treated effluent from petroleum bulk stations and terminals; 8) treated effluent from well drilling activities; 9) treated effluent from recycled water distribution systems; 10) storm water and certain non-storm water from a small municipal separate storm sewer system; and 11) circulation water from decorative ponds or tanks. CWB annually authorizes about 400 activities under the general permit.

4. Baseline Protections

The discussions in Section II.B, the appendix, and the preceding sections describe the federal laws and actions that generally provide baseline protection. Additional protection is provided by a memorandum of agreement aimed at enhancing coordination between USEPA and NOAA regarding the USEPA's responsibilities under the Clean Water Act and their intersection with the ESA.[39] Under the agreement:

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[38] Hawaii State Department of Health, Clean Water Branch. 2008. *Clean Water Branch Standard Comments.* August 22. Retrieved 25 May 2010 from http://hawaii.gov/health/environmental/env-planning/landuse/landuse.html/CWB-standardcomment.pdf.

[39] USEPA, U.S Fish and Wildlife Service, and NOAA. 2001. "Memorandum of Agreement Between the Environmental Protection Agency, Fish and Wildlife Service and National Marine Fisheries

- USEPA will coordinate with NMFS and CWB to ensure that each NPDES permit will comply with all applicable requirements of the Clean Water Act, including the adoption and enforcement of standards prohibiting toxic discharges.
- Where USEPA and NMFS agree that information indicates an existing water-quality standard is not adequate to avoid adversely modifying designated HMS critical habitat, USEPA will work with CWB to obtain revisions in the standard or, if necessary, it will revise the standards through the promulgation of federal water quality standards under Section 303(c)(4)(B) of the Clean Water Act.
- For NPDES permits having detrimental effects on the HMS critical habitat that are minor, USEPA and NMFS intend to work with CWB to reduce the detrimental effects stemming from the permit.
- For NPDES permits that have detrimental effects on the HMS critical habitat that are more than minor, and where CWB and NMFS are unable to resolve the issues, USEPA and NMFS intend to work with CWB to remove or reduce the detrimental impacts of the permit. In appropriate cases, they will object to a proposed permit likely to have detrimental effects and USEPA will federalize the permit consistent with its authority under the Clean Water Act.

Hawaii's Water Pollution Law (HRS Ch. 342D) is the state's principal regarding water quality law. It incorporates portions of the federal Clean Water Act, and establishes a general policy of preventing degradation of state surface waters. Under this policy, the quality of waters with quality higher than the water quality standard established by the CWB should not be diminished, unless the change is justifiable for important social or economic purposes.

The CWB has established water-quality standards for marine waters consistent with the requirements of recreation and the protection and propagation of fish, shellfish, and wildlife, and it is implementing programs to satisfy the standards. The standards have three primary components. The first is a general policy of avoiding degradation of existing water quality. The second is specification, for individual areas of water, of one or more designated beneficial uses that should not be impaired by poor water quality. The third is a set of criteria, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use. When criteria are met, water quality will generally protect the designated use.

Although these protections are in place, not all marine areas meet the state's standards; therefore specific sites or areas may require additional protections. In 2008, CWB issued a report, approved by EPA, listing 209 marine areas that

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Service Regarding Enhanced Coordination Under the Clean Water Act and Endangered Species Act." *Federal Register*. Vol. 66, No. 36. 22 February. pp. 11202–11217.

fail to have water quality sufficient to support their designated uses.[40] For Kauai, 28 areas were listed, which is 13 percent of the total number of listed waters. For the other islands, the results were: Oahu 71 (34% of total), Molokai 3 (1% of total), Lanai 6 (3% of total), Maui 72 (34% of total), and Hawaii 31 (15% of total). To determine if a marine area meets water quality standards, the state monitors data for turbidity, *Enterococcus* indicator bacteria, nitrogen, nitrogen oxides, phosphorus, nutrients, and others substances. Turbidity in excess of the state's standards accounted for the listing of 154 marine areas. CWB believes the turbidity results from polluted runoff, and is seeking to reduce polluted runoff in selected watersheds. Excessive occurrence of *Enterococcus* indicator bacteria occurred in 56 of the listed areas. These bacteria may result from animal waste or soils, as well as from human sewage. Concentrations increase during rain events through stormwater runoff from streams and storm drains.

5. Potential Impacts of Critical Habitat Designation on Activities that Generate Water Pollution

At this point in time there is insufficient information to determine the proposed designation's potential impacts on these activities. NMFS, however, anticipates that, if the proposed designation results in project modifications, these likely would include area constraints; monitoring efforts to identify impacts to benthic community or prey species; or efforts to reduce concentrations of identified hazardous substance(s).

NMFS has not yet determined the relationship between individual pollutants being released in Hawaii and the essential features of critical habitat for the HMS. If the future reveals that pollutants adversely modify these essential features, the response likely would aim to reduce the concentrations, levels, or types of harmful materials released into the marine environment. Unless and until the relevant information becomes available, CWB and USEPA will be unable to identify which water-quality standards, if any, would require revision, which proposed NPDES permits, if any, would require efforts by CWB, NMFS, and USEPA to eliminate or reduce detrimental impact on critical habitat, or which facilities, if any, operating with a NPDES permit would require modification to reduce emissions of pollutants.

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[40] Hawaii State Department of Health, Clean Water Branch. 2008. *2006 State of Hawaii Water Quality Monitoring and Assessment Report: Integrated Report To The U.S. Environmental Protection Agency and The U.S. Congress Pursuant To Sections §303(D) and §305(B), Clean Water Act (P.L. 97-117), Chapter I Marine Waters.* January 11. Retrieved 25 May from http://hawaii.gov/health/environmental/env-planning/wqm/2006_Integrated_Report/2006_Chapter_I_Marine_Waters.pdf.

E. Aquaculture Activities

1. Description of Threat

NMFS has identified aquaculture activities as a potential threat to the critical habitat proposed for the HMS. Some of the potential impacts are similar to those of construction projects and location- and project-specific. They may include: 1) coastal construction that reduces the amount or value of available haul-out area in preferred HMS habitat; 2) in-water construction or running of in-water facilities that reduces the numbers of available prey, by reducing available prey habitat or by reducing the quality of prey habitat; 3) in-water construction that reduces the amount or value of available shallow, sheltered marine habitat adjacent to preferred pupping areas utilized by moms and pups; and 4) activities associated with construction and related activities that increase the potential for anthropogenic disturbance, thus making monk seals avoid or abandon preferred haul-out areas or pupping areas.

Potential water-quality impacts are similar to those associated with activities that generate point-source water pollution. The discharge of materials from an aquaculture site has the potential to degrade the quality of the water and adversely modify the essential features of the critical habitat by reducing the quantity or quality of available prey species for the HMS outside the facility. Pollutants may also reduce the quality of available prey resources. Some pollutants in the marine environment are known to have dynamic consequences including causing bioaccumulation of compounds that have been linked to immunological response in some species.

NMFS recognizes that, although some activities associated with aquaculture may adversely modify critical habitat for the HMS, some aquaculture projects may have a positive impact as well. Aquaculture production may decrease commercial fishing pressure on stocks of fish that are important prey species for the HMS, for example.

2. Federal Nexus

Offshore aquaculture projects would require a permit from the USACE, under Section 10 of the Rivers and Harbors Act of 1899, for the creation of any obstruction to navigation." If the aquaculture facility does not interfere with navigation, the USACE will not require a Section 10 permit, but will, if relevant conditions are satisfied, issue a Letter of Permission that states the USACE has reviewed the applicant's proposal and will allow the proposed activities to occur as proposed. The letter will serve as a permit. Any permit issued by the USACE will be conditioned on compliance with regulations established by the U.S. Coast Guard regarding the use of lights, etc. to mark the structures.

The USEPA, under Section 318 of the Clean Water Act, has asserted (40 C.F.R. 122.24 jurisdiction to require NPDES permits for aquaculture projects in the open ocean. It also has authority, under the Ocean Dumping Act (33 U.S.C. 1412 (1999)) to permit the dumping into U.S. waters of material that will not

unreasonably degrade or endanger human health or the marine environment, ecosystems, or economic potentialities. Facilities discharging less than 45,454 kg per year can be exempted from the permit requirements. When determining if a permit is required, USEPA emphasizes the amount of feed and other materials introduced into the water rather than the amount of waste generated within the aquaculture cage.

Large projects or those expected to have significant environmental impacts may be required to satisfy the requirements of the National Environmental Policy Act (42 U.S.C. 4321). The burden will lie with the federal agency proposing the action (such as permit or license issuance) to identify environmental impacts, to avoid and minimize those impacts, and to explore alternatives that may be less environmentally damaging. The permitting agency will prepare an environmental assessment or, if the project is significant and controversial, an Environmental Impact Statement.

3. Extent of the Activity within Critical Habitat Study Area

Aquaculture is the farming of plants and animals in water. Table 12 lists species that already are being produced or may be produced in Hawaii's marine waters. The Hawaii Department of Agriculture promotes the development and expansion of aquaculture operations in the state, as part of the department's efforts to promote greater food self sufficiency for the islands, as well as export industries.

Table 12. Marine Aquaculture Products in Hawaii

Commercial Products Being Grown	
Abalone (red, Haliotus rufens and Japanese, Haliotus discus hanai)	Marine shrimp for food (Penaeus vannamei
Aquatic snails (Pomacea sp.)	Microalgae (Spirulina sp., Hematococcus sp.)
Broodstock and juvenile shrimp (L. vannamei, L. monodon, L. stylirostris)	Milkfish (Chanos chanos)
Giant clams (Tridacna sp.)	Moi (Pacific threadfin)
Japanese Flounder (hirame, Parlichthys olivaceus)	Mullet (Mugil cephalus)
Kahala (amberjack, Seriola rivoliana)	Seahorses (various species)
Lobster (Homarus americanus)	Seaweed or sea vegetables (Gracilaria sp.)
Marine ornamental fish and plants (various species)	Seed clams (Mercenaria mercenaria)
Marine ornamental invertebrates (various species)	Seed oysters and clams (Crassostrea gigas, Ostrea edulis, Mercenaria sp.)
	Seed pearl oysters (Pinctada fucata, P. margartifera
Active Research Underway	
Deepwater snappers (opakapaka, Pristipomoides Filamentosus; ehu, Etelis carbunculus; onaga, E. coruscans)	Live rock
Groupers (various species)	Marine ornamental fish (various species)
Halibut	Marine ornamental invertebrates (various species)
Jacks (various species)	Sable fish

The Hawaii aquaculture industry is comprised of 2 major sectors: commercial production and research and technology transfer. Commercial aquaculture farms—inland, coastal, and offshore—exist on Oahu, Kauai, Maui, Molokai and Hawaii. Summary information on the industry comes from the State Department of Agriculture.[41] Hawaii has more than 100 aquafarms that produced products worth $27.7 million in 2003. Associated research, training, and technology-transfer activities had a value of $12 million. The Department projects further expansion, with more species cultured and higher output. Sectors targeted for greater development include: 1) high value seafood products for local consumption and export; 2) macroalgae or seaweeds for food or specialty chemicals; 3) microalgae for health foods or specialty chemicals; 4) year-round production of specific pathogen-free broodstock and seedstock; 5) marine and freshwater aquarium species for export; and 6) offshore and open

[41] Hawaii Department of Agriculture. 2010. "Answers to Twenty-Five of the Most Frequently Asked Questions about Hawaii's Aquaculture Industry." Retrieved 4 July from http://hawaii.gov/hdoa/adp/faq.

ocean production of fish and pearl oysters." Examples of projects already located in open ocean habitat include fin fish cages located off Kona on Hawaii Island and off Ewa Beach on Oahu.

Aquaculture facilities adjacent to the coast or located in marine waters have the potential to be impacted by the proposed designation of critical habitat for the HMS. Of particular interest to the industry are facilities capable of expanding into the open ocean environment and rearing fish that exhibit high values in the commercial fishing industry. One such project, recently approved by the state Board of Land and Natural Resources, plans to develop the world's first commercial farm for bigeye tuna. The cages would be located about three miles off of the west coast of Hawaii Island and suspended by a self-powered system at about 65 feet below the ocean surface. In full operation, the project would operate 12 cages over about 250 acres of ocean and produce 6,000 tons of bigeye tuna per year.[42] The potential impacts of construction and other activities associated with the project on critical habitat for the HMS remain unknown, as the project has not yet undergone consultation. Projects such as this do, however, demonstrate the potential for farming in deep water where the proposed designation of critical habitat may affect their location and operations.

4. Baseline Protections

The discussions in Section II.B, the appendix, and the preceding sections describe the federal laws and actions that generally provide baseline protection. Further discussion of these protections is presented in the sections on in-water construction and activities that generate point-source water pollution.

5. Potential Impacts of Critical Habitat Designation on Aquaculture Activities

At this point in time there is insufficient information to determine the proposed designation's potential impacts on aquaculture activities. NMFS, however, anticipates that, if the proposed designation results in project modifications, these likely would include:

- Date restrictions, project time constraints (during construction)
- Area constraints
- Limitations on the size, and numbers of heavy equipment brought into the area
- Increased monitoring efforts regarding seal behavior and response to disturbance
- Increased education efforts for the project personnel

[42] David Braun. 2009. "First Tuna Farm in U.S. Approved by Hawaii Regulators. *NATGEO News Watch*. Retrieved 11 July 2010 from http://blogs.nationalgeographic.com/blogs/news/chiefeditor/2009/10/first-tuna-farm-in-us-approved.html.

- Monitoring efforts to identify impacts to benthic community or prey species
- Efforts to reduce concentrations of identified hazardous substance(s)

The industry is new and has had little interaction with NMFS, whose records for 2006–09 show only two consultations on aquaculture projects in areas being proposed as critical habitat for the HMS. NMFS has not yet determined the relationship between different types of activities—their locations, types of facilities, species of fish being raised, the food and other materials discharged into the water, etc.—and the essential features of critical habitat for the HMS.

If the future reveals that construction and related activities likely would adversely modify the essential features of the HMS critical habitat, the response likely would aim to alter the location, timing, and duration of the activity. Similarly, if future information reveals that materials introduced into the marine environment by aquaculture projects are likely to adversely modify the essential features of HMS critical habitat, the response likely would aim to reduce the concentrations, levels, or types of harmful materials released.

F. Fisheries

1. Description of Threat

NMFS has identified fisheries as a potential threat to the essential features of HMS critical habitat in specific areas #11- 16 (Kaula Niihau, Kauai, Oahu, Maui County, and Hawaii Island). The Hawaiian monk seals feed on a large variety of prey species so, in some cases, as fisheries exploit species found in the monk seals' diet, they may decrease the abundance and availability of the prey species. Fisheries that may impact HMS critical habitat are those that harvest species that may overlap with the HMS diet, or have the potential to impact the quantity of available prey species. Federally managed fisheries may include the Bottomfish and Seamount Groundfish fishery, the Coral Reef Ecosystem Fishery, the Precious Coral Fishery, and the Crustacean Fishery; all of which are managed under the Fishery Ecosystem Plan for the Hawaiian Archipelago.

The *Recovery Plan* notes, however, that "no study of ecological competition between fisheries and seals has looked at a seal population as small as that of the monk seal living in small island ecosystems." Therefore, at this time, the impacts of fisheries on HMS foraging success and population status remain unknown. While it is clear that overlap in prey species and catch creates the potential for impacts, HMS population trends in comparison to fishing efforts may appear to conflict. The decline in HMS population can be attributed to dwindling numbers in the NWHI, where fishing efforts have been restricted for a number of years and recent management measures have negated commercial activity. In the MHI, where fishing is highly regulated and some species and areas are considered to be subject to overfishing, the HMS subpopulation is increasing and seals are considered to be generally robust in nature.

While this divergence may appear to indicate that impacts from fisheries are low, many other factors also come into play and may confound the relationship. In particular, the MHI offer habitat with low intraspecific competition, as well as low interspecific competition. In other words, the low density of seals competing for food across a wide amount of available habitat where other competing apex predators have been highly removed, gives the MHI seals a considerable advantage over their NWHI counterparts. This advantage in available food resources is reflected in the increasing population and robust size of the seals here in the MHI. As HMS populations grow in the MHI, dynamics may shift. There is insufficient information to predict with confidence if, and at what point, food resources may become a limiting factor for seals in the MHI and to what extent fisheries impacts will contribute to the food limitations.

2. Federal Nexus

As authorized under the Magnuson-Stevens Fishery Conservation and Management Act, NMFS is responsible for overseeing and implementing fishery management plans for commercial and non-commercial domestic fisheries in federal waters off of Hawaii. These plans are subject to section 7 consultation under the ESA.

3. Extent of the Activity within the Critical Habitat Study Area

The areas surrounding the NWHI have gained increased attention, due to the unique and valuable natural resources that are a part of this habitat. Increased knowledge regarding the area's resources and the threats to them has resulted in increased management measures to preserve this unique area. Similar to federal waters in the MHI, waters in the NWHI were managed in the past for stock sustainability and fisheries have been subject to various management measures aimed at protecting stock sustainability, including limits on fishing access, area closures, and catch limits. The presidential proclamation establishing the Northwestern Hawaiian Islands Marine National Monument on June 15, 2006, re-named Papahanaumokuakea (PMNM) on March 2, 2007, however, set into motion measures to close all commercial fisheries within the monument by June 15, 2011. That closure objective was completed earlier, in January 2010, with funding for compensation to affected fishing interests provided under the Consolidated Appropriations Act of 2008. Although the lobster fishery had essentially been closed since 2006, due to the annual harvest guideline being set at 0 lbs, the compensation program officially closed lobster and bottomfish fishing by compensating the remaining permit holders from the two fisheries for the economic value of their permits. Therefore, these commercial fisheries no longer overlap with the proposed designation and are not considered in this analysis. Only those federally managed fisheries overlapping with the proposed designation surrounding the MHI are considered for this portion of the discussion.

Table 13 indicates the approximate area of the marine waters proposed for designation surrounding the specific areas in the MHI. More than half the

proposed area, 2,701 mi² out of 4,787 mi² total overlaps with state waters. The remaining 2,086 mi², overlap with federal waters, which extend from 3 to 200 nautical miles offshore. Maps in Appendix A depict the overlap.

Table 13. Area of Marine Water Included in the Proposed Designation

	Area in Proposed Designation (mi^2)		
Island	**Total**	**State Waters**	**Federal Waters**
Hawaii	1,015	642	373
Kauai	326	280	46
Kaula	39	22	17
Maui	2,510	1,142	1,368
Niihau	200	170	30
Oahu	697	445	252
Total	4,787	2,701	2,086

As discussed in the threat to the species, fisheries activities that may impact HMS critical habitat are those that harvest species that may overlap with the HMS diet, or have the potential to impact the quantity of available prey species. Federally managed fisheries may include the Bottomfish and Seamount Groundfish fishery, the Coral Reef Ecosystem Fishery, the Precious Coral Fishery, and the Crustacean Fishery, all of which are managed under the Fishery Ecosystem Plan for the Hawaiian Archipelago.

Within the bottomfish fishery, more than half of the catch occurs in federal waters. Federal waters used for bottom fishing include Middle Bank (which does not overlap with HMS critical habitat), most of Penguin Bank, and approximately 45 nautical miles of bottomfish habitat in the Maui-Lanai-Molokai complex. Bottomfish in the Hawaiian Archipelago are a multi-species complex of deep-slope snappers, groupers, and jacks. Most fishing effort focuses on seven species (known as the deep 7): onaga (Etelis coruscans), ehu (Etelis carbunculus), gindai (Pristipomoides zonatus), kalekale (Pristipomoides sieboldii), hāpuʻupuʻu (Epinephelus quernes), ʻōpakapaka (Pristipomoides filamentosus), and lehi (Aphareus rutilans).

