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ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR THE HAWAIIAN MONK SEAL

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prepared for:

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EXECUTIVE SUMMARY

INTRODUCTION

1. This report identifies and analyzes the potential economic impacts resulting from designation of critical habitat for the Hawaiian monk seal. Critical habitat was designated for the monk seal on the Northwest Hawaiian Islands (NWHI) in 1986, and critical habitat boundaries were revised in 1988.[1,2] Pursuant to the Endangered Species Act (ESA), the National Marine Fisheries Service (NMFS) released the "Proposed Rulemaking to Revise Critical Habitat for Hawaiian Monk Seals" (Proposed Rule) on June 2, 2011.[3] The 2011 rulemaking proposed to expand the existing delineation of critical habitat to include additional habitat in the NWHI as well as six new areas of critical habitat in the Main Hawaiian Islands (MHI). NMFS is now refining the proposed action by decreasing the amount of marine habitat and terrestrial areas for designation based on newly available monk seal tracking information and public comments received.

2. Section 4(b)(2) of the ESA requires NMFS to consider the economic, national security, and other impacts of designating a particular area as critical habitat. NMFS may exclude an area from critical habitat if it determines that the benefits of exclusion outweigh the benefits of specifying the area as part of the critical habitat, unless it also determines that the failure to designate the area as critical habitat will result in the extinction of the species concerned.

[1] National Oceanic and Atmospheric Administration, *Critical Habitat; Hawaiian Monk Seal; Endangered Species Act: Notice of Final Rule*, 51 Federal Register 16047, April 30, 1986.

[2] National Oceanic and Atmospheric Administration, *Critical Habitat; Hawaiian Monk Seal; Endangered Species Act: Notice of Final Rule*, 53 Federal Register 18988, May 26, 1988.

[3] National Oceanic and Atmospheric Administration, *Endangered and Threatened Wildlife and Plants: Proposed Rulemaking to Revise Critical Habitat for Hawaiian Monk Seals*, 76 Federal Register 32026, June 2, 2011.

SUMMARY OF FINDINGS*

- **Total economic costs**: Quantified impacts of the designation reflect additional administrative effort as part of future consultations on projects. The estimated present value of impacts is $2.04 million over the next ten years ($290,000 annualized). In addition to these quantified impacts, our analysis concludes that bottomfish and coral reef fisheries, and development may experience economic impacts of the designation on the Main Hawaiian Islands (units 11 through 16). Absent information to quantify these impacts, we provide a qualitative assessment of these potential unquantified impacts.
- **Distribution of impacts across units**: Quantified impacts are anticipated to be greatest in Maui Nui (40 percent) and Oahu (27 percent). These impacts are driven by relatively minor administrative costs associated with a significant number of in-water construction and coastal construction projects across these particular areas. Unquantified impacts are also identified with respect to development in remove areas of Oahu and Kauai. Unquantified impacts to fisheries would be distributed across the Main Hawaiian Islands.
- **Distribution of impacts across activities**: While the quantified impacts to in-water and coastal construction are greatest (approximately 81 percent of total impacts), the quantified impacts represent only minor additional administrative effort as part of future section 7 consultation on these activities. These activities are therefore more likely to be measurably affected by critical habitat designation. In other words, while coastal construction activities will be subject to the greatest number of consultations, we expect it is unlikely that the designation will result in changes to the scope and scale of these projects. While relatively few consultations are expected for fisheries, and development, our analysis identifies the potential for critical habitat designation to affect the scope and scale of these activities.
- **Benefits**: The primary benefit of critical habitat designation is the contribution of the rule to the conservation and recovery of the Hawaiian monk seal. Absent quantitative information on the extent to which critical habitat is expected to contribute to conservation and recovery, we cannot quantify this benefit and instead provide a qualitative discussion. In addition, critical habitat designation may generate ancillary environmental improvements to the extent that conservation measures for the monk seal, for example, improve water quality or habitat conditions for other native species.

*Quantified impact estimates are provided at a seven percent discount rate over the next ten years.