Bottomfish fishing, part of the culture and economy of indigenous people long before Europeans first arrived, continues to play important roles in the local culture. This fishery typically involves small boats. The owners and operators often fish for recreation and subsistence, but also sell small amounts of fish to cover expenses, making ambiguous the distinction between commercial and recreation/subsistence fishing. Those who sell any fish commercially are required to obtain a commercial marine license and submit to the state records on their fishing activity and catch. The number of boats engaged in commercial fishing increased in the 1970s and early 1980s, peaking at 583 vessels in 1985.

Table 14 shows the number of fishermen and boats, and the size of landings in recent years. Historically, Penguin Bank was one of the most important fishing grounds in the MHI for bottomfish, but Table 15 indicates fishing effort is more widely dispersed.

Table 14 Characteristics of the Bottomfish Fishery

Year	Total Allowable Catch (TAC)	Total Deep 7 Landings (lb)	Landings Percent of TAC	Unique Fishermen Making Deep 7 Landings	Unique Boats Making Deep 7 Landings	Deep 7 Trips	Avg. Trips per Boat	Avg. Landings per Boat (lb)	Avg. Landings per Boat per Trip (lb)
2007-08	178,000	196,147	110	351	348	2,345	7	564	84
2008-09	241,000	259,194	108	476	468	3,275	7	554	79
2009-10	254,050	208,412	82	459	451	2,794	6	462	75
2010-11	254,050	- -	- -	- -	- -	- -	- -	- -	- -

Source: NMFS, Pacific Islands Regional Office, Sustainable Fisheries.

Crabs are also an important component of the commercial crustacean fishery species in Hawaii. The dominant species in the catch is kona crab (Ranina ranina) with more than 28,000 lbs. caught annually. By weight, more than 50 percent of the kona crab are caught on Penguin Bank, which has long been an important location for kona crab net harvests.[43]

Catch information for the crustacean fishery in the MHI is limited to commerical catches as there are no federal or state reporting requirements for recreational participants. Common species harvested within this fishery include lobster

Table 15. Commercial Vessels, by Areas Fished, 2003

Fishing Zone	Number of Vessels
Island of Hawaii, State water	57
Island of Hawaii, Federal water	44
Maui, Molokai, Lanai, Kahoolawe, State water	59
Maui, Molokai, Lanai, Kahoolawe, Federal water	66
Penguin Bank, Federal Water	50
Oahu, State Water	53
Oahu, Federal Water	46
Kauai, State Water	37
Kauai, Federal Water	16
Middle Bank, Federal Water	NA
Total, State Water	206
Total, Federal Water	192
Total	398

Source: Western Pacific Regional Fishery Management Council (Council). 2009. *Fishery Ecosystem Management Plan for the Hawaii Archipelago.ˆ24 September.* Retrieved 5 June 2010 from www.wpcouncil.org/hawaii/HawaiiFEP/December12005HawaiiFEP.pdf.

(spiny and slipper), crab, and deepwater shrimp. Reporting estimates that more than 28,000 lb of kona crab (Ranina ranina) are caught annually. By weight, more than 50 percent of the kona crab are caught on Penguin Bank, which has long been an important location for kona crab net harvests.[44] Intermittent deepwater shrimp fishing has occurred in the MHI since the late 1960s. Additionally, deepwater shrimp fishing in the MHI may intermittently be harvested from areas such as Penguin Bank. As of August 9, 2010, NMFS identified one deepwater shrimp permit, and no MHI lobster permits had been issued.

Precious coral harvesting for pink, black and gold corals has occurred historically in waters surrounding the MHI since the late 1950's. Most of the black coral harvest occurs in state waters, but a black coral bed in the Auau Channel is located in the federal waters. The pink and gold corals occurring at 400-500 meters have had minimal harvesting. Despite the minimal fishing efforts, information regarding invasive species and growth rates has led to conservation measures in this fishery. Currently, the gold coral fishery has a 5-year moratorium, until June 30, 2013. NMFS indicates one precious coral permit had been issued as of August 9, 2010.

In the coral reef fisheries, the majority of total commercial catch of inshore fishes, invertebrates and seaweed comes from nearshore reef areas around the MHI, though harvests of some coral reef species also occur in federal waters. Total catch of coral reef ecosystems species are dominated by bigeye scad and mackerel scad. Other species include surgeonfish, goatfish, squirrelfish and parrotfish.

Figure 3 illustrates changes over time in the total weight and value of all commercial landings in Hawaii. Both variables increased notably at the end of the 1980s, with total value outpacing total weight. Figure 4, which illustrates the total weight of commercial landings by category, shows a more complex picture. Landings of reef fishes have remained fairly constant, landings of pelagic fishes (those from areas not close to the bottom or near to the shore) increased markedly since the end of the 1980s, and landings of bottomfishes and other fishes have decreased over that period. Both figures represent landings from both state and federal waters as the underlying data do not distinguish between the two.

4. Baseline Protections

The discussions in Section II.B, the appendix, and the preceding sections describe the federal laws and actions that generally provide baseline protection. Additional protections come from the development and implementation of management plans that emphasize an ecosystem perspective and call for cooperation from all parties actively participating in and impacting the fisheries.

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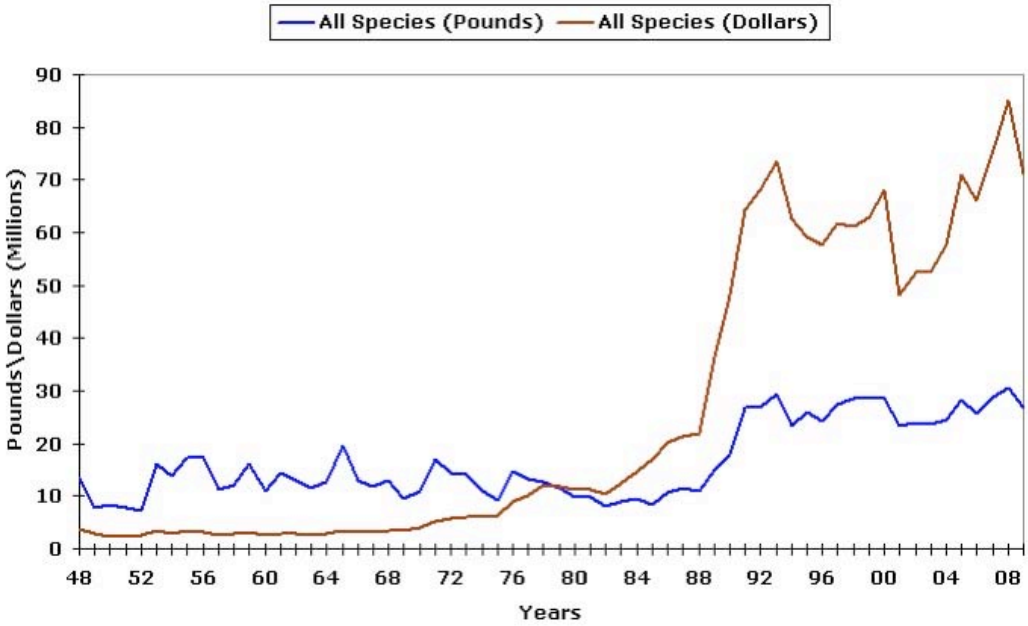
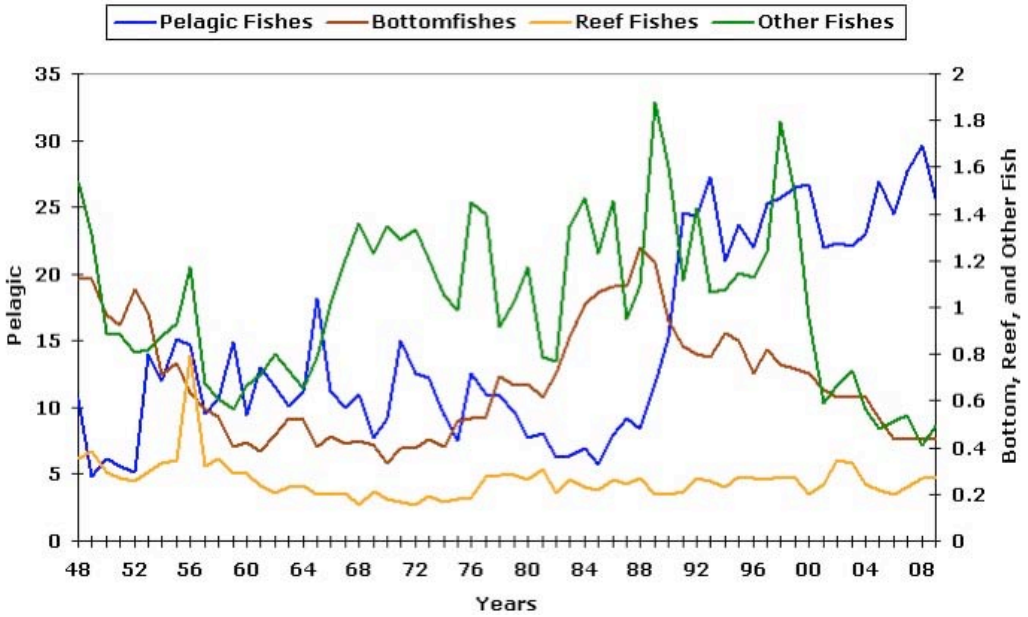
[44] Western Pacific Fishery Management Council. "Hawaii Archipelago: Fisheries Today." Retrieved 11 July 2010 from http://www.wpcouncil.org/hawaii-fisheriestoday.html.

Figure 3. Annual Total Reported Commercial Landings in Hawaii, 1948 – 2009



Source: NOAA Pacific Islands Fisheries Science Center. Retrieved 29 august 2010 from http://www.pifsc.noaa.gov/wpacfin/hi/Data/Landings_Charts/hr3b.htm.

Figure 4. Annual Total Reported Commercial Landings in Hawaii by Category, 1948 – 2009 (Million pounds)



Source: NOAA Pacific Islands Fisheries Science Center. Retrieved 29 august 2010 from http://www.pifsc.noaa.gov/wpacfin/hi/Data/Landings_Charts/hr3a.htm.

The Western Pacific Fishery Management Council, one of eight regional fishery management councils established by the Magnuson-Stevens Fishery Conservation and Management Act, recommends management measures to NMFS for the Pacific Islands fishery in the Exclusive Economic Zone, which is the area between 3 and 200 miles offshore of the U.S. coastline. They also work cooperatively with the State of Hawaii to develop management measures for fishing activities within state waters (within 3 miles of the shoreline). Recommended management measures implemented by NMFS for the Pacific Islands fishery in the Exclusive Economic Zone are then enforced by the NOAA Office of Law Enforcement, the U.S. Coast Guard, and local enforcement agencies.

In 2009, the Council adopted an ecosystem-based approach for managing fisheries in the Hawaii Archipelago.[45] This shift focuses more on managing for the sustainability of a place-based ecosystem rather than for the separate sustainability of specific species. Management of the offshore bottomfish, crustacean, precious coral and coral reef ecosystems fisheries are found in the Hawaii Archipelago Fishery Ecosystem Plan (FEP). This plan did not establish new fishery management regulation but provides a framework under which the Council will manage the fisheries. The ecosystem-based approach to this plan recognizes several objectives that should complement the aim of protecting the essential features of critical habitat. Examples of these appear in the objectives of the plan: (pp. 7-8) The first objective is "To maintain biologically diverse and productive marine ecosystems and foster the long-term sustainable use of marine resources in an ecologically and culturally sensitive manner through the use of a science-based ecosystem approach to resource management." Another is "To minimize fishery bycatch and waste to the extent practicable." A third objective is "To manage and comanage protected species, protected habitats, and protected areas." Together, these objectives indicate the Council recognizes the importance of protecting habitats for protected species, including critical habitat for the HMS, and aims to take appropriate fishery-management actions toward this end.

Data collected from the fisheries are analyzed in annual reports and utilized by the Council to modify management to adapt to the changing needs in accordance with the new ecosystem plan. Management measures are implemented by NMFS. Management measures may in turn provide some measure of protection for HMS critical habitat. Over the years, management measures to protect fisheries resources and other protected resources have included total allowable catch limits, gear modifications, time area closures, permits, the identification of essential fish habitat, and area closures.

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[45] Western Pacific Regional Fishery Management Council. 2009.*Fishery Ecosystem Plan for the Hawaii Archipelago*. 24 September. Retrieved 5 June 2010 from http://wpcouncil.org/fep/WPRFMC%20Hawaii%20FEP%20(2009-09-21).pdf.

Despite the state's restrictions on bottomfish fishing, in June 2005 NMFS determined that overfishing of the bottomfish complex was occurring in the Hawaii Archipelago.[46] NMFS noted that the overfishing was primarily occurring in waters around the MHI, rather than the NWHI. In response to a notice from NMFS that overfishing was occurring, the Council recommended and NMFS approved Amendment 14 to the Bottomfish Fishery Management Plan, which implemented an annual total allowable catch limit (TAC) for landings of Deep 7 species by the MHI commercial fishery, established federal non-commercial permits, and created reporting requirements, non-commercial bag limits and a closed season for fishing for Deep 7 species in the MHI. Amendment 14 also defined the Main Hawaiian Islands bottomfish fishing year as September 1-August 31 and implemented a TAC of 178,000 lbs for the 2007-2008 fishing year.

After reviewing the 2008 updated stock assessment, the Council recommended, and NMFS approved, a 2008-09 MHI commercial Deep 7 TAC of 241,000lbs, which is associated with an approximate 40 percent risk of overfishing for FY 2009 in the MHI management subarea, decreasing to a 25 percent risk for FY 2010. Given that the establishment of a TAC for Deep 7 bottomfish in the MHI management subarea is a precautionary measure to address overfishing in the entire Hawaiian Archipelago, it should be recognized that the probability of overfishing bottomfish in the Hawaiian Archipelago is essentially zero for all alternatives considered under the most recent stock and risk assessments.

Regulation and enforcement include the following:

Bottomfish:

- Ban on use of bottom trawls and bottom set gillnets; and ban on possession or use of any poisons, explosives or intoxicating substances to harvest bottomfish or seamount groundfish.
- Commercial fishing in requires State of Hawaii Commercial Marine License.
- Non-commercial permit and reporting for fishing in EEZ around MHI.
- Annual Total Allowable Catch (TAC) quota for Hawaii Restricted Bottomfish Species specified in annually based on the best scientific information available (fishing year is September 1 – August 31).

Crustaceans:

- Federal permit and logbook reporting
- Ban on fishing for, taking or retaining lobster with explosives, poisons or electrical shocking devices.
- Minimum size and condition restrictions for lobster.
- Notification before port landing and before offloading.
- Observer coverage when requested by NMFS.

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[46] 70 FR 34452. June 14, 2005.

Precious Corals:

- Federal permit and logbook reporting.
- Use of only selective gear.
- Bed specific quotas.
- Closed areas.
- Minimum height for pink coral.
- Minimum stem diameter for black coral.
- Moratorium on gold coral.

Coral Reef Ecosystem:

- Special permit, reporting and pre-landing.
- Notification fro any directed fishery harvesting potentially harvested coral reef taxa.
- Gear restrictions.
- Ban on possession and use of poisons, explosives or intoxicating substances to take coral reef ecosystem managed species.
- Ban on harvest of live rock and living corals except for indigenous people for traditional uses and aquaculture operations for seed stock under special permit, reporting and pre-landing notification requirement.

On 1 January 2010 one of the new regulatory measures went into effect. It requires anglers who fish in federal waters to sign up with the National Saltwater Angler Registry. The requirement aims to learn more about the recreational fish catch. Those who sign up may be surveyed to obtain information about the number of fishing trips, the number and species of fish caught, where and when fish are caught, and the economic impact of recreational fishing. The requirement does not apply to anglers fishing in state waters, or to commercial fishermen or charter operators, who are licensed under separate rules. The requirement applies to Native Hawaiians who fish in federal waters, but they will be exempt, under a provision for "indigenous people" from having to pay any future fee associated with the program. NMFS does not intend to use the registry to regulate the activities of individual anglers. Instead, it hopes to use the survey responses to describe how recreational fishing affects fish stocks, and to show the economic importance of marine recreational fishing.

All existing measures and pending recommendations were developed, analyzed and transmitted to NMFS in accordance with the Magnuson-Stevens Act in response to changing conditions in the fishery or the environmental. This precautionary approach to management of federal fisheries incorporates principles of adaptive management and uses a precautionary approach that rejects a lack of information as a basis for inaction.

5. Potential Impacts of Critical Habitat Designation on Fisheries Activities

At this point in time there is insufficient information to determine the proposed designation's potential impacts on federal fisheries activities. Adoption of the proposed designation of critical habitat for the HMS will require re-initiation of consultation regarding the activities' impacts on species listed under the ESA. The extent to which the re-initiation would result in modification to the activities remains unknown. This uncertainty is made greater because current data do not distinguish between activities occurring in state waters from those occurring in federal waters. NMFS, however, anticipates that, if the proposed designation results in project modifications, these likely would include date restrictions, or area constraints; or monitoring efforts to identify impacts to benthic community or prey species.

Ecological competition between fishing efforts and the HMS has not been fully assessed; the uncertainty associated with impacts to the essential features makes the nature of future management for these activities highly uncertain. Although ecological competition between fisheries and the HMS has been difficult to assess, there remains the possibility that future information may support efforts to alter fishery activities to protect HMS critical habitat.

Any potential impacts of the designation on fisheries activities would directly affect federally managed fisheries. Plans being considered for federally managed fisheries will undergo consultation with NMFS regarding the potential impact on species listed under the ESA and the proposed designation would result in expanding the consultation to include issues associated with HMS critical habitat. Consideration of critical habitat likely would increase administrative costs of a consultation and may result in plan modifications. The modifications might lead to loss of fishing days, area closures, or reduced catch volumes from the closure of fishing to prevent adverse modifiction of HMS critical habitat. Impacts may vary widely dependent on the extent, and duration of closures. Current information, however, is insufficient to determine the extent of these costs, should they materialize.

There also may be some indirect effects on state-managed fisheries. Many of the fishery-management plans are initiated by the Council in cooperation with the State of Hawaii, and, as such, many state management measures are initiated to complement efforts put forth by federal plans. Hence, there is the possibility that state fishery management actions may be indirectly impacted by the designation. If modifications or restrictions become necessary for the federal fisheries to insure protection of HMS critical habitat, the State of Hawaii may feel pressure to enact similar measures to complement federal efforts or to prevent shifts in the fishing efforts that could otherwise create an imbalance in the ecosystem.

The proposed designation of critical habitat for the HMS likely would have no additional effect on fishery planning, management, or regulations regarding hookings and entanglements. These impacts jeopardize the continued existence

of the HMS and, under the ESA, are relevant to the listing of the species, rather than to the designation of critical habitat. As the HMS population increases in the MHI, increased direct interactions between seals and various fisheries may occur, but these interactions are considered to be jeopardy concerns. Any protections put in place to prevent hookings and entanglements were not considered for this analysis.

G. Oil-Spill and Vessel-Grounding Response Activities

1. Description of Threat

NMFS has identified oil spills and vessel grounding response activities as potential threats to the essential features of the Hawaiian monk seal critical habitat. Oil spills and vessel groundings in the marine environment have the potential to impact the quantity and quality of prey species available for Hawaiian monk seals in the proposed areas for designation. Prey species may be removed by the initial oil spill or foraging areas may become toxic to the seals. In addition, oil-spill or vessel-grounding response efforts may increase the potential for anthropogenic disturbance, thus making monk seals abandon preferred marine or haul out areas.

The impacts of an oil spill will depend upon the volume of the spill, duration, type of petroleum product, and physical factors, such as wind, wave, and current conditions under which the spill occurs. Similarly, variables influencing the impacts of vessel groundings include the location of the grounding, the identified substrate, plans for removal, and the possible release of fluids. While oil spill preparedness plans may be consulted to insure that planning incorporates measures to identify and protect critical habitat for the Hawaiian monk seal, the spills or grounding events themselves can not be predicted or controlled. The activities that take place in response to such events may initiate section 7 consultation, however. The uncertainties associated with the scope and locations of these possible events make it difficult to determine exact modifications to planning protocols or to response and recovery efforts, but the designation of HMS critical habitat may require changes in response efforts.

2. Federal Nexus

The USCG has the authority to respond to all spills of oil and hazardous substances in the offshore/coastal zone, while the USEPA has the authority to respond in the inland zone. The USEPA and the USCG oversee the Oil Pollution Prevention regulations promulgated under the authority of the Federal Water Pollution Control Act. These regulations address spill prevention, control and countermeasure plans and facility response plans for offshore and onshore oil producers and carriers. Many vessel groundings may fall into these same categories, because they have the possibility to release hazardous substances.

A federal nexus for vessel grounding may materialize based on activities associated with the Oil Pollution Act, the response effort and habitat recovery efforts. Vessel groundings may trigger activities by federal agencies that could

be involved in financing the recovery effort; or the USACE or USEPA as activities may require permits associated with the Clean Water Act.

3. Extent of the Activity within the Critical Habitat Study Area

About 3-5 vessels ground in the Hawaiian Islands each year, with a maximum of 10.[47] Vessel groundings have the potential to occur in any of the marine components of the specific areas identified for the proposed HMS critical habitat. While activities are restricted within the PMNM, vessels do traverse areas of the monument, especially for research. In the MHI, vessel groundings may occur in any of the marine component areas of the specific areas due to traffic associated with transport, fishing, or recreation, military, or other activities. Vessel groundings may occur as a result of weather, or human error; both circumstances require planning for response. Since oil release may be a component associated with vessel groundings, groundings also have the potential of occurring in any of the marine components of the specific areas identified for the proposed HMS critical habitat. Larger oil spills are likely to occur in the more industrial developed areas of the MHI where oil consumption along with transport is a more common occurrence.

Vessel groundings and the clean-up of spills often require an emergency response that addresses multiple concerns, including the conservation of threatened and endangered species and their critical habitat. If such situations occur in the future, they generally will not allow measured assessment of the potential for a given clean-up decision to adversely modify the critical habitat areas for the HMS that are being proposed.

To address the need to make emergency decisions, the various federal agencies that might be involved have jointly developed guidance to establish a general framework for cooperation and participation among the agencies in the exercise of the respective responsibilities for spill planning and response activities.[48] The guidelines apply to the two agencies with regulatory authority over the response to spills, the U.S. Coast Guard and the USEPA, and the agencies with resource-management responsibilities, USFWS and NOAA. The procedures described in the guidelines are intended to streamline the consultation process outlined in ESA section 7(a)(2) of the ESA, better provide for the conservation of listed species, and improve oil spill planning and response procedures.

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[47] Oishi, F. 2002. "Vessel Groundings in the Pacific Islands–Hawaii and American Samoa Case Studies and Island Reports: Hawaii." *Workshop Proceedings: U.S. Flag Pacific Islands Vessel Grounding Workshops.* January and February. Retrieved 23 July 2010 from http://www.botany.hawaii.edu/basch/uhnpscesu/pdfs/sam/NOAA2002VesselAS.pdf.

[48] U.S. Fish and Wildlife Service. Oil Spill Planning and Response Activities under the National Oil and Hazardous Substances Pollution Contingency Plan and Endangered Species Act. Retrieved 5 June 2010 from http://www.fws.gov/southeast/es/pdf/OilSpillContingency.pdf.

The guidance addresses three areas of oil spill response activities: pre-spill planning activities, activities during an actual spill event, and post-spill activities. It identifies the roles and responsibilities of each agency in each area. The guidelines anticipate that the cooperative efforts among the agencies prior to a spill will identify the potential effects of spill-response activities on the critical habitat of the HMS, and jointly develop response plans and countermeasures to minimize or avoid effects on the critical habitat. Should a spill occur, the agencies will use this information to implement response actions that reduce or eliminate impacts to the critical habitat. If proposed spill-response activities would result in adverse modification of the critical habitat, the guidance clearly states what information the agencies should use to initiate emergency consultation, and the steps for formal consultation, if necessary, after the spill-response effort ends. The guidance aims to promote useful informal consultation wherever possible during spill-planning and -response. The agencies anticipate that effective informal consultation will reduce or eliminate the likelihood of having to initiate formal consultation after spill-response decisions and activities are completed.

In this context, the guidance contains this definition:

> *Emergency Consultation.* An expedited consultation process that takes place during an emergency (natural disaster or other calamity) (50 CFR '402.05). The consultation may be initiated informally. The emergency continues to exist until the removal operations are completed and the case is closed in accordance with 40 CFR 300.320(b). The Federal On Scene Coordinator of spill-response activities will continue to conduct emergency consultations, if needed, until the emergency is over and the case is closed. Formal, or informal, consultation is initated after the emergency is over, at which time the USFWS and/or NMFS evaluates the nature of the emergency actions, the justification for the expedited consultation, and any impacts to listed species and their habitats.

Application of the guidelines to develop a contingency plan that covers the areas being proposed as critical habitat for the HMS will not result in potential adverse modification of the critical habitat. Actions implemented under the plan might have such an effect, however. If the areas being proposed are designated and a spill involving these areas subsequently occurs, emergency consultations may be conducted informally to allow the Federal On Scene Coordinator to incorporate concerns about the critical habitat into decisions about response actions. If he/she anticipates that spill-response decisions and actions might adversely affect the critical habitat, the coordinator may request that a representative of NMFS to the Incident Command System oversee and be responsible for the gathering of required information to ascertain the potential impacts and evaluate alternatives. If spill-response activities (as distinguished from the spill itself) adversely modify the critical habitat, the coordinator will initiate a formal consultation on the effect of the spill response activities after on-scene operations have ended.

4. Baseline Protections

The discussions in Section II.B, the appendix, and the preceding sections describe the federal laws and actions that generally provide baseline protection. In addition, the Oil Pollution Act of 1990 mandated the development of an Area Contingency Plan for every marine planning area. The Hawaii Department of Health, Office of Hazard Evaluation and Emergency Response is developing the *Hawaii Oil and Hazardous Substances Emergency Response Plan*, a supplement to the Hawaii *Plan for Emergency Preparedness*, in accordance with guidance from the USEPA. The plans implement Hawaii's Environmental Response Law (HRS 128D and its Emergency Planning and Community Right-to Know Act (HRS 128E). These laws establish processes and funding mechanisms to develop plans and respond to the release or threatened release of hazardous substances into the environment.

5. Potential Impacts of Critical Habitat Designation on Oil-Spill and Vessel-Grounding Activities

At this point in time there is insufficient information to determine the potential incremental effects, if any, of the proposed designation on oil-spill and vessel-grounding response activities. NMFS, however, anticipates that, if the proposed designation results in project modifications to response activities, these likely would include:

- Limitations on the size, and numbers of heavy equipment brought into the area.
- Increased monitoring efforts regarding seal behavior and response to disturbance.
- Increased education efforts for the public.
- Increased education efforts for the project personnel.
- Monitoring efforts to identify impacts to benthic community or prey species.
- Limitations on access to and from the area.
- Monitoring efforts regarding seal foraging behavior.
- Habitat restoration measures to insure long term ecosystem health.

Application of the interagency guidelines to develop a contingency plan that covers the areas being proposed as critical habitat for the HMS will not result in potential adverse modification of the critical habitat. Clean-up actions implemented under the plan might have such an effect, however. The interagency guidance recognizes that the response to a spill or vessel grounding may trigger consultations to determine and minimize the potential impact on the critical habitats of species listed under the ESA. Current information, however, is insufficient to how the proposed designation would alter the chain of events relative to those that would occur without it. The designation could result in re-initiation of consultation related to response activities to address concerns associated with their potential impact on HMS critical habitat. Implementation of future response activities could involve a representative

from NMFS to identify potential impacts to the essential features of HMS critical habitat and appropriate steps for reducing the impacts.

H. Military Activities

In meeting the considerations put forth by section 4(b)(2) of the ESA, NMFS has worked with the Department of Defense and the U.S. Coast Guard (USCG), under the Department of Homeland Security, to identify impacts the proposed designation of critical habitat for the HMS may have on National Security. In accordance with the ESA, NMFS worked to identify those areas where the benefits of exclusion, for National Security, outweigh the benefits of designation. During this process, NMFS solicited information from the Navy, USMC, Army, Air Force, and the USCG to determine what controlled areas the organizations wished to be considered for exclusion and also to determine potential impacts. Some areas identified were proposed for exclusion, but not all areas. As such, in areas not proposed for exclusion, the designation may have economic impacts incremental to the costs these entities already incur to meet the jeopardy standards.

The full national security exclusion process is outlined in the 4(b)(2) report; the following discussion identifies economic costs that may be associated with the designation, and presents information and concerns raised by the Navy.

1. Description of Threat

NMFS has determined that some military activities have the potential to threaten the essential features of critical habitat for the HMS. Activities may pose potential threats to the essential habitat features in four potential ways: 1) coastal activities may reduce the amount or value of available haul-out area in preferred HMS habitat; 2) in-water activities may reduce the numbers of available prey, by reducing available prey habitat or by reducing the quality of prey habitat; 3) in-water activities may reduce the amount or value of available shallow, sheltered marine habitat adjacent to preferred pupping areas utilized by moms and pups; and 4) activities may increase the potential for anthropogenic disturbance, thus making monk seals avoid or abandon preferred haul-out areas or pupping areas. Military and associated activities vary widely and occur across a wide variety of locations. Activities range from coastal construction and maintenance of facilities, to the various training exercises that may occur on land or at sea. The wide scope of activities and locations makes it difficult to determine the costs of future modifications without looking at the project-specific details associated with each activity.

2. Federal Nexus

The activities of concern discussed in this section may be carried out by the U.S. Navy, Marine Corps, Army, Air Force and Coast Guard and, as such, are subject to section 7 consultations when activities have the potential to adversely modify or destroy critical habitat for the HMS.

3. Extent of the Activity within the Critical Habitat Study Area

NMFS' records for consultations during the period, 2006–09, show as many as 15 consultations in areas that may be designated as critical habitat for the HMS. Ambiguity over the number arises because some of the consultations involved areas that might be excluded from the designation because the national security benefits of exclusion outweigh the benefits of leaving the areas in the designation. The consultations involved the Navy, USACE, USCG, and Army.

Military activities overlap with critical habitat in the NWHI and throughout the MHI. The USCG, Army and Air Force have indicated, during the national security exclusion process, that they do not foresee the proposed designation having impacts on their activities in the areas they control. All three entities were aware of obligations to consult regarding the listing of the species, but were unable to identify activities that may be impacted by the critical habitat designation.

Section 4(a)(3)(B)(i) of the ESA precludes from designation those military lands covered by an Integrated Natural Resources Management Plan (INRMP), provided that the Secretary determines the plan provides a benefit to the species for which the designation of critical habitat is being proposed. The Marine Corps has prepared an INRMP for the areas under its control; Marine Corps Base Hawaii – Kaneohe Bay, Marine Corps Training Area Bellows, Puuloa Training Facility.[49] In accordance with the ESA, NMFS reviewed the Marine Corps' INRMP with respect to areas overlapping with those under consideration for the revision to HMS critical habitat. NMFS found that the INRMP contains measures that benefit the HMS via habitat protection or restoration, as well as through monitoring, enforcement, public education measures and plan implementation and review efforts. Accordingly, these areas controlled by the Marine Corps are precluded from the designation of critical habitat for the HMS. Activities occurring in these areas are still subject to consultation to prevent jeopardy, but additional effort to consider impacts to critical habitat will not be incurred. Draft INRMPs were reviewed for the Naval Station Pearl Harbor and the Pacific Missile Range Facility. The review found that these plans failed to meet all of the criteria identified by the Critical Habitat Review Team for a successful management plan and, therefore, they were not found to be a benefit to the species. More information regarding the determination process may be found in the proposed rule in the *Federal Register* or in the draft 4(b)(2) report appendices.

The Navy's facilities are spread across the islands and waters of the Hawaiian Archipelago, and its training, research, development, testing, and evaluation activities extend from the MHI into the NWHI. In response to notification from

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[49] Marine Corps Base Hawaii. 2006. *Marine Corps Base Hawaii Integrated Natural Resources Management Plan Update (MCBH INRMP): 2007–2011.* November. Retrieved 27 April 2010 from http://www.iiirm.org/hawaiian_consultation/workshop%20materials/inrmp_icrmp/INRMP%20Update%202006/2006%20MCBH%20INRMP%20Update%20V1%20Main%20Text.pdf

NMFS that it was considering the designation of critical habitat for the HMS, the Navy identified 13 military-activity areas where it anticipated that, if the area were designated, the resulting protections afforded the habitat under the ESA might interfere with planned military activities. The Navy also claimed that such interference would have an adverse impact on national security. Accordingly, NMFS reviewed information provided by the Navy to determine if the national security benefits of excluding each area would outweigh the benefits of including it in the designation. From this review, NMFS is proposing to exclude five of the areas from the designation for national security reasons.[50] Table 16 identifies the 13 military-activity areas and the national-security decision. The discussion of potential impacts considers only those areas not excluded from the proposed designation for national-security reasons.

In 2008 the Navy described military activities around d the Hawaiian Islands in an environmental impact statement for the Hawaii Range Complex (HRC).[51] The HRC encompasses land, water, and air on and around the MHI and the NWHI, extending to areas offshore (within 12 nautical miles from land), and open ocean, as shown in Figure 1. The Navy distinguishes between two areas within the HRC. The Hawaii Operating Area, which is nearer the MHI, has 235,000 square nautical miles and the Temporary Operating Area has 2.1 million square nautical miles of surface and subsurface ocean areas and airspace Both are used for training and for research, development, testing, and evaluation activities. The Hawaii Operating Area includes the Pacific Missile Range Facility (PMRF) on Kauai as well as 1,020 squares nautical miles of instrumented ocean area at depths between 1,800 feet and 15,000 feet. It also includes the eastern tip of the Papahanaumokuakea Marine National Monument that extends into areas the Navy traditionally used as part of its activities at PMRF. Other major features include designated warning and training areas, airspace, water ranges, land ranges, airfields, the Pearl Harbor Naval Defensive Sea Area, and open ocean areas.

Activities within the Hawaii Range Complex are currently addressed with NMFS in a programmatic consultation that is renewed every 5 years. Generally speaking the HRC covers a range of training and exercise activities conducted by all Department of Defense forces and other associated federal agencies in Hawaii, as well as the activities associated with Rim of the Pacific Exercises that involve military personnel of other nations. Activities for the five year period are outlined in the Environmental Impact Statement and in the Biological Opinion for the HRC EIS. Annual reviews and monitoring reports regarding these activities are required. Activities within the HRC that might have the potential to affect the critical habitat being proposed for the HMS include:

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[50] Discussion of the weighing process that resulted in this action is explained in the 4(b)(2) report accompanying the proposed rule.

[51] U.S. Department of Defense, Department of the Navy. 2008. *Final Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS): Hawaii Range Complex (HRC).* May.

Table 16. National-Security Exclusion Recommendations for Military-Activity Sites

Military-Activity Site	Overlap w/ Critical Habitat Specific Area	Proposed for Exclusion for National Security Reasons?[a]
Kaula Island and the Surrounding 3-mile Danger Zone	Area 11 - Kaula	No
Niihau 0-12nm offshore	Area 12 - Niihau	No
Kingfisher Underwater Training Area off Niihau	Area 12 - Niihau	Yes
Pacific Missile Range Facility (PMRF) Main Base at Barking Sands, Kauai	Area 13 - Kauai	Yes
Pacific Missile Range Facility Offshore Areas	Area 13 - Kauai	Yes
Barbers Point/Kalauloa (White Plains & Nimitz Beaches)	Area 14 - Oahu	No
Naval Defensive Sea Area and Puuloa Underwater Training Range	Area 14 - Oahu	Yes
Anchorages B, C, D	Area 14 - Oahu	No
Fleet Operational Readiness Accuracy Check Site (FORACS)	Area 14 - Oahu	No
Barbers Point Underwater Range and Ewa Training Minefield (Danger Zones)	Area 14 - Oahu	No
Marine Corps Training Area Bellows Offshore	Area 14 - Oahu	No
Shallow Water Minefield Sonar Training Range off Kahoolawe	Area 15 – Maui County	Yes
Kahoolawe Danger Zone	Area 15 – Maui County	No

[a] Decisions regarding national security exclusions are discussed in the Hawaiian monk seal critical habitat 4(b)(2) report.

- Training activities, including amphibious assaults that entail moving personnel and vehicles through nearshore marine areas and across beaches and other coastal areas.
- Underwater detonation of explosives.
- Sonar and electromagnetic transmissions.

4. Baseline Protections

The discussions in Section II.B, the appendix, and the preceding sections describe the federal laws and actions that generally provide baseline protection. Additional protection may be provided by the Navy's efforts to comply with this network of federal environmental laws, regulations, and executive orders, including these:

- Migratory Bird Treaty Act.
- Coastal Zone Management Act
- Rivers and Harbors Act.
- Clean Air Act
- Clean Water Act.
- National Historic Preservation Act
- Magnuson-Stevens Fishery Conservation and Management Act
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- Executive Order 13045, Environmental Health and Safety Risks to Children
- Executive Order 13423, Strengthening Federal Environmental, Energy and Transportation Management
- Executive Order 13089, Coral Reef Protection
- National Marine Sanctuaries Act.

5. Potential Impacts of Critical Habitat Designation on Military Activities

Impacts to military construction activities likely would be similar to the modifications addressed in the discussion of under in-water constructions activities. The Navy has not identified in-water and coastal construction as an activity that it is currently pursuing in areas overlapping with the proposed designation. Impacts to the training exercises in areas proposed for critical habitat may include additional monitoring efforts to discover impacts of activities to HMS prey species and habitat, or possible area constraints on activities in one or more specific locations.

At this point in time there is insufficient information to determine the potential incremental effects, if any, of the proposed designation on the Navy's military activities. NMFS, however, anticipates that, if the proposed designation results in project modifications, these likely would include date restrictions, project time constraints or area constraints; monitoring efforts to identify impacts to benthic community or prey species; and monitoring efforts regarding seal foraging behavior or response to disturbance.

The Navy emphasizes the HRC's overall strategic importance and has expressed concern that if the proposed designation were to constrain overall military activities, the impact on its operations, and the cost of developing substitutes could be extreme. Costs identified by the Navy were strictly associated with their land based facilities. Navy facilities including those at Pearl Harbor were not included in the designation due to the low quality or lack of essential features at this site, and NMFS has proposed exclusion of the Pacific Missile Range for national-security reasons. The Navy has not provided additional information regarding economic impacts to operations outside of these facilities, because of uncertainty associated with the potential modifications, if any, to its activities that might result from the proposed designation. Further information

is required to determine the location-specific, potential incremental impacts of the proposed designation on the military-activity areas that remain in the proposal, and on the military activities associated with them.

IV. Other Potential Economic Impacts

The preceding section focuses on identifying the potential direct economic costs and benefits associated with activities that would be affected by the proposed designation of critical habitat for the HMS. Additional economic impacts may involve indirect costs and benefits; changes in jobs, incomes, and other indicators of economic activity; and changes in the distribution of economic impacts among different groups. Just as the designation might produce both direct costs and direct benefits, it also may produce both indirect costs and indirect benefits; have positive and negative impacts on jobs, incomes, and other variables, and distribute the economic impacts among groups that favor some and disfavor others. The impacts likely would be diffuse and, to some extent, have offsetting consequences for different groups. For example, if including an area in the designation would generate direct, project-delay and project-modification costs, there likely would be negative impacts on the incomes of the projects's workers who would be able to proceed as planned during the delay, but there may be positive impacts on the incomes of those employed to implement the project modifications. Determining the indirect costs and benefits, the changes in jobs and other variables and the distribution of effects among different groups would require situation-specific information.