3. This analysis employs the best data available to analyze the economic impacts of designating particular areas as critical habitat; these impacts represent the "benefits of exclusion."[4] NMFS presents its formal consideration of the benefits of including particular areas (the "benefits of inclusion") within the designation in a separate report.[5] Together, these two reports support NMFS in determining whether the benefits of excluding any particular area outweigh the benefits of designating that area. These

[4] A draft of this report was made available to the public for review and comment in January, 2011, when NMFS published its proposed revised critical habitat rule. This report incorporates revisions, as appropriate, to respond to comments on the draft. A detailed discussion of public comments on the draft economic analysis and associated responses, see the responses to public comment, which will be available with the release of a Final Rule.

[5] National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals: Final Biological Report, October 2014, received from NMFS on November 12, 2014.

determinations are required under Section 4(b)(2) before any exclusion can be made. Such determinations are documented in NMFS' 4(b)(2) report.[6]

ANALYTIC METHODS

4. Once critical habitat is designated, section 7 of the ESA requires Federal agencies to consult with NMFS to ensure that any action they authorize, fund, or carry out will not result in the destruction or adverse modification of critical habitat. NMFS may, through the consultation process, recommend changes to these activities (termed "activities with a Federal nexus") that would avoid destruction or adverse modification of critical habitat. The economic impacts of critical habitat designation stem from this process and any modifications to activities implemented as a result of consultation.

5. To derive a measure of the economic impacts associated with designating a particular area as critical habitat, this analysis: (1) characterizes existing or potential threats to the monk seal critical habitat within these areas; (2) links these threats with particular human activities; (3) identifies the modifications to these activities that would avoid or minimize the threats; and (4) to the extent feasible, quantifies and monetizes the economic impact of the modifications and administrative effort associated with the section 7 consultation process.

6. Based on our review of the 2011 Proposed Rule, NMFS's Revision of Critical Habitat for Hawaiian monk seals: Biological Report (October 2013 and November 2014), discussions with biologists at NMFS, and a review of the ESA section 7 consultation history for the Hawaiian monk seal, we have identified the following activities that may require consultation to consider monk seal critical habitat:

   - **In-water and coastal construction** –activities that may affect coastal and marine areas that overlap with potential critical habitat, including construction and maintenance of roads, bridges, or culverts; dredging; bank stabilization; installation and maintenance of vegetation, pilings, moorings, and bulkheads; boat ramp construction or maintenance; and construction or repair of pipelines;
   - **Fisheries** –Certain federally managed commercial and recreational fisheries, and fishery-related projects or activities that are supported by federal funds;
   - **Dredging and disposal of dredged material** – maintenance dredging and debris removal in harbors and navigable waterways, as well as the disposal of dredged material;
   - **Energy development (renewable energy projects)** –ocean thermal energy, wave energy, and offshore wind energy, all of which require placement of cables or anchors in the marine environment;
   - **Development** – residential, commercial, or industrial development occurring within or adjacent to potential critical habitat;

[6] National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals, ESA Section 4(b)2 Report, September 2010.

- **Aquaculture** –including marine nearshore, pelagic commercial, research-related, algae farming, and use of traditional fish ponds.
- **Activities that generate water pollution** – point and non-point sources such as agricultural pesticide applications, industrial discharge, and stormwater runoff;
- **Oil spills, spills of other substances, vessel groundings and marine debris response activities** – pre-spill response planning and post-spill recovery efforts;
- **Military activities** – in-water training and research; and
- **Other activities –** research projects, Native Hawaiian activities, and other activities outside of the categories listed above.

7. This report focuses on the economic impacts of critical habitat designation on the activities listed above, comparing the state of the world with and without the designation of critical habitat for the Hawaiian monk seal. The "without critical habitat" scenario represents the baseline for the analysis, considering habitat protections already afforded the monk seal either as a result of its listing as an endangered species or as a result of other Federal, State, and local regulations. This baseline scenario does not include protections provided by the 1986 or 1988 designations of critical habitat in the NWHI. The "with critical habitat" scenario describes the incremental impacts associated specifically with the designation of critical habitat for the monk seal in both the MHI and the NWHI. The incremental impacts quantified in this analysis are those not expected to occur absent the designation of critical habitat for the monk seal.

8. To quantify the economic impacts of modifications to the activities listed above, we undertake the following general steps:

    1. Identify the baseline extent and frequency of economic activity in areas identified for designation as critical habitat, as well as the statutes and regulations that constrain that activity in the absence of the critical habitat designation;
    2. Identify the types of activities that are likely to be affected by critical habitat designation;
    3. Estimate the costs of modifications needed to comply with the ESA's critical habitat provisions (incremental impacts); and
    4. Project the occurrence of the activities and the likelihood they will in fact need to be modified over ten years for each specific area identified by NMFS.

9. Incremental impacts include the direct costs associated with additional administrative effort required to conduct section 7 consultations (including new consultations that otherwise would have been limited to jeopardy issues, reinitiated consultations, or new consultations occurring specifically because of the designation that would not already have occurred) as well as the direct costs associated with project modifications that would not have been required under the baseline scenario to avoid jeopardizing the continued existence of the species.

10. The analysis estimates impacts based on activities that are reasonably foreseeable, including activities that are currently authorized, permitted, or funded, or for which

proposed plans are currently available to the public. In general, the time frame considered to forecast economic impacts in the study area is ten years. The extent of economic activity across the study area is uncertain beyond this timeframe.

11. To calculate present value and annualized impacts, guidance provided by OMB specifies the use of a real annual discount rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates, such as three percent, which some economists believe better reflects the social rate of time preference (i.e., the willingness of society to exchange the consumption of goods and services now for the consumption of goods and services in the future).[7] Accordingly, the analysis presents impacts at seven percent and provides a sensitivity analysis in Appendix A that presents impacts assuming a discount rate of three percent.

HAWAIIAN MONK SEAL BIOLOGY AND HABITAT REQUIREMENTS

12. The Hawaiian monk seal is a wide-ranging, air-breathing aquatic carnivore. The seals spend a majority of their time in the ocean for foraging, socializing, mating and traveling, but rely on terrestrial habitat to rest, avoid predators, molt, pup (give birth), and nurse. Hawaiian monk seals are considered solitary animals, often hauling out individually, though they may congregate in small numbers. The range for the species, identified by sighting data, includes the Hawaiian Archipelago and Johnston Atoll. As of 2009, the Hawaiian monk seal population was estimated at 1,212 individuals.[8]

13. Exhibit 1-1 summarizes, at a general level, the physical and biological features of habitat essential to the conservation of the Hawaiian monk seal.

EXHIBIT ES-1. PHYSICAL AND BIOLOGICAL FEATURES OF HAWAIIAN MONK SEAL CRITICAL HABITAT

1. **Terrestrial areas and adjacent shallow, sheltered aquatic areas with characteristics preferred by monk seals for pupping and nursing.** These include sandy, protected beaches located adjacent to shallow sheltered aquatic areas, where the mother and pup may nurse, rest, swim, thermoregulate, and shelter from extreme weather. Substrates used for pupping include sand, shallow tide-pools, coral rubble, and rocky substrates that provide accessibility to seals for hauling out.
2. **Marine areas from 0 to 200 m in depth that support adequate prey quality and quantity for juvenile and adult monk seal foraging.** Hawaiian monk seals are foraging generalists that feed on a wide variety of bottom-associated prey species and utilize a wide range of benthic habitat. Inshore, benthic and offshore teleosts, cephalopods, and crustaceans are commonly described as monk seal prey items and foraging areas include sand terraces and talus slopes, which provide substrate and materials for preferred benthic and cryptic prey species to hide.

[7] U.S. Office of Management and Budget, Circular A-4, September 17, 2003 and U.S. Office of Management and Budget, "Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations; Notice," 68 Federal Register 5492, February 3, 2003.

[8] National Oceanic and Atmospheric Administration, "U.S. Pacific Marine Mammal Stock Assessments: 2012 ", available at http://www.nmfs.noaa.gov/pr/pdfs/sars/po2012sehm-hi.pdf as of October 31, 2013. For a detailed review of biological information, see: National Marine Fisheries Service, August 2007, Recovery Plan for the Hawaiian Monk Seal (*Monachus schauinslandi*).