The preceding section explains that the information currently available is insufficient to determine the project- and situation-specific, direct costs and benefits of the proposed designation. Similarly, the information is insufficient to determine these additional, potential impacts. Hence, this section provides contextual information about Hawaii's economy as a whole. It also provides information about the relationship between some types of activities. Reflecting the availability of relevant information, the discussion focuses on in-water and coastal construction activities, fisheries and aquaculture activities, and military activities.

A. Overview of the State's Economy

Table 17 shows some summary statistics for Hawaii and its economy, with comparable data for the U.S. as a whole. Hawaii has about 4 percent of the national population. Hawaii's population and economic activity are less concentrated in urban areas than the U.S. as a whole. Hawaii has higher levels of income and earnings, and a lower incidence of poverty. Unemployment is higher in rural areas than in urban ones for both Hawaii and the rest of the U.S., and the rural unemployment rate is higher but the urban unemployment rate is lower in Hawaii than in the U.S. Employment contracted more sharply in rural areas than urban ones during the past year, and rural employment fell more sharply in Hawaii than in the U.S, but urban employment fell less in Hawaii than nationwide. Federal funding received per person in rural areas of Hawaii was about 75 percent of the national level, but urban areas in the state received about 50 percent more than their counterparts nationwide.

Table 17. Economic Overview: Hawaii and the U.S.

Indicator	Rural	Urban	Total
Population, 2009			
Hawaii	387,604 (30%)	907,574 (70%)	1,295,178
U.S.	50,247,839 (16%)	256,758,711 (84%)	307,006,550
Per-Capita Income, 2008			
Hawaii	$34,742	$45,205	$42,078
U.S.	$31,108	$41,953	$40,166
Earnings per Job, 2008			
Hawaii	$37,742	$47,249	$47,249
U.S.	$36,108	$41,953	$40,166
Poverty Rate (percent), 2008			
Hawaii	11.1	8.5	9.3
U.S.	15.1	12.9	13.2
Total Number of Jobs, 2008			
Hawaii	247,612 (28%)	626,137 (72%)	873,749
U.S.	26,583,671 (15%)	154,909,253 (85%)	181,755,100
Unemployment Rate, 2009			
Hawaii	9.2	5.7	6.8
U.S.	9.0	9.3	9.3
Percent Employment Change, 2008-09			
Hawaii	-6.6	-3.0	-4.1
U.S.	-3.2	-3.9	-3.8
Federal Funding, FY 2006, Dollars per Person			
Hawaii	$5,728	$11,811	$10,042
U.S.	$7,769	$7,855	$7,841

Source: USDA, Economic Research Service. 2010. "State Fact Sheets: Hawaii" and "State Fact Sheets: United States." Retrieved 7 June 2010 from http://www.ers.usda.gov/statefacts/hi.htm, and http://www.ers.usda.gov/statefacts/US.HTM. Data were updated 3 June 2010.

The Hawaii Department of Business, Economic Development & Tourism estimates that the cost of living in Honolulu is about 60–85 percent higher than the national urban average, largely because of higher costs for housing and consumables.[52] The Department of Defense, however, estimates that the cost of

[52] Hawaii State Department of Business, Economic Development & Tourism. 2009. "Cost of Living Analyses for Honolulu and the United States Average: January 1, 2008." *Hawaii Data Book.* Retrieved 5 June 2010 from http://www.ers.usda.gov/statefacts/US.HTM.

living on the islands is about 28–38 percent higher than on the continental mainland.[53]

Oahu County has the greatest share of the state's population, about 70 percent, followed by Hawaii County (14 percent), Maui County (11 percent), and Kauai County (5 percent).[54] Between the 2000 census and 2009, statewide population grew 0.7 percent annually, slower than the 0.9 percent average growth during the previous decade.[55] Growth stemmed primarily from natural increase (births minus deaths) and international in-migration that more than offset domestic out-migration. The 2000 census found that about 24 percent of the state's population indicated selected "Native Hawaiian and Other Pacific Islander" as their race, either solely or in combination with one or more others. About 9 percent chose only one race and it was "Native Hawaiian and Other Pacific Islander".[56]

The recent recession and other factors have deeply hit expenditures in the state's tourism industry, which are linked to a sizeable share of the state's overall economic activity.[57] Spending by visitors who arrived by air dropped 15 percent in the first half of 2009. A year earlier, total visitor-related expenditures were $13.1 billion. This activity generated output in gross state product of $10.7 billion, household income of $5.8 billion, state and county tax revenues of $986 million, and 141,500 jobs.[58]

Much of the tourism activity and expenditures are associated with Waikiki. In 2008, it accounted for 3.6 million visitors, and expenditures of $5.4 billion, or 41

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[53] Hawaii State Department of Business, Economic Development & Tourism. 2009. "Cost of Living Analyses for Military in Hawaii Relative to Continental United States, by Island." *Hawaii Data Book.*Retrieved 5 June 2010 from http://hawaii.gov/dbedt/info/economic/databook/2008-individual/14/141808.xls.

[54] Hawaii Department of Business, Economic Development & Tourism. 2009. "Resident Population, by County: 1990 to 2008." *Hawaii Data Book.* Retrieved 5 June 2010 from http://hawaii.gov/dbedt/info/economic/databook/2008-individual/10/102108.xls. The estimate for Maui county includes 117 residents of Kalawao County.

[55] Hawaii Department of Business, Economic Development & Tourism. 2009. "County Population Facts." *Hawaii Data Book.* Retrieved 5 June 2010 from http://hawaii.gov/dbedt/info/census/popestimate/2009-county-population-hawaii/County_Population_Facts_2009.doc.

[56] Hawaii Department of Business, Economic Development & Tourism. 2009. "Difference in Population by Detailed Native Hawaiian and Other Pacific Islander Race, for the State of Hawaii: 1990 to 2000." *Hawaii Data Book.* Retrieved 5 June 2010 from http://hawaii.gov/dbedt/info/census/Folder.2005-10-13.2927/sf1/sf1/hawall.pdf

[57] Woo, S. 2009. "Heavy Reliance on Tourism Has Hawaii's Economy Hurting." *The Wall Street Journal.* 17 August. Retrieved 5 June 2010 from http://online.wsj.com/article/SB125047318664935729.html

[58] Hawaii Department of Business, Economic Development & Tourism. "Resident Population, by County: 1990 to 2008." *Hawaii Data Book.* Retrieved 5 June 2010 from http://hawaii.gov/dbedt/info/economic/databook/2008-individual/07/073208.xls.

percent of the statewide total.[59] Overall, tourism directly and indirectly accounts for about 16.9 percent of the state's gross domestic product, 17.5 percent of civilian jobs, and 21.3 percent of state taxes.[60]

Table 18 shows the distribution of visitors among the islands in 2008. Oahu has the highest number of visitors, followed by Maui, the Island of Hawaii, and Kauai.

Table 18. Average Daily Visitor Census, by County and Island, 2008

County and Island	Domestic	International	Total
Oahu	54,014	27,737	81,751
Hawaii County	21,411	3,432	24,842
Kauai County	18,889	966	19,855
Maui County	40,925	5,113	46,038
Maui	39,493	4,940	44,433
Molokai	724	107	831
Lanai	708	66	774
Total	135,239	37,248	172,487

Source: Hawaii Department of Business, Economic Development & Tourism. 2009. "Average Daily Visitor Census, by County and Island, 2007 and 2008." *Hawaii Data Book.* Retrieved 5 June 2010 from *www.hawaii-county.com/databook_2004/Table%207/7.3.pdf.*

B. In-Water and Coastal Construction and the Economy

Most concern expressed about the indirect economic effects of the designation of critical habitat for the HMS and its impacts on in-water and coastal construction and related activities focuses on how it might impact sandy beaches and highway infrastructure. Hawaii's sandy beaches make important contributions to the quality of life for residents and visitors, and to the economy. The extent and location of sandy beaches is summarized in Tables 19 and 20. Many beaches have been narrowed or lost through erosion: nearly 17 miles, or 25 percent, on Oahu during the past century, for example. Owners of beachfront properties and the state government emphasize the economic importance of sandy beaches. The Hawaii Department of Land and Natural Resources, for example,

[59] Hawaii Department of Business, Economic Development & Tourism. "Waikiki's Share of Tourism: 2008." *Hawaii Data Book.* Retrieved 5 June 2010 from http://hawaii.gov/dbedt/info/economic/databook/2008-individual/07/073308.xls.

[60] Hawaii Department of Business, Economic Development & Tourism. "Contributions to the State's Economy by Statewide Visitor Industry and by Waikiki: 2008." *Hawaii Data Book.* Retrieved 5 June 2010 from http://hawaii.gov/dbedt/info/economic/databook/2008-individual/07/073408.xls. Direct and indirect contributions measure the overall impact of visitor expenditures through all firms that contributed to goods and services sold to visitors.

has concluded that the sandy beach at Waikiki, is the basis for 44 percent of annual tourism expenditures.[61]

The beach at Waikiki is largely a product of past placement of natural sands from inland sources around the state. Major segments of the beach now have little to no sand at high tide, however, prompting steps to replenish the sand. One effort occurred in 2006, to demonstrate the feasibility of replenishing the sand with pumped onto the beach from offshore deposits. The project pumped 10,000 cubic yards of sand over a 20-30 day period, adding as much as 50 feet of horizontal width to 1,700 linear feet of beach that previously had no beach, and vertically raising the beach in these areas 2–4 feet.[62] The sand was pumped from a site 2,000 feet offshore for a cost of $471 per square yard, or $475,000 total.

These expenditures, and those of similar beach-replenishment projects, would have indirect economic impacts associated with the expenditure of the funds by the contractor and its employees and suppliers. Additional indirect impacts would accompany the influence, if any, of the replenished beach on the number of tourists that visit the state and where they choose to visit and spend money.

Table 19. Swimming and Surfing Sites, by Island

	Hawaii	Maui	Lanai	Molokai	Oahu	Kauai
Sandy Shoreline (mi)	19.4	32.6	18.2	23.2	50.3	41.2
Primary[a] (mi)	1.2	7.9	- -	- -	12.5	2.8
Surfing Sites	185	212	99	180	594	330

Source: Hawaii Department of Business, Economic Development & Tourism. "Swimming and Surfing sites, by Island." *Hawaii Data Book*. Retrieved 5 June 2010 from http://hawaii.gov/dbedt/info/economic/databook/2008-individual/07/075208.xls.

[a] Safe, clean, and generally suitable for swimming.

Nearly 17 miles, or 25 percent, of Oahu's beaches were lost or significantly narrowed over the 20th Century, and greater losses were reported on Maui. Future changes in beaches may be more extreme, in response to anticipated changes in climate and accelerated rises in sea level. Owners of beachfront properties and the state government have long recognized the economic importance of sandy beaches, as well as the cost of projects to establish and sustain them. The Hawaii Department of Land and Natural Resources, for example, emphasizes the economic importance of replenishing the sandy beach

[61] Hawaii Department of Land and Natural Resources 2007. "Kuhio Beach Project" http://hawaii.gov/dlnr/occl/projects/beach-nourishment/kuhio-beach-project.

[62] Hawaii Department of Land and Natural Resources 2007. "Kuhio Beach Project" http://www6.hawaii.gov/dlnr/occl/files/Waikiki/summary.pdf.

Table 20. Length and Width of Selected Beaches

Island and Beach	Length (miles)	Width (feet)[a]
Hawaii		
Hapuna	0.5+	200+
Maui		
Spreckelsville	2+	(NA)
Kaanapali	1.5	60-80
Lanai		
Polihua	1.5+	(NA)
Molokai		
Papohaku	2+	300
Oahu		
Waikiki	2	(NA)
Waimanalo	3.5-4.5	(NA)
Sunset	2-3+	200
Kauai		
Polihale to Kekaha	15	300
Polihale	3	300
Niihau		
Keawanui	3.5	175

Source: Hawaii Department of Business, Economic Development & Tourism. "Length and Width of Selected Beaches." *Hawaii Data Book.* Retrieved 5 June 2010 from hawaii.gov/dbedt/info/economic/databook/2008-individual/.../051508.pdf.

at Waikiki, concluding that revenue generated in this area constitutes 44 percent of annual tourism expenditures.[63]

Similar indirect impacts accompany expenditures on the state's shoreline highways. The state's Highways Modernization Plan, unveiled in January, 2009, calls for the expenditure of $4.2 billion over six years. Table 21 shows the expected expenditures on shoreline-protection projects that might be of concern regarding their potential effect on HMS critical habitat.

[63] Hawaii Department of Land and Natural Resources 2007. "Kuhio Beach Project" http://hawaii.gov/dlnr/occl/projects/beach-nourishment/kuhio-beach-project.

Table 21. Estimated Expenditures, Shoreline Protection Projects

Project	Estimated Expenditure (million)
Oahu, Kamehameha Highway	
Vicinity of Punaluu	$5.3
Haleiwa to Waimea Bay	$3.1
Vicinity of Hauula	$5.7
Vicinity of Kaaawa	$10.8
Vicinity of Kawailoa Beach	$1.7
Hawaii	
Hilo Bayfront	$2.3
East Hawaii	$10
Maui	
Launiupoko, Olowalu, Niaupala Fishpond, Wailua-Kumimi, Kealia Pond	$14.1
Honoapiilani Highway	$10.0
Kahului Highway	$5.0
North Kihei Road	$10.0
Kauai	
Kuhio Highway, Vicinity of Hanalei Bay	$2.3
East Kauai	$10.0

Source: http://hawaii.gov/dot/highways/modernization/projects-list-pdf.

In general, a change in expenditures directly resulting from the proposed designation would lead to additional indirect changes. If the proposed designation were to result in a project modification that increased a contractor's cost for completing a highway project, for example, workers and others would see an increase in their earnings. The overall impact would be the contractor's increase in spending for supplies and labor, plus the impact as its suppliers and workers spend their additional income. The businesses and workers that receive this additional income would, in turn, spend it. The process would continue until, eventually, the initial increase in spending left the state for purchases of goods and services from elsewhere. The overall impact is called the multiplier. It varies among different industries but, in general it likely is no more than two for the state as a whole and smaller for local economies.

C. Fisheries and Aquaculture Activities and the Economy

1. Commercial and Recreational Fishing.

In the middle of the past decade, the total value of the commercial fishery catch delivered to processors, about $50 million per year, was about 0.1 percent of total gross state product, and the bottomfish catch, the most common fishery in waters proposed for designation as critical habitat for the HMS, accounted for about one-tenth of this amount.[64] The number of people who participate in the bottomfish fishery, however, indicates its economic importance is greater than the value of its commercial catch. More than 100,000 residents, almost 9 percent of the total population) participate in recreational or subsistence fishing, and more than 40,000 tourists go fishing while in Hawaii each year. Consumption of seafood is an important element of the tourism industry. Fisheries involving crustaceans and coral are also important, though considerably smaller. Bottomfishing, which was part of the culture and economy of indigenous people long before Europeans first arrived, continues to play important roles in the local culture.

The bottomfish fishery typically involves small boats. The owners and operators of these boats often fish for recreation and subsistence, but also sell small amounts of fish to cover expenses, making the distinction between commercial and recreation/subsistence fishing ambiguous. Those who sell any fish commercially are required to obtain a commercial marine license and submit to the state records on their fishing activity and catch. The number of boats engaged in commercial fishing increased in the 1970s and early 1980s, peaking at 583 vessels in 1985. It has declined since, falling to 325 vessels in 2003. Surveys conducted in 1987 indicates that bottomfish account for about 75 percent of the catch of Maui fishermen, 25 percent in Oahu and Kauai, and 13 percent in Hawaii. The deepwater bottomfish species most indicative of commercial fishing in federal waters, about 36 percent are landed in Maui, 30 percent in Oahu, 18 percent in Hawaii, 10 percent in Kauai, and 5 percent in Molokai/Lanai. Historically, Penguin Bank has been one of the most important fishing grounds in the MHI for bottomfish, but Table 22, which shows the number of boats with commercial marine licenses fishing in different state and federal waters in 2003, indicates fishing effort is more widely dispersed. Some boats may fish in more than one area.

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[64] Western Pacific Regional Fishery Management Council (Council). 2009. *Fishery Ecosystem Management Plan for the Hawaii Archipelago.^24 September.* Retrieved 5 June 2010 from www.wpcouncil.org/hawaii/HawaiiFEP/December12005HawaiiFEP.pdf. These numbers do not account for the value of output by the fish-processing industry.

Table 22. Commercial Vessels, by Areas Fished, 2003

Fishing Zone	Number of Vessels
Island of Hawaii, State water	57
Island of Hawaii, Federal water	44
Maui, Molokai, Lanai, Kahoolawe, State water	59
Maui, Molokai, Lanai, Kahoolawe, Federal water	66
Penguin Bank, Federal Water	50
Oahu, State Water	53
Oahu, Federal Water	46
Kauai, State Water	37
Kauai, Federal Water	16
Middle Bank, Federal Water	NA
Total, State Water	206
Total, Federal Water	192
Total	398

Source: Western Pacific Regional Fishery Management Council (Council). 2009. *Fishery Ecosystem Management Plan for the Hawaii Archipelago.ˆ24 September*. Retrieved 5 June 2010 from www.wpcouncil.org/hawaii/HawaiiFEP/December12005HawaiiFEP.pdf.

Table 23 shows the estimated direct, indirect, and total economic impacts—output, value added, income, and employment—of recreational marine fishing in Hawaii. The data represent estimates from 2006, when surveys indicated total recreational expenditures on marine fishing in Hawaii were about $750 million. Direct impacts occur when anglers spend money at fishing-related, retail and service businesses. Indirect effects occur when the owners and employees of those businesses spend the income derived from anglers, their expenditures trigger another round of spending by business owners and employees, and the cycle repeats until expenditures outside Hawaii siphon away the initial amount. Total impacts are the sum of direct and indirect impacts. In 2006, recreational fishing accounted, in total, for about $800 million in output, $400 million in value added, $250 million in income, and 7,000 jobs. The extent to which these impacts derived from fishing in federal waters is not known.

2. Aquaculture.

In 2007, 70 aquaculture operations in the state generated sales of about $25 million.[65] About one-fifth of the sales came from the production of finfish or

[65] Hawaii Department of Business, Economic Development & Tourism. "Aquaculture Operations, Acreage, Production, and Value, by County, 2007.8." *Hawaii Data Book*. Retrieved 5 June 2010 from hawaii.gov/dbedt/info/economic/databook/2008-individual/.../192108.pdf.

shell fish; about 40 percent came from the sale of algae, with the rest attributable to the sale of unspecified, "other" products. Most of the sales, more than $20 million, occurred from operations in Hawaii County, although it had only 25 operations. Data for production on other islands was not reported to avoid disclosure of confidential information on individual operations. The available data do not distinguish between marine operations and those using freshwater. Many aquaculture activities generate indirect economic activity that resembles those associated with commercial and recreational fishing.

Table 23. Economic Impacts Generated in Hawaii from Marine Recreational Fishing Expenditures, 2006

Impact Type	Direct Impact	Indirect Impact	Total Impact
Output ($1,000)	$475,530	$297,289	$772,819
Value Added ($1,000)	$207,748	$172,866	$380,614
Income ($1,000)	$151,478	$102,073	$253,551
Employment (Jobs)	4,359	2,664	7,023

Source: Gentner. B. and S Steinback. 2008. "Table 224. Total Economic Impacts Generated in Hawaii from Marine Recreational Fishing Expenditures by Resident Status in 2006."*The Economic Contribution of Marine Angler Expenditures in the United States, 2006*. NOAA Technical Memorandum NMFS0F/SPO-94. December. Retrieved 28 August 2010 from http://www.st.nmfs.noaa.gov/st5/publication/AnglerExpenditureReport/AnglerExpendituresReport_ALL.pdf.

D. Military Activities and the Economy

Total military expenditures in Hawaii, for personnel and contracts in 2007 was $6.5 billion, with $2.2 billion for the Navy and Marine Corps.[66] A breakdown of expenditures by site and activity is not available. A model of the state's economy suggests that each expenditure of $1 billion by the military in the state generates total economic output of about $1.5 billion, earnings of about $0.9 billion, and about 13, 500 jobs.[67]

Table 24 shows the distribution among different military facilities in Hawaii of military and civilian personnel working for the Department of Defense. The total, 62,357, includes 45,954 on active duty and 16,403 civilians. The data in Table 23 provides a general indication of the number of personnel who might be affected by extreme circumstances: if, following the designation of critical habitat for the HMS, the Department of Defense concluded that it must close a facility to avoid adverse modification of critical habitat. Under these

[66] Hawaii Department of Business, Economic Development & Tourism. "Department of Defense Summary of Personnel, Payrolls, and Prime Contract Awards: 2007." *Hawaii Data Book*. Retrieved 5 June 2010 from http://hawaii.gov/dbedt/info/economic/databook/2008-individual/10/100608.xls.

[67] Hawaii Department of Business, Economic Development & Tourism. "Direct and Indirect Impact of a $1 Billion Military Expenditure." *Hawaii Data Book*. Retrieved 5 June 2010 from http://hawaii.gov/dbedt/info/economic/databook/2008-individual/10/101208.xls.

circumstances, exclusion of the affected area from the designation would enable the department to avoid having to close the facility. The ultimate impact on the affected personnel remains unknown, however: they might lose their jobs, be reassigned to another venue in Hawaii, or be reassigned outside the state. Also unknown is the extent to which the adjustment would result in the hiring of additional personnel, at another facility, to compensate for the closure of a given facility. The overall impact on military and related personnel located in Hawaii could be negative or positive, depending on the relevant specifics.

Similar reasoning applies, if the designation were to induce the Department of Defense to modify the activities at a site, as a result of a section 7 consultation, rather than close the site. The modification could increase or decrease the number of personnel at the site and elsewhere in Hawaii.

The *HRC* EIS/OEIS provides some general information about efforts taken to diminish negative impacts on the economy. All of the activities within the HRC occur adjacent to compatible land uses. Minority and low-income populations do use the ocean adjacent to the islands for subsistence fishing, and hunt near some of the support sites. Subsistence activities are important in supplementing relatively low family incomes, as well as maintaining the preferred lifestyle of the community. Public access for fishing and other, limited recreational activities, is common for some beaches adjacent to military installations within the HRC.

Table 24. Department of Defense Personnel in Hawaii, by Selected Location

		Military Personnel[a]					Civilian Personnel[b]				
Installation or Area	Total Personnel	Total	Army	Navy	Marines	Air Force	Total	Army	Navy/ Marines	Air Force	Other
Total	62,357	45,954	19,867	12,246	8,948	4,893	16,403	4,662	8,922	2,042	777
Aiea	284	188	-	184	-	4	96	-	93	-	3
Barbers Point NAS	126	42	3	38	-	1	84	3	33	22	26
Camp H.M. Smith	1,270	1,020	393	-	381	246	250	-	214	28	8
Ford Island	177	82	81	1	-	-	95	1	93	-	1
Fort Shafter	2,924	1,719	1,719	-	-	-	1,205	1,185	-	1	19
Hickam AFB	6,368	4,436	475	6	22	3,933	1,932	2	65	1,752	113
Honolulu	1,140	66	-	66	-	-	1,074	201	761	15	97
Kaneohe	10,487	9,897	-	1,466	8,429	2	590	-	525	-	65
Kauai Island	169	34	-	34	-	-	135	1	132	-	2
Kunia	1,977	1,857	-	1,265	69	523	120	39	79	2	-
Oahu Island	264	27	-	27	-	-	237	237	-	-	-
Pearl City	337	3	1	1	-	1	334	16	318	-	-
Pearl Harbor	11,289	8,964	109	8,799	46	10	2,325	3	2,078	-	244
Schofield Barracks	16,496	15,616	15,616	-	-	-	880	770	-	-	110
Tripler Army Med. Ctr.	3,069	1,427	1,420	4	-	3	1,642	1,637	5	-	-
Wahiawa	437	334	-	334	-	-	103	12	87	-	4
Wheeler AFB/Army Fld	743	163	-	-	-	163	580	398	-	97	85
Other	4,800	79	50	21	1	7	4,721	157	4,439	125	-

Source: Hawaii Department of Business, Economic Development & Tourism. "Department of Defense Personnel, by Selected Location, September 30, 2007." *Hawaii Data Book*. Retrieved 5 June 2010 from http://hawaii.gov/dbedt/info/economic/databook/2008-individual/10/100508.xls

[a] Personnel on active duty. In some instances, the military departments, Army, Navy, and Air Force, report personnel by parent installation rather than their operating location. There are approximately 6,000 personnel afloat for Hawaii.

[b] Direct hire civilian personnel include employees involved in civil functions in the Army Corps of Engineers and cemeterial employees.

APPENDIX A: MAPS OF THE AREAS INCLUDED IN THE PROPOSED RULE FOR DESIGNATION OF CRITICAL HABITAT FOR THE HMS

Figure A-1. Proposed Critical Habitat Areas

Figure A-2. Proposed Critical Habitat Areas with Proposed Exclusions

Figure A-3. Proposed Marine Critical Habitat Areas and Overlap with State and Federal Waters

Figure A-1. Proposed Critical Habitat Areas

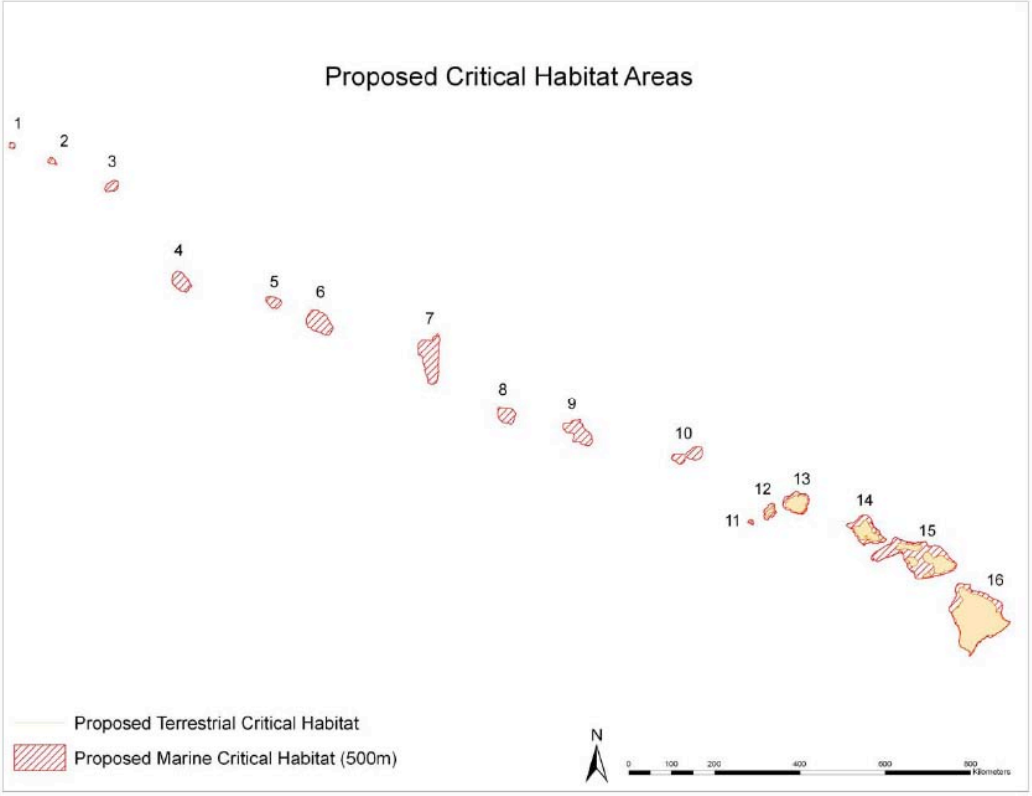
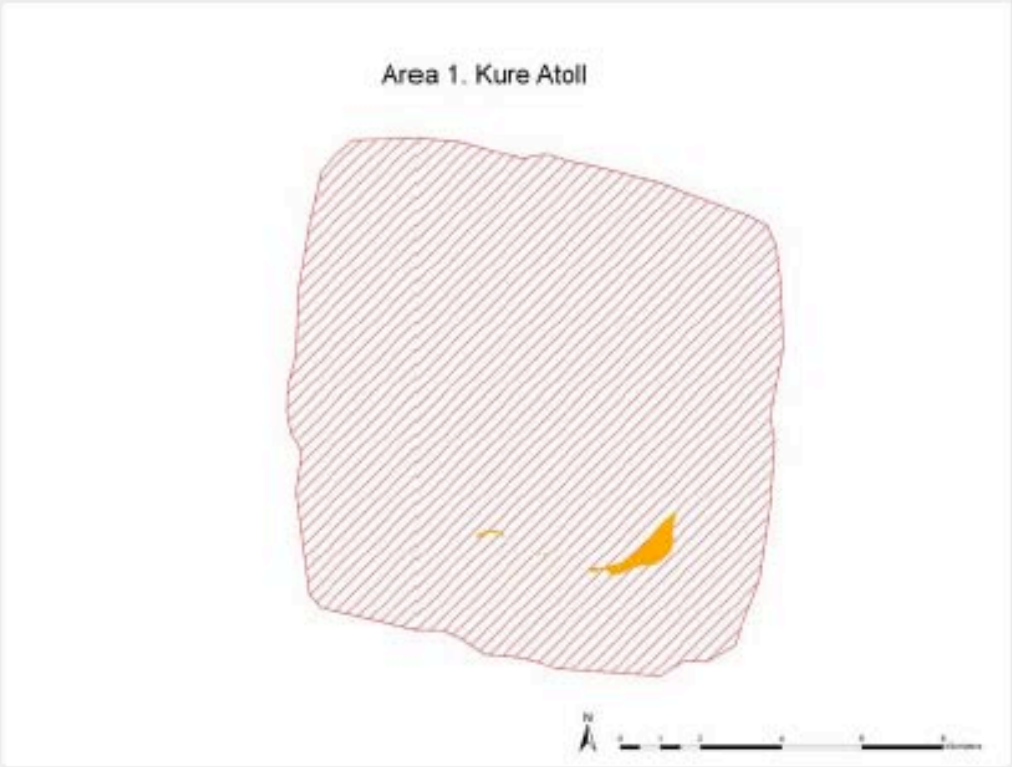


Figure A-1. Proposed Critical Habitat Areas, cont.



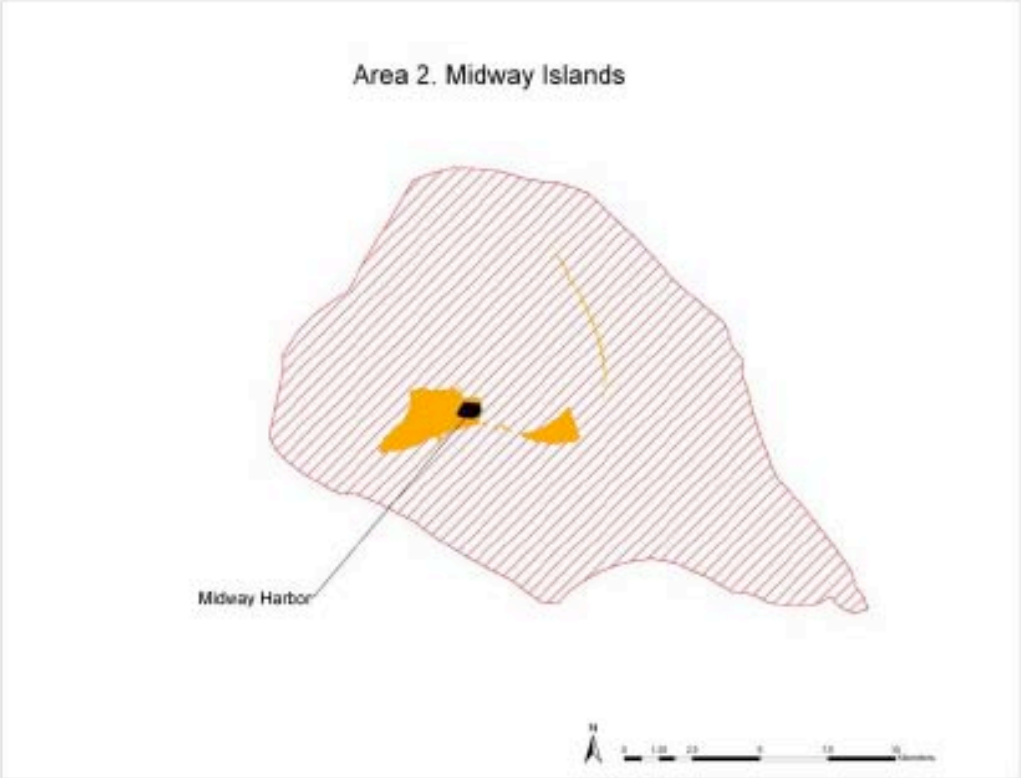
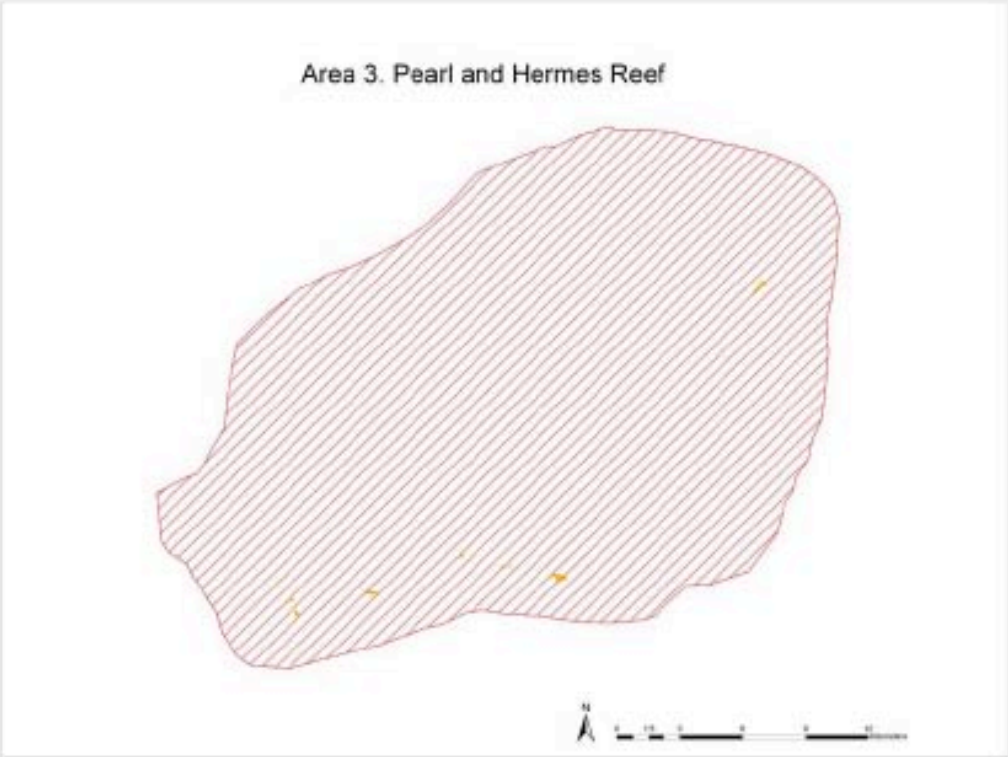


Figure A-1. Proposed Critical Habitat Areas, cont.



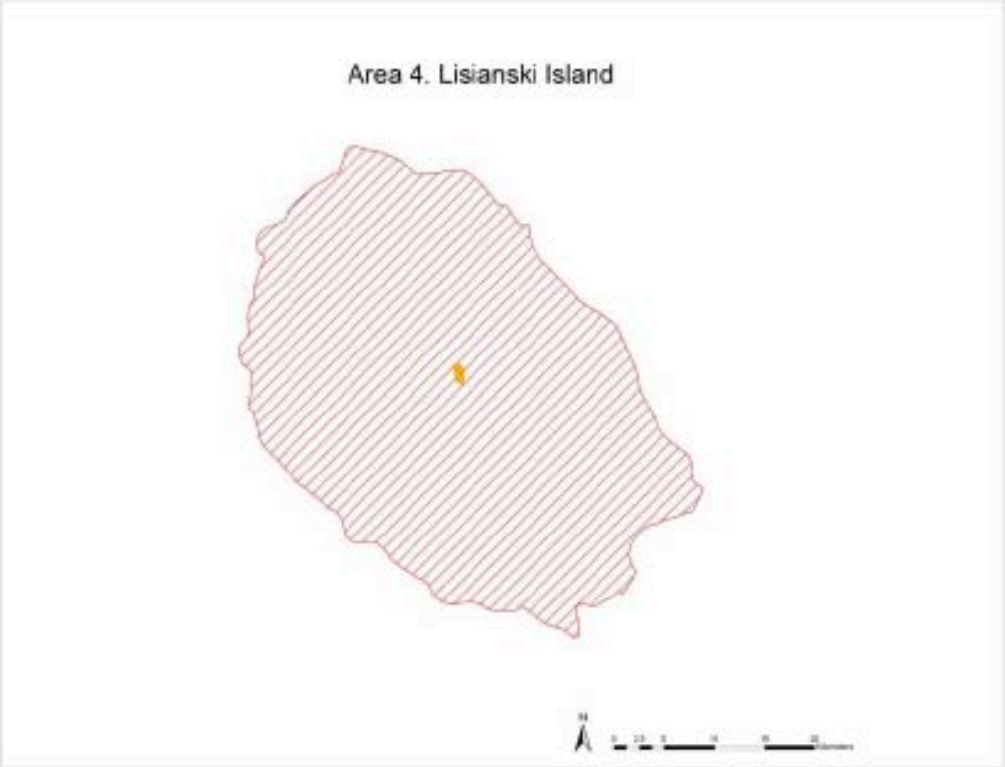
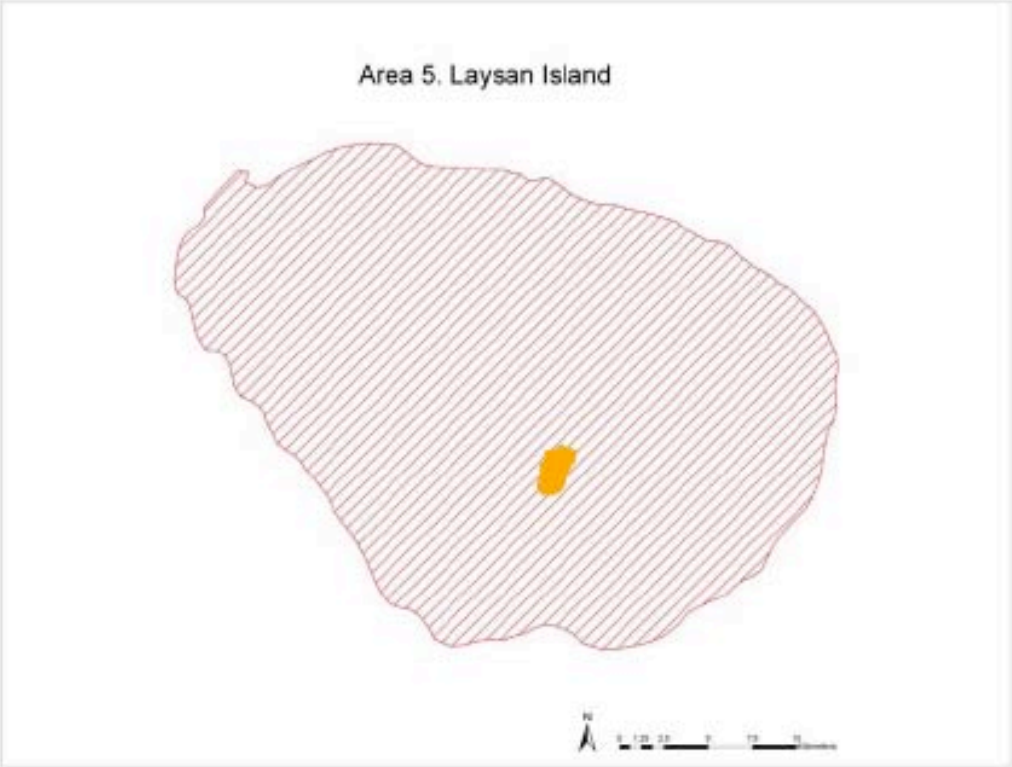


Figure A-1. Proposed Critical Habitat Areas, cont.