3. **Significant areas used by monk seals for hauling out, resting, or molting. Hawaiian monk seals utilize terrestrial habitat to haul out for resting, and molting.** These are generally characterized by sandy beaches, sand spits, or low shelving reef rocks accessible to seals. These areas are defined by the frequency with which local populations of seals use a stretch of coastline or particular beach.
Source: National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report, October 2013 and November 2014 drafts, received from NMFS on November 13, 2013 and November 12, 2014, respectively.

STUDY AREA

14. In defining the geographic extent of the potential designation (the "study area"), NMFS includes 16 Specific Areas, representing each of the MHIs and NWHIs. Habitat on the NWHI will include "all beach areas, sandspits and islets, including all beach crest vegetation to its deepest extent inland, and marine habitat 10 m in height from the bottom through the shoreline out to 200 m (656 ft) depth contour." Habitat on the MHI includes "marine habitat 10 m (32.8 ft) in height from the bottom from the 200 m (656.4 ft) depth contour (relative to mean lower low water), through to the shoreline and including terrestrial areas extending 5 m (16 ft) inland from the shoreline between the identified boundary points"" around each of the islands in the MHI.[9]

15. A number of areas on the MHI that fall in these broad habitat delineations are not part of the proposal. These include a number of areas that were explicitly excluded for national security, military installations areas that are ineligible for inclusion under 4(a)(3) of the ESA, and areas that are not accessible to Hawaiian monk seal, or do not have the features that support monk seal conservation (e.g., Na Pali coast cliffs). A third category of shoreline areas which are not included in the designation are areas that do not meet the definition of habitat, including any manmade structures and shoreline hardening.

RESULTS AND KEY FINDINGS

16. Exhibit ES-2 summarizes estimated economic impacts of the designation within the study area. As shown, the total estimated present value of the quantified impacts is $2.04 million over the next ten years. On an annualized basis, this is equivalent to impacts of $290,000 per year. These impacts reflect additional administrative effort to consider critical habitat as part of future section 7 consultations. These quantified impacts are primarily associated with the designation of the MHI. In particular, 40 percent of the quantified impacts are associated with the designation of Maui Nui and another 27 percent with the designation of Oahu. This is not surprising, as these are the islands are subject to the greatest levels of economic activity, and therefore support the majority of the projected section 7 consultations.

17. The quantified impacts alone, however, provide an incomplete picture of the potential effects of the critical habitat designation. Our analysis also emphasizes the potential for critical habitat to change the scope and scale of future projects or activities due to additional conservation measures recommended for the Hawaiian monk seal. We

[9] National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report, October 2013 and November 2014 drafts, received from NMFS on November 13, 2013 and November 12, 2014, respectively.

provided qualitative descriptions of these categories of "unquantified impacts" throughout the analysis. First, additional impacts related to fisheries in the MHI are possible, although unlikely, as described in Chapter 4. Critical habitat designation may also limit the scope or scale of potential future development projects in identified areas in Kauai and Oahu, as described in Chapter 7. When considered alongside the quantified impacts, the unquantified impacts provide a more complete picture of the particular areas and economic activities most likely to experience impacts of the designation.

18. Exhibit ES-3 summarizes forecast economic impacts associated with designation of critical habitat for monk seals by economic activity. While approximately 81 percent of the quantified impacts are associated with transportation and in-water construction activities, the quantified impacts do not reflect the total impacts of critical habitat designation. This percentage therefore describes the distribution of potential future consultation activity across the activities, but does not necessarily represent the relative magnitude of total economic impacts across activities. Unquantified impacts may change the relative magnitude of impacts across activities. In fact, unquantified impacts to fisheries, development, and military activities may change the relative distribution of impacts across activities presented in this exhibit. Important information limitations and uncertainty limit our ability to quantify these impacts, as described in this analysis.