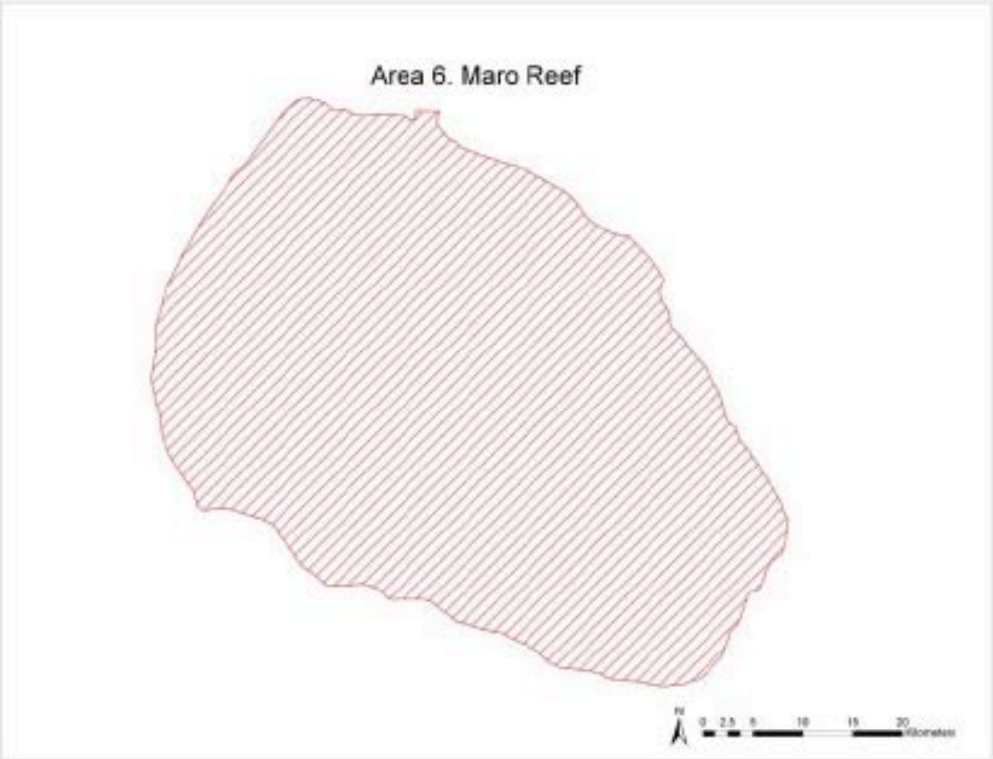
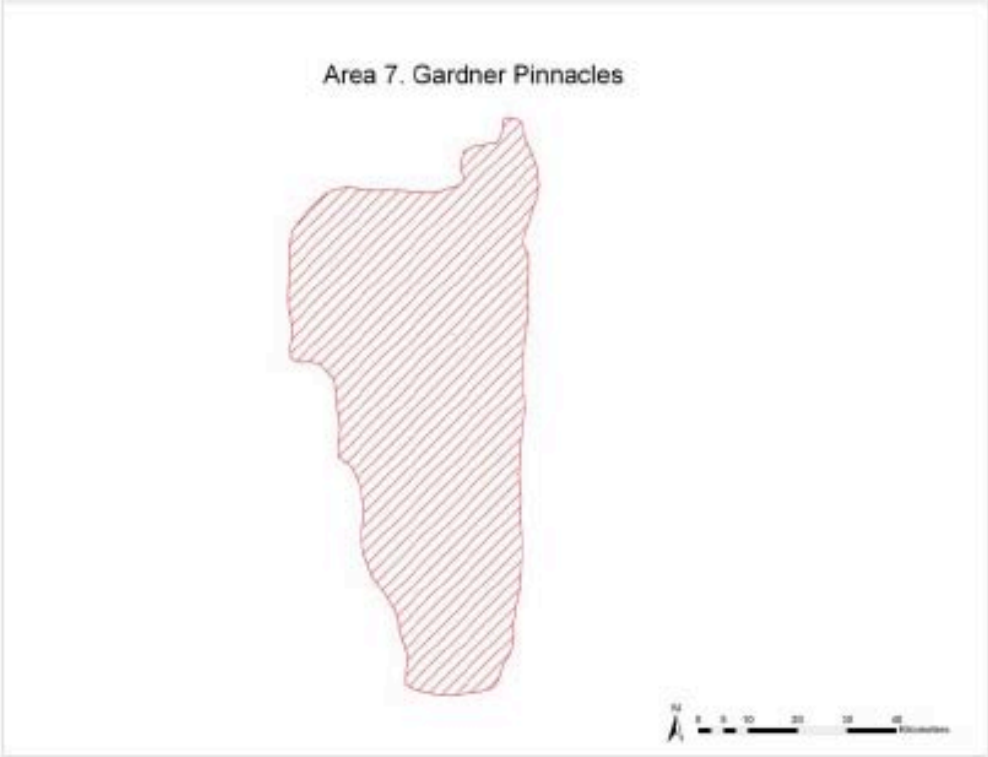
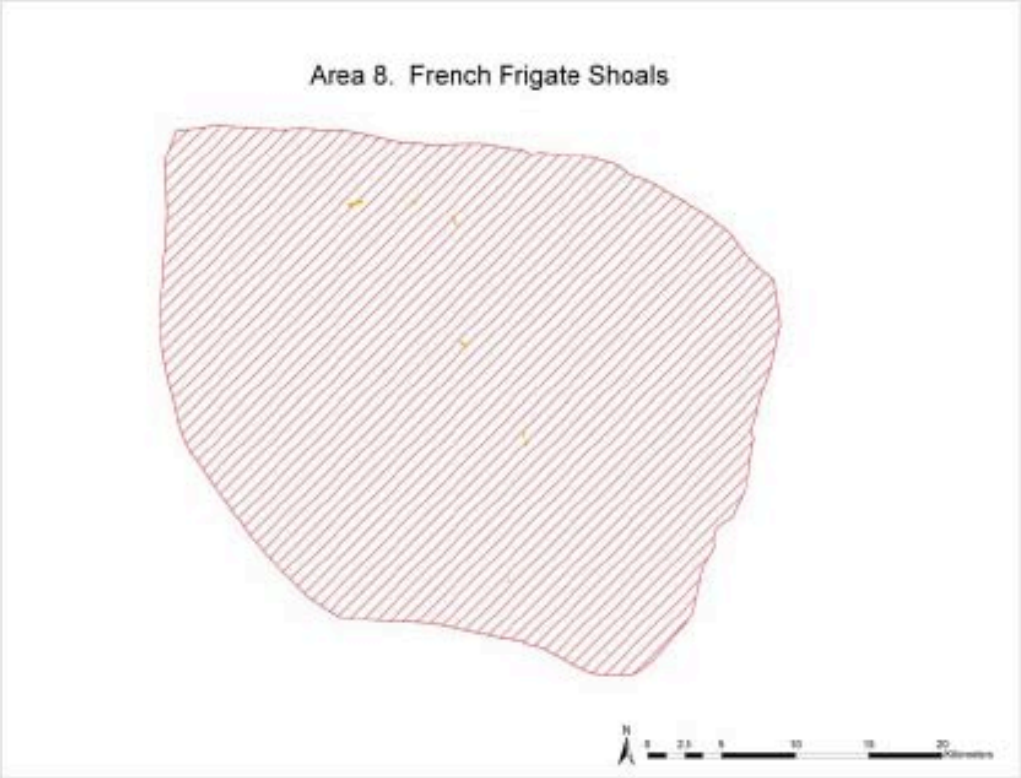


Figure A-1. Proposed Critical Habitat Areas, cont.





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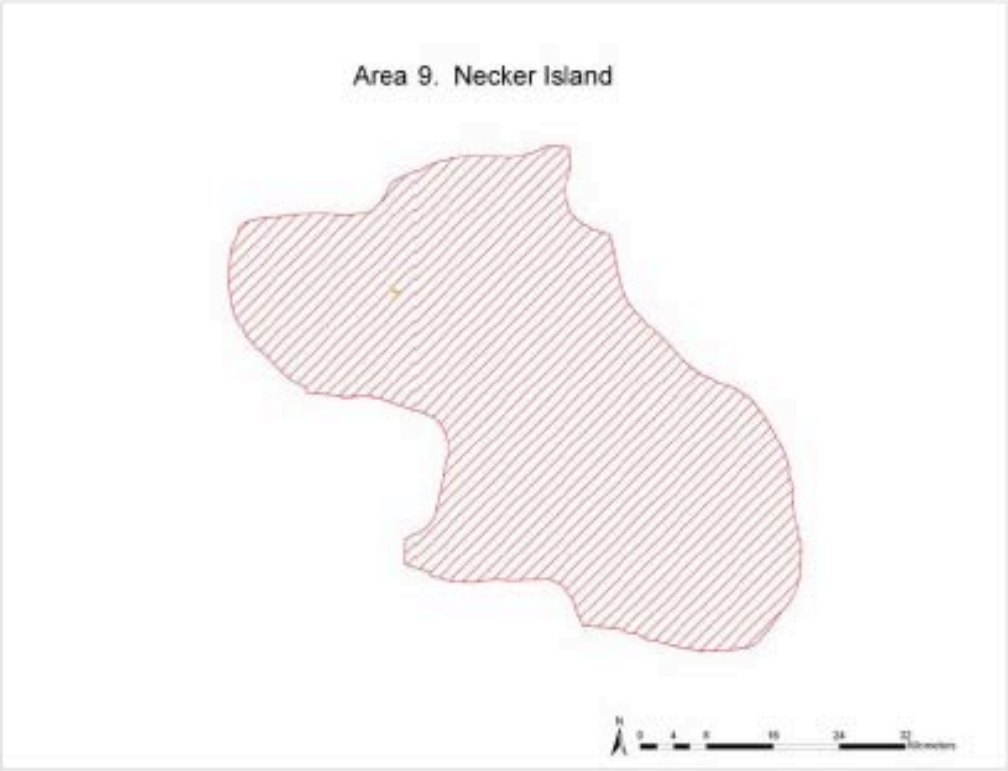

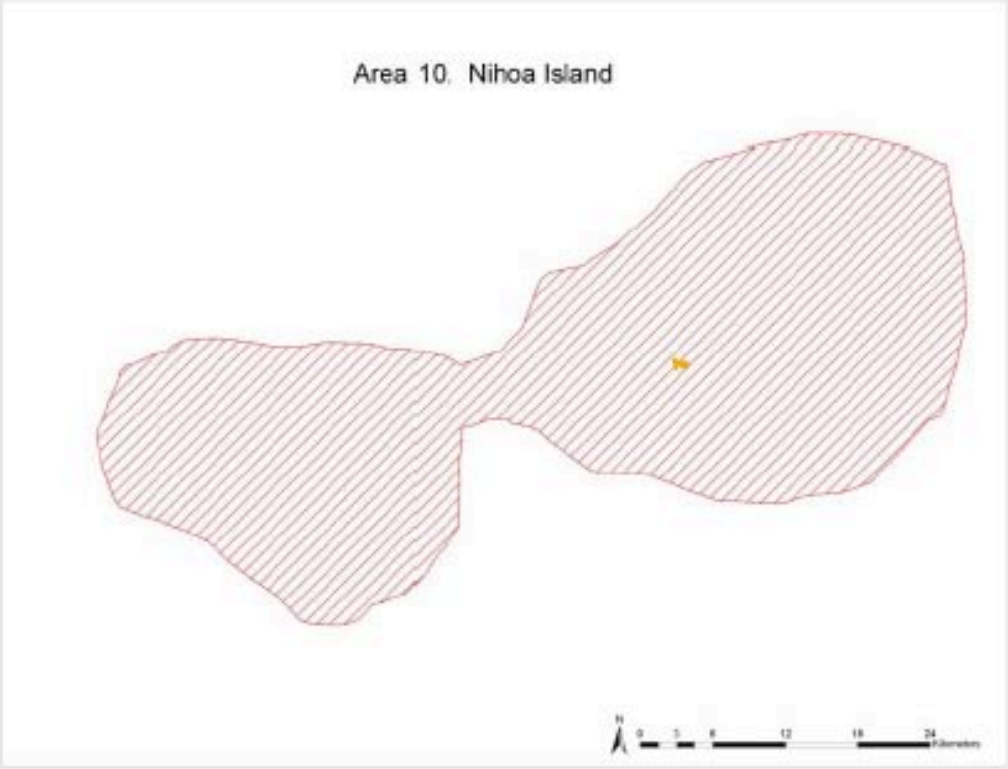

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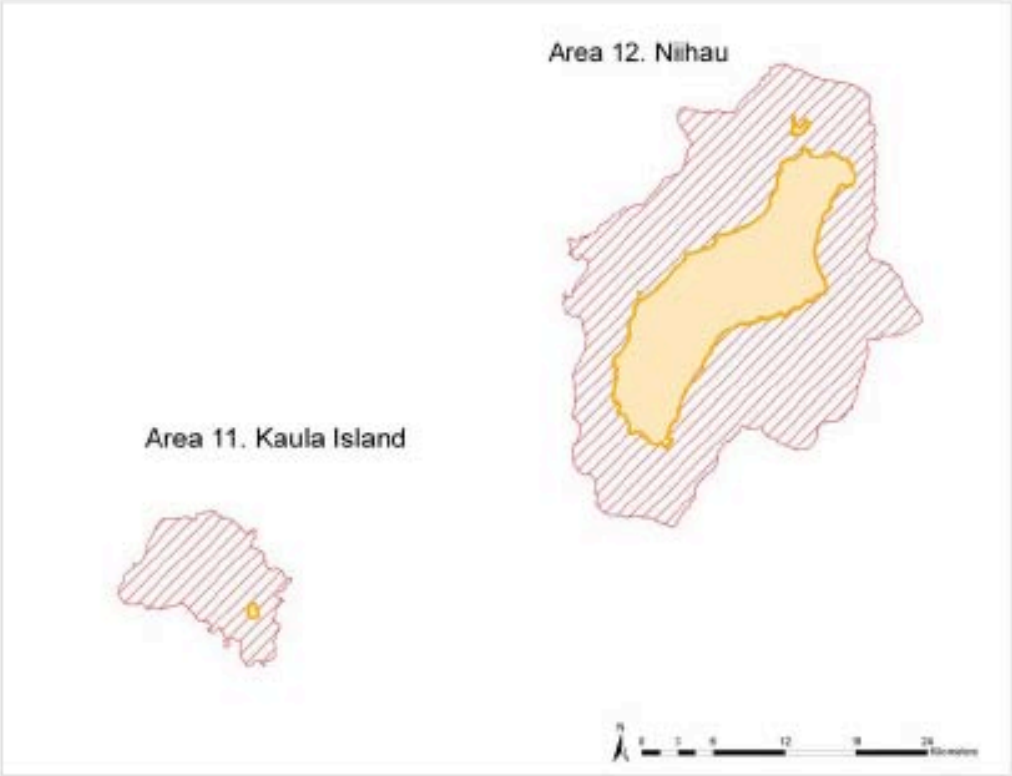

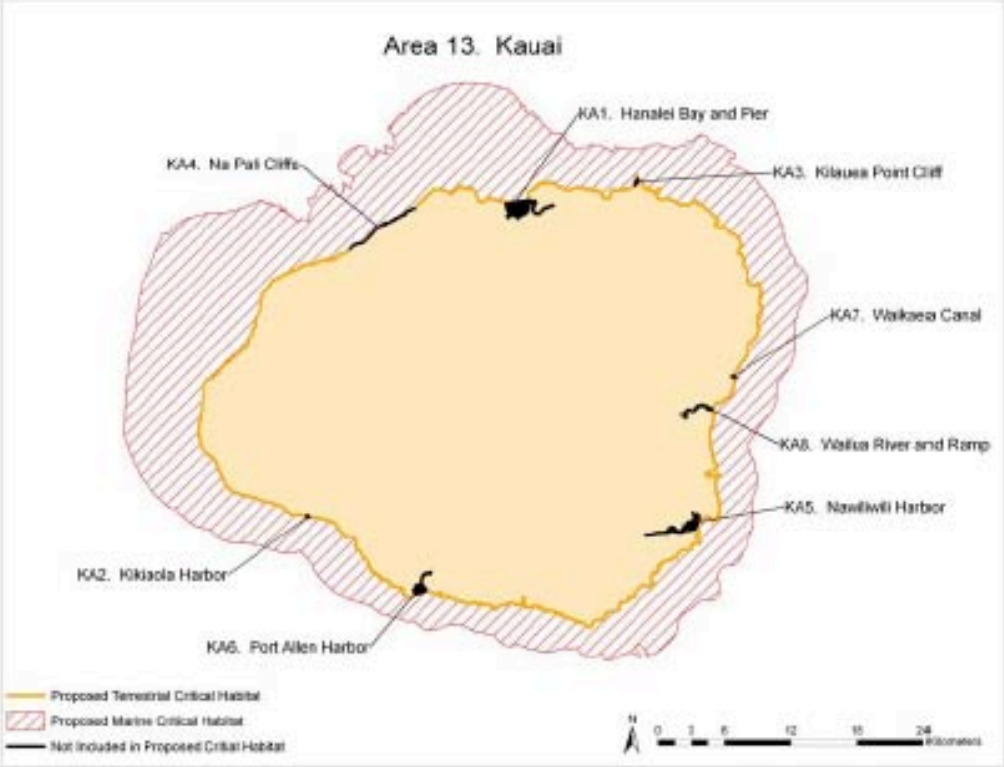

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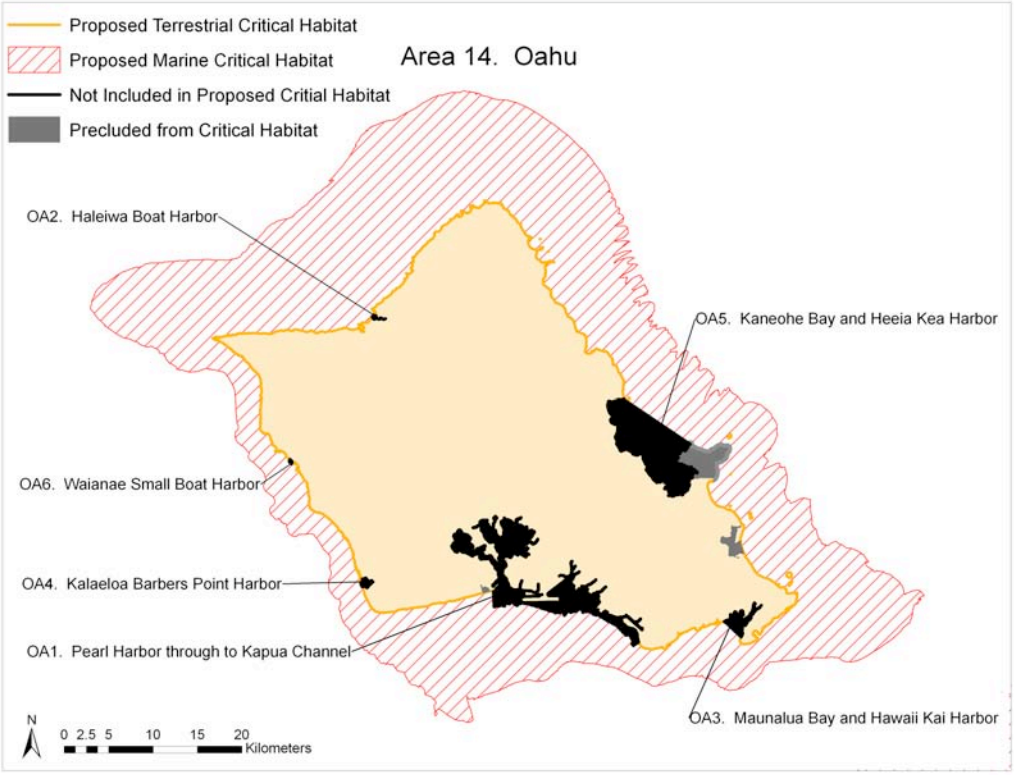

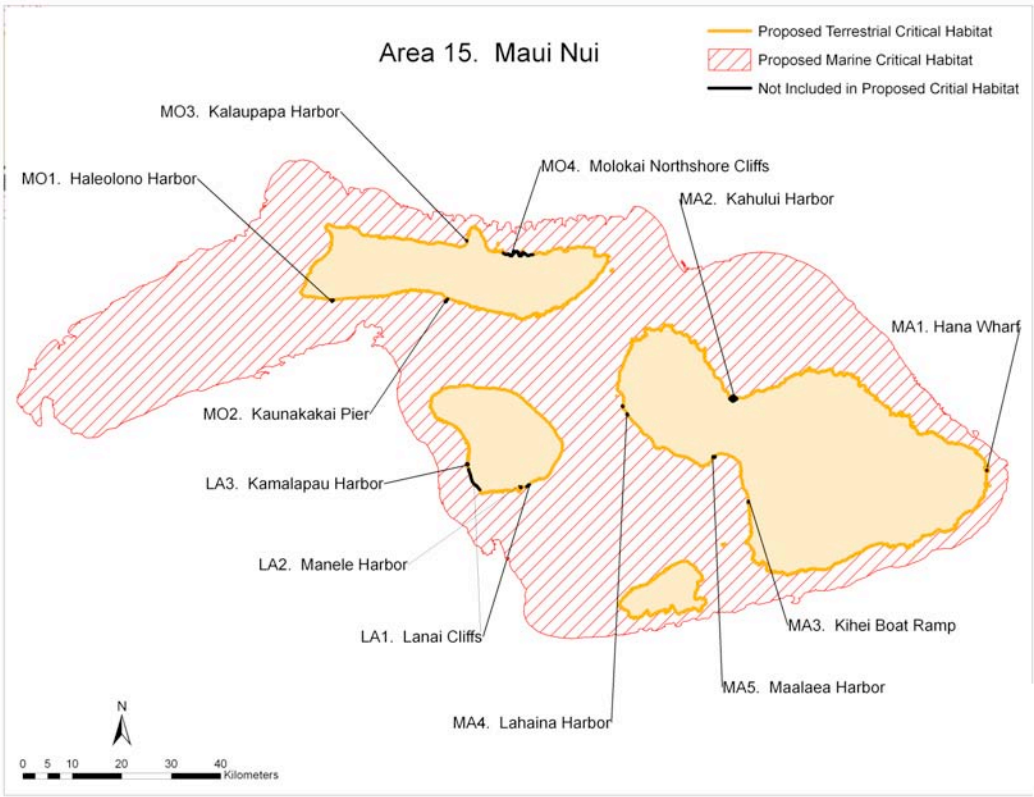

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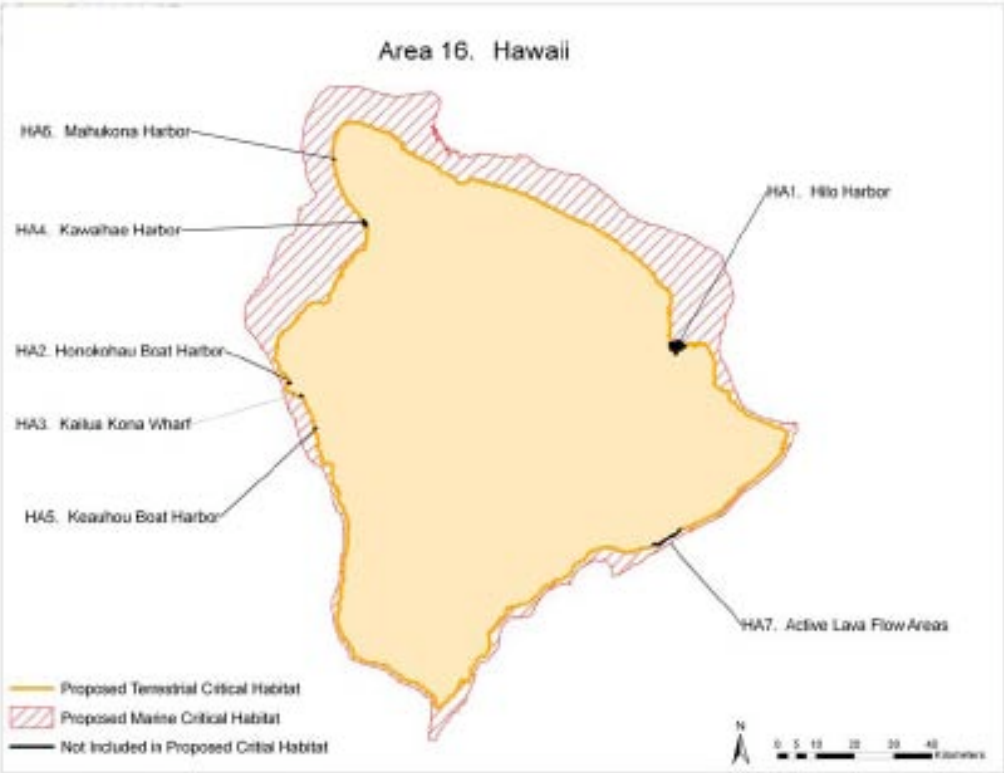
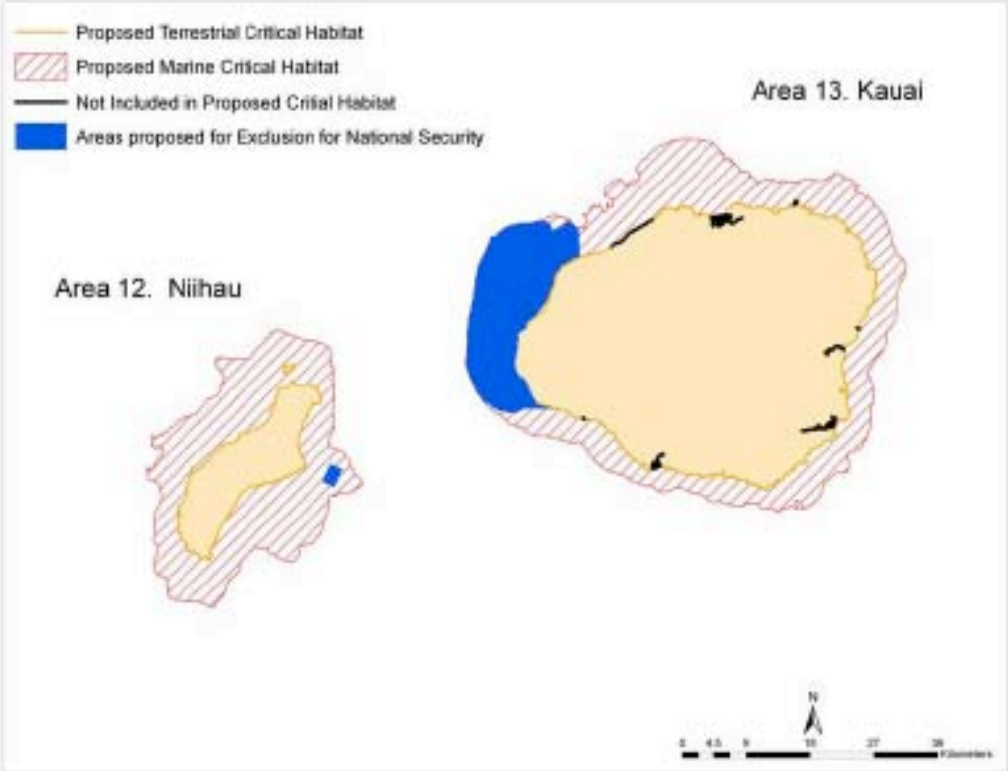


Figure A-2. Proposed Critical Habitat Areas with Proposed Exclusions



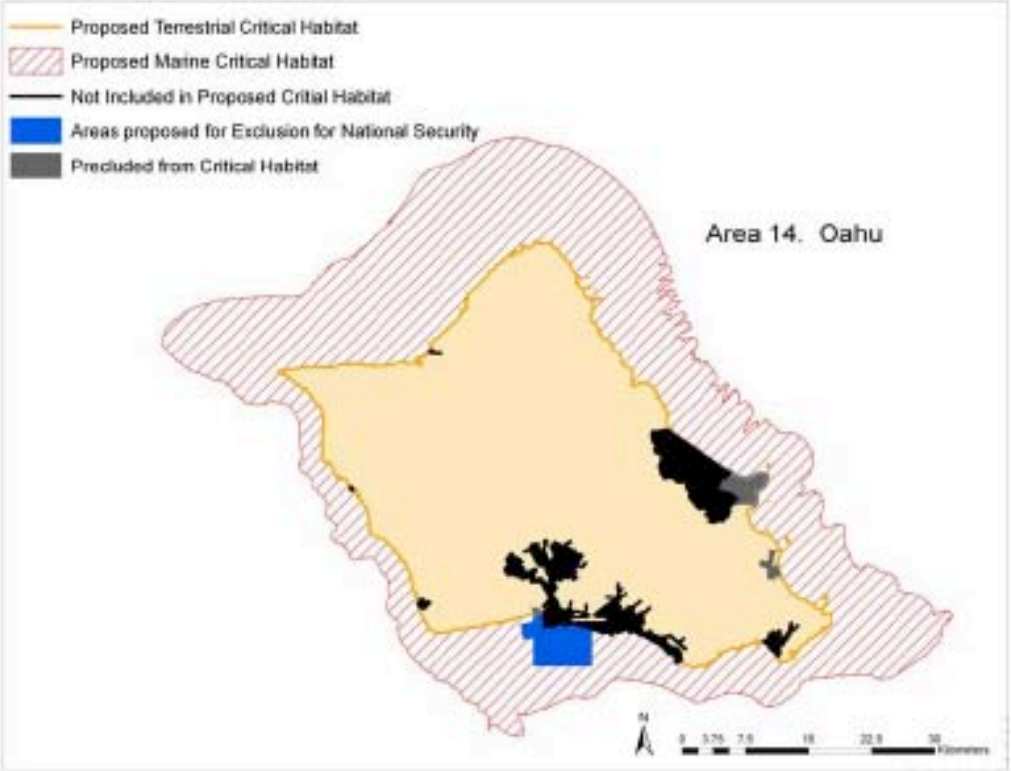


Figure A-2. Proposed Critical Habitat Areas with Proposed Exclusions, cont.

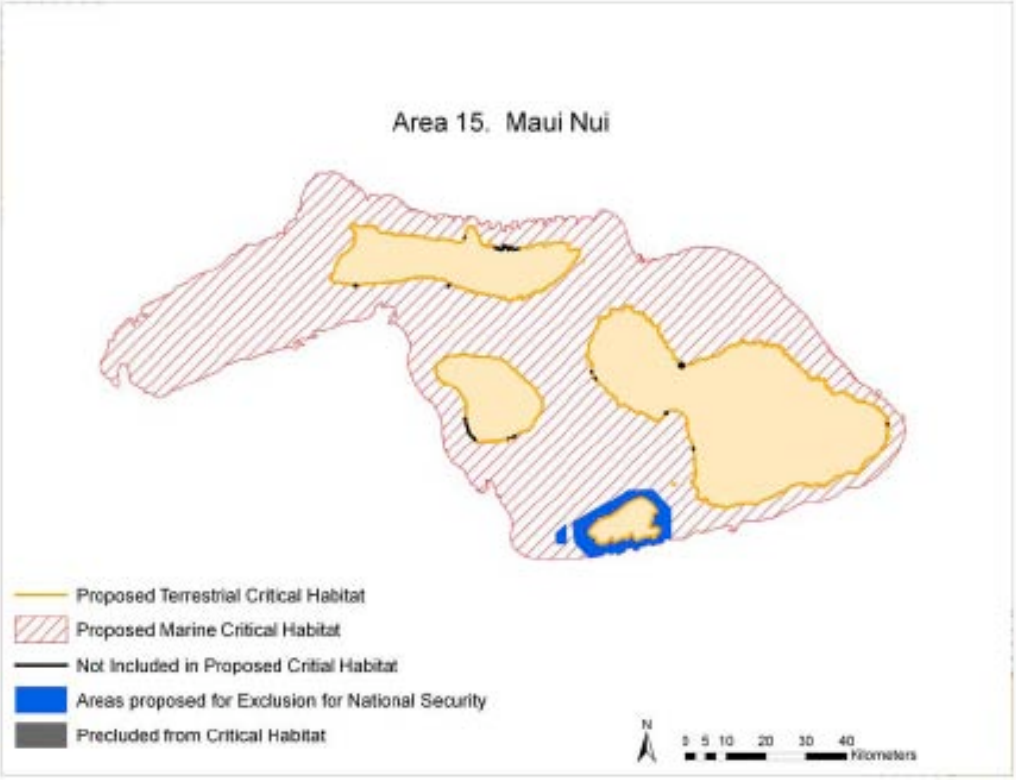
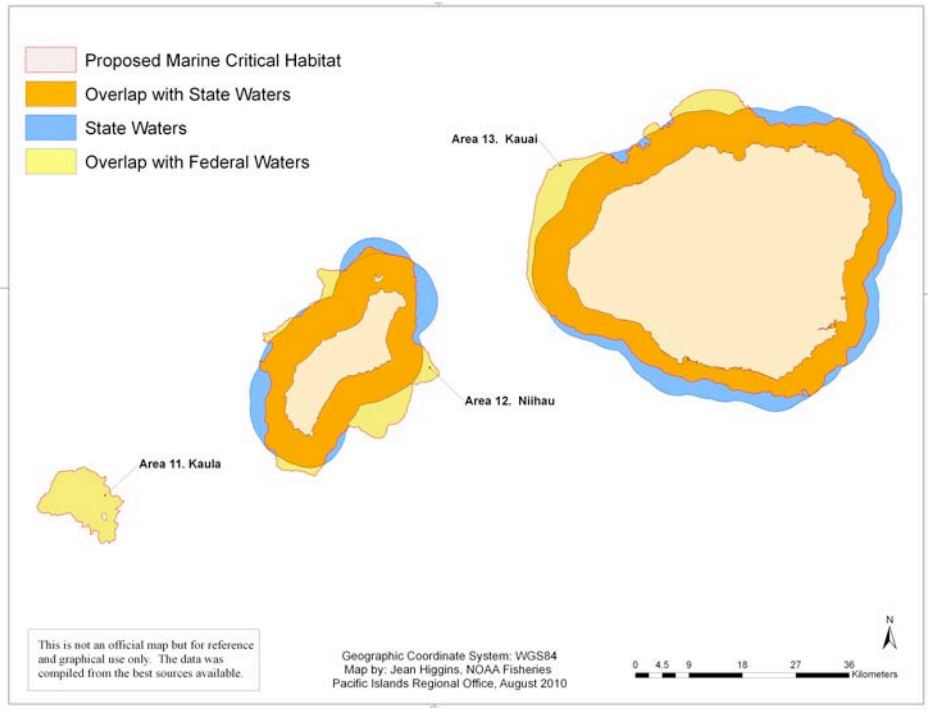
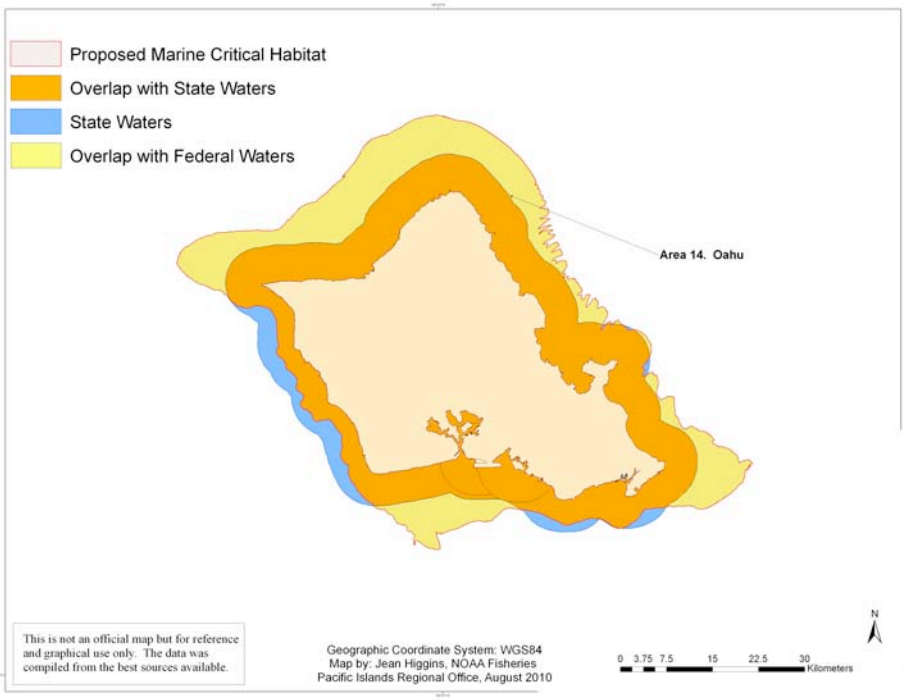


Figure A-3. Proposed Marine Critical Habitat Areas and Overlap with State and Federal Waters





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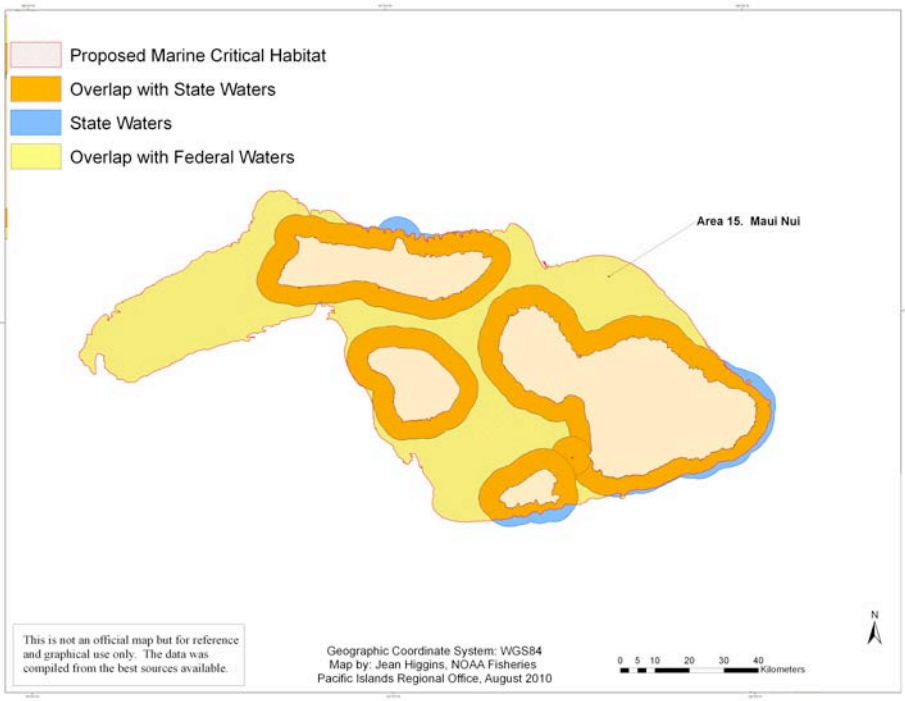

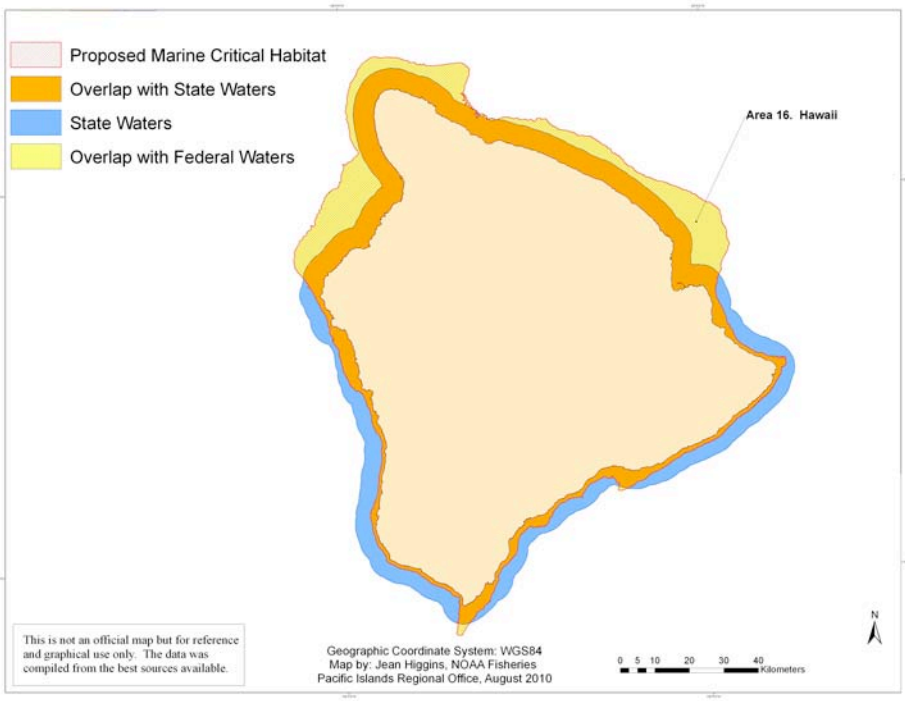

APPENDIX B: LAWS AND REGULATIONS THAT PROVIDE BASELINE PROTECTION FOR HMS CRITICAL HABITAT

The following complements the discussion, in Section II.B.1, of federal laws and actions that provide baseline protection for HMS critical habitat, relative to the protection that would be provided by the proposed designation.[68]

A. The Act to Prevent Pollution from Ships (APPS)(33 U.S.C. Section 1901 et seq.)

The APPS is the federal legislation implementing the International Convention for the Prevention of Pollution from Ships (MARPOL).[69] In the act, Congress gave authority to the Secretary of Transportation to carry out the MARPOL provisions. MARPOL establishes requirements pertaining to the discharge of oil and noxious substances, air pollution and requirements for discharge of plastics. The APPS applies to U.S. flag ships across the world and to foreign flag vessels operating in U.S. Navigable water or while at a port or terminal under U.S. jurisdiction. The U.S. Coast Guard has primary responsibility for enforcing regulations necessary to implement APPS in these waters. HMS critical habitat may be protected from measures taken to regulate pollution under this act.

B. The Clean Air Act 42 U.S.C. §7401 et seq. (1970)

The Clean Air Act (CAA) is the comprehensive federal law that regulates air emissions from stationary and mobile sources.[70] Among other things, this law authorizes EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and to regulate emissions of hazardous air pollutants.

One of the goals of this act is to set and achieve NAAQS in every state by 1975 in order to address the public health and welfare risks posed by certain widespread air pollutants. The setting of these pollutant standards was coupled with directing the states to develop state implementation plans (SIPs), applicable to appropriate industrial sources in the state, in order to achieve these standards. The Clean Air Act was amended in 1977 and 1990, primarily to set new goals (dates) for achieving attainment of NAAQS since many areas of the country had failed to meet the deadlines.

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[68] Information for this appendix comes from several sources. These include NOAA Fisheries. 2009. *Economic Impacts Associated with Potential Critical Habitat Designation for the leatherback Sea Turtle.* Retrieved July 4, 2010, from http://www.nmfs.noaa.gov/pr/pdfs/species/leatherback_economics.pdf; and the relevant webpages of USEPA, NOAA, the Hawaii Coastal Zone Management Program,

[69] http://epw.senate.gov/atppfs.pdf

[70] From EPA webpage: http://www.epa.gov/lawsregs/laws/caa.html

Section 112 of the Clean Air Act addresses emissions of hazardous air pollutants. Prior to 1990, CAA established a risk-based program under which only a few standards were developed. The 1990 Clean Air Act Amendments revised Section 112 to first require issuance of technology-based standards for major sources and certain area sources. "Major sources" are defined as a stationary source or group of stationary sources that emit or have the potential to emit 10 tons per year or more of a hazardous air pollutant or 25 tons per year or more of a combination of hazardous air pollutants. An "area source" is any stationary source that is not a major source.

For major sources, Section 112 requires that EPA establish emission standards that require the maximum degree of reduction in emissions of hazardous air pollutants. These emission standards are commonly referred to as “maximum achievable control technology” or “MACT” standards. Eight years after the technology-based MACT standards are issued for a source category, EPA is required to review those standards to determine whether any residual risk exists for that source category and, if necessary, revise the standards to address such risk. Measures taken to reduce pollution may in turn protect the quality of habitat being proposed as critical habitat for the HMS.

C. The Clean Water Act (33 U.S.C. 1251 et seq.)

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States.[71] It gives the Environmental Protection Agency (EPA) the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA also continued requirements to set water quality standards for all contaminants in surface waters.

Pursuant to Section 404 of the CWA, it is unlawful for any person to dredge, dispose off dredge material, or discharge a pollutant from a point source into navigable waters, unless a permit is obtained from the U.S. Army Corps of Engineers (USACE). As part of pollution prevention activities, the USACE may limit activities in waterways through the Section 404 permitting process, independent of leatherback concerns. These reductions in pollution may benefit HMS critical habitat.

Pursuant to Section 402 of the CWA and under the National Pollutant Discharge Elimination System (NPDES) program, EPA sets pollutant-specific limits on the point source discharges for major industries and provides permits to individual point sources that apply to these limits. Under the water quality standards program, EPA, in collaboration with States, establishes water quality criteria to regulate ambient concentrations of pollutants in surface waters.

Under section 401 of the CWA, all applicants for a federal license or permit to conduct activity that may result in discharge to navigable waters are required to submit a state certification to the licensing or permitting agency. Costs

[71] Source is leatherback economic analysis.

associated with this and other existing water control plans are considered baseline protection in this analysis.

D. The Coastal Zone Management Act (16 U.S.C. Section 1451 et seq.)

The Coastal Zone Management Act (CZMA) was enacted on October 27, 1972, to encourage coastal states, Great Lake States, and United States territories and commonwealths (collectively referred to as coastal states) to develop comprehensive programs to manage and balance competing uses of and impacts to coastal resources.[72] The CZMA emphasizes the primacy of state decision-making regarding the coastal zone. Section 307 of the CZMA (16 USC § 1456), called the federal consistency provision, is a major incentive for states to join the national coastal management program and is a powerful tool that states use to manage coastal uses and resources and to facilitate cooperation and coordination with federal agencies.

Federal consistency is the CZMA requirement where federal agency activities that have reasonably foreseeable effects on any land or water use or natural resource of the coastal zone (also referred to as coastal uses or resources and coastal effects) must be consistent to the maximum extent practicable with the enforceable policies of a coastal state's federally approved coastal management program. (Federal agency activities are activities and development projects performed by a federal agency, or a contractor for the benefit of a federal agency.)

Federal license or permit activities and federal financial assistance activities that have reasonably foreseeable coastal effects must be fully consistent with the enforceable policies of state coastal management programs. (Federal license or permit activities are activities proposed by a non-federal applicant requiring federal authorization, and federal financial assistance activities are proposed by state agencies or local governments applying for federal funds for activities with coastal effects.)

A lead state agency performs federal consistency reviews (usually the same agency that implements or coordinates the state's federally approved coastal management program). At the federal level, the Office of Ocean and Coastal Resource Management (OCRM), within the National Oceanic and Atmospheric Administration's (NOAA's) National Ocean Service (NOS), among other duties and services, interprets the CZMA and oversees the application of federal consistency; provides management and legal assistance to coastal states, federal agencies, tribes and others; and mediates CZMA related disputes. NOAA's Office of the Assistant General Counsel for Ocean Services assists OCRM and processes federal consistency appeals to the Secretary of Commerce.

Section 6217, "Protecting Coastal Waters," provides that each state with an approved coastal zone management program must develop and submit to

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[72] http://coastalmanagement.noaa.gov/consistency/welcome.html

USEPA and NOAA for approval a Coastal Nonpoint Pollution Control Program. The purpose of the program "shall be to develop and implement management measures for nonpoint source pollution to restore and protect coastal waters, working in close conjunction with other State and local authorities." The central purpose of section 6217 is to strengthen the links between federal and state coastal zone management and water quality programs and to enhance state and local efforts to manage land use activities that degrade coastal waters and coastal habitats.

Section 6217(b) states that each state program must:

- Identify land uses which, individually or cumulatively, may cause or contribute significantly to a degradation of (a) coastal waters where there is a failure to attain or maintain applicable water quality standards or protect designated uses, or (b) coastal waters that are threatened by reasonably foreseeable increases in pollution loadings from new or expanding sources.
- Identify critical coastal areas adjacent to coastal waters identified under the preceding paragraph;
- Implement additional management measures applicable to land uses and areas identified under paragraphs (1) and (2) above that are necessary to achieve and maintain applicable water quality standards and protect designated uses.
- Provide technical assistance to local governments and the public to implement the additional management measures.
- Provide opportunities for public participation in all aspects of the program.
- Establish mechanisms to improve coordination among State and local agencies and officials responsible for land use programs and permitting, water quality permitting and enforcement, habitat protection, and public health and safety.
- Propose to modify State coastal zone boundaries as necessary to implement NOAA's recommendations under section 6217(e), which are based on NOAA's findings that inland boundaries must be modified to more effectively manage land and water uses to protect coastal waters.

Hawaii adopted its *Coastal Nonpoint Pollution Control Program: Management Plan* in 1996. It identifies management measures to be taken to reduce the impact on coastal waters of nonpoint source pollution originating from agriculture, forestry, urban areas, marinas and recreational areas, hydromodification (channelization, channel modification, dams, streambank and shoreline erosion), and wetlands and riparian areas. NOAA and USEPA, however, have expressed concerns about the state’s ability to implement measures and its lack of adequate oversight enforcement authority.

E. The Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. Section 9601 et seq.)

Under CERCLA, the USEPA may initiate clean up actions at abandoned hazardous waste sites.[73] The USEPA can conduct a short-term removal action at any site that requires emergency action or conduct a long-term remedial action at any site on the National Priorities List. The EPA can also compel private parties to perform response action when release or threatened release of hazardous substances present an imminent and substantial endangerment to the public health or welfare of the environment. CERCLA also contains a "citizen suit" provision that permits private citizens to initiate civil action against parties that violate CERCLA. CERLCA authorizes the USEPA to force parties that were responsible for the release of hazardous substances to finance cleanups on the contaminated site. Where the responsible party cannot be identified or has gone bankrupt, CERCLA established a Trust Fund, known as Superfund. These elements give CERCLA a potential role in increasing the likelihood that hazardous materials potentially harmful to HMS critical habitat will be cleaned up sooner and more thoroughly than would occur otherwise.

F. Federal Power Act (16 U.S.C 800 1920, as amended)

The Federal Power Act (FPA) was promulgated to establish the Federal Energy Regulatory Commission (FERC) to oversee non-Federal hydropower generation. The FERC is an independent Federal agency governing approximately 2,500 licenses for non- Federal hydropower facilities, has responsibility for national energy regulatory issues. FERC regulates. Section 10(j) of the FPA was promulgated to ensure that FERC considers both power and non-power resources during the licensing process. Under this provision, FERC may require, before issuing a permit, that the sponsor of a project modify the project or take other actions to protect HMS critical habitat.

G. Fish and Wildlife Coordination Act (16 U.S.C.§§ 661-666 1934, as amended)

This law was enacted to protect fish and wildlife when federal actions result in the control or modification of a natural stream or body of water. The statute requires federal agencies to take into consideration the effect that water-related projects would have on fish and wildlife resources; take action to prevent loss of damage to these resources; and provide for the development and improvement of the resources. This act may offer protection to HMS critical habitat because modifications taken in support of this act should promote the health, and improvement of fish and wildlife resources related to in-water projects.

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[73] Center for Sustainable Systems. *Quick Reference: Comprehensive Environmental Response, Compensation, and Liability Act (CERLCA)*. Retrieved 28 August 2010 from http://css.snre.umich.edu/css_doc/CERCLA.pdf.

H. The Magnuson-Stevens Fishery Conservation and Management Act

This law signed by the President in January, 2007, amends the older Magnuson-Stevens Fishery Conservation and Management Act (as amended through 1996) that included bycatch reduction standards, and provision for the description of essential fish habitat in fishery management plans and consideration of actions to ensure the conservation and enhancement of habitat. The newer Magnuson-Stevens Reauthorization Act mandates the use of annual catch limits and accountability measures to end overfishing, provides for widespread market-based fishery management through limited access programs, and calls for increased international cooperation. This act may provide protection to HMS critical habitat by imposing measures to conserve and enhance fish habitat that may, in turn benefit HMS prey species.

I. The National Environmental Policy Act (42 U.S.C. 4321 et seq.)

The National Environmental Policy Act (NEPA) requires that all Federal agencies conduct a detailed environmental impact statement (EIS) in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. The NEPA process may provide protection to the HMS critical habitat for activities that have Federal involvement, if alternatives are considered and selected that are less harmful to HMS critical habitat than other alternatives.

J. The Oil Pollution Act (33 U.S.C. Section 2701 et seq., 46 U.S.C. Section 3703a.)

This is the principal statute governing oil spills into the nation's waterways, including spills that might harm HMS critical habitat.. The Oil Pollution Act (OPA) was passed in the wake of the *Exxon Valdez* oil spill in March 1989. The statute influences incentives to reduce the risk of spills by establishing liability and limitations on liability for damages resulting from oil pollution, and establishes a fund for the payment of compensation for such damages. In conjunction with CERCLA, it mandates a "National Oil and Hazardous Substances Pollution Contingency Plan (NCP)" to provide the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants. It requires preparation of spill prevention and response plans by coastal facilities, vessels, and certain geographic regions. OPA amended the Clean Water Act and includes the Oil Terminal and Oil Tanker Environmental Oversight and Monitoring Act of 1990.

K. Rivers and Harbors Act (33 USC §§ 401 ET SEQ. 1938)

The Rivers and Harbors Act (RHA) places Federal improvements of rivers, harbors and other waterways under the jurisdiction of the Department of the Army, USACE and requires that all improvements include due regard for wildlife conservation. This act may provide protection to the Hawaiian monk seal critical habitat related to activities in bays and estuarine navigable waters. Under sections 9 and 10 of the RHA, the USACE is authorized to regulate the construction of any structure or work within navigable waterways. This includes, for example, bridges and docks. To provide additional protection for the aquatic environment nationwide and within the Pacific region, the USACE has attached conditions to general permits. These conditions set forth requirements that are meant to preserve water quality and minimize the impacts to resources. Some of the conditions set forth by these conditions likely will provide protection for HMS critical habitat by minimizing impacts to prey species.

L. The Resource Conservation and Recovery Act (42 U.S.C. Section 6901 et seq.).

This act is the primary federal statute addressing the recycling and disposal of solid waste. It established a federal program regulating solid and hazardous waste management. The law takes a cradle-to-grave approach in the tracking of hazardous waste from generation to final disposal. All existing landfills are required to meet minimum technology requirements, while all new waste facilities are required to obtain a permit from the U.S. Environmental Protection Agency. Measures taken under this act are likely to provide protection for critical habitat by minimizing pollution risks.

M. The Sikes Improvements Act (16 USC §670 1997)

The Sikes Improvement Act (SIA) requires military installations to prepare and implement an Integrated Natural Resources Management Plan (INRMP). The purpose of the INRMP is to provide for:

- The conservation and rehabilitation of natural resources on military installations.
- The sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and nonconsumptive uses.
- Subject to safety requirements and military security, public access to military installations to facilitate the use of the resources.

INRMPs developed in accordance with SIA may provide protection to HMS critical habitat within military training ranges.

N. Executive Order Adopting and Implementing the *Final Recommendations of the Interagency Ocean Policy Task Force, July 19, 2010.*

The task force set national priority objectives that include:

- Ecosystem-Based Management: Adopt ecosystem-based management as a foundational principle for the comprehensive management of the ocean, our coasts, and the Great Lakes.
- Coastal and marine spatial Planning: Implement comprehensive, integrated, ecosystem-based coastal and marine spatial planning and management in the United States.
- Inform Decisions and Improve Understanding: Increase knowledge to continually inform and improve management and policy decisions and the capacity to respond to change and challenges. Better educate the public through formal and informal programs about the ocean, our coasts, and the Great Lakes.
- Coordinate and Support: Better coordinate and support Federal, State, tribal, local, and regional management of the ocean, our coasts, and the Great Lakes. Improve coordination and integration across the Federal Government, and as appropriate, engage with the international community.
- Resiliency and Adaptation to Climate Change and Ocean Acidification: Strengthen resiliency of coastal communities and marine and Great Lakes environments and their abilities to adapt to climate change impacts and ocean acidification.
- Regional Ecosystem Protection and restoration: Establish and implement an integrated ecosystem protection and restoration strategy that is science-based and aligns conservation and restoration goals at the Federal, State, tribal, local, and regional levels.
- Water Quality and Sustainable Practices on Land: Enhance water quality in the ocean, along our coasts, and in the Great Lakes by promoting and implementing sustainable practices on land.
- Ocean, Coastal, and Great Lakes Observations, Mapping, and Infrastructure: Strengthen and integrate Federal and non-Federal ocean observing systems, sensors, data collection platforms, data management, and mapping capabilities into a national system, and integrate that system into international observation efforts.

NMFS anticipates that actions taken to accomplish these objectives may anticipate and should complement measures taken to protect critical habitat for the HMS and other marine species.

O. State Laws

Hawaii has adopted laws to implements relevant federal laws, such as the Clean Water Act, that provide protection for HMS critical habitat. Other laws that may provide protection include:

- HRS 195D, Hawaii's endangered species law, which states, "To insure the continued perpetuation of indigenous aquatic life, wildlife, and land plants, and their habitats for human enjoyment, for scientific purposes, and as members of ecosystems, it is necessary that the State take positive actions to enhance their prospects for survival." It requires state agencies to take such actions as may be necessary to ensure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of the HMS as long as it is listed under the ESA. These actions may include entering into agreement with federal agencies, counties, private landowners, and organizations for the areas utilized for conserving, managing, enhancing, or protecting the habitat of listed species. It also prohibits any taking, transport or commerce in designated species, outlines conservation programs that mandate continued research on listed species, and gives law enforcement officials broad authority to enforce the law. It allows for the acquisition and maintenance of habitat, prohibits violation of a habitat conservation plan, and authorizes government payment to compensate for the costs of maintaining a listed species' essential habitat.

- Senate Bill 2441 (2009), which makes it a felony to harm a Hawaiian monk seal.

These laws may provide protection to HMS and its critical habitat by influencing the behavior of individuals, businesses, and stage agencies.