19. Following are the key findings of our analysis with respect to each of the economic activities evaluated:

- **In-Water and Coastal Construction:** Quantified impacts to in-water and coastal construction activities occurring within Hawaiian monk seal habitat are estimated to be $1.65 million ($290,000 annualized), or 81 percent of quantified costs. Impacts include costs associated with DLNR efforts to consider monk seal critical habitat in issuing permits and leases for approximately 35 projects annually on state-owned lands and waters, as well as 6 consultations related to transportation and in-water construction projects.
- **Fisheries:** Quantified impacts associated with commercial fisheries are estimated to be approximately $16,000 over the next ten years ($2,280 annualized). Reductions to the annual catch limit for federally managed fisheries are possible, although unlikely, and thus this represents a category of unquantified impacts in our analysis.
- **Energy Development:** Quantified impacts related to energy projects are estimated to be $54,400 ($7,740 annualized) over the next ten years. These costs reflect additional effort to consider critical habitat designation as part of seven formal consultations on proposed energy developments in marine or coastal habitat in the MHI. Due to the extensive requirements of proposed energy projects to consider environmental impacts, including impacts on marine life, critical habitat for the Hawaiian monk seal is unlikely to generate additional recommendations for conservation measures for these projects.
- **Development:** Impacts of critical habitat designation on development are significantly uncertain and are therefore not quantified in this analysis.

Development of coastal areas is governed by Federal, state, and county-level programs and policies that provide significant baseline protection to the critical habitat area. No consultations have historically occurred for development projects with respect to the Hawaiian monk seals. However, NMFS will evaluate effects of future development that occurs adjacent to critical habitat on a project-by-project basis. NMFS is most concerned with development projects that may affect remote areas that are adjacent to the critical habitat designation. We identify three such areas that are remote and increased development may attract activity and negatively affect the habitat for the seals (two identified projects on Kauai, and one identified project on Oahu). Potential impacts to development in these areas represents a key category of unquantified impacts in this analysis.

- **Military Activities:** The majority of ongoing military activities are managed according to existing plans that were subject to consultation with NMFS regarding potential effects on monk seals. This analysis estimates total quantified impacts of $14,900 ($2,120 annualized) for consultations regarding military activities occurring within the critical habitat area. These costs reflect additional administrative effort to consider critical habitat designation as part of future consultations, minor efforts because of the significant level of review required of these activities under NEPA, the MMPA, and the ESA, even absent critical habitat designation.
- **Other activities:** This analysis additionally evaluates impacts to aquaculture, dredging activities, water pollution management, and oil spills and spills of other substances response activities. Impacts to these activities are anticipated to be relatively minor and represent limited additional administrative effort to consider critical habitat as part of future section 7 consultations. Critical habitat designation for the Hawaiian monk seal is not expected to change the scope and scale of these activities in the future.

20. This analysis also contemplates the potential economic benefits of monk seal critical habitat. The objective of the critical habitat rule is to support conservation and recovery of the Hawaiian monk seal. The economics literature demonstrates that humans place value on the conservation of listed species, including the monk seal. From an economics perspective the appropriate measure of the value of the conservation and recovery of the species is reflected in the willingness-to-pay of human populations to achieve this objective. In addition, critical habitat may generate ancillary environmental improvements that, while not the focus of the critical habitat rule, constitute a potential economic benefit. For example, to the extent that the designation limits development activities in remote areas, there may be a consequent benefit to water quality and habitat conditions for other native species in that area. Chapter 13 describes existing literature describing the potential benefits of monk seal conservation.

21. We do not, however, quantify these benefits. First, in order to quantify the direct benefit to human populations of monk seal conservation and recovery, we would need to quantify the extent to which the critical habitat designation, in particular, contributes to conservation and recovery of the species (i.e., above and beyond the protections afforded

the monk seals through the listing status under the ESA and the Marine Mammal Protection Act (MMPA)). Attributing the full economic benefits of conservation and recovery to the critical habitat rule would overstate the direct economic benefits of the rule. In addition, we are unable to quantify potential ancillary benefits of the rule as our analysis did not identify any specific changes in how economic activities are carried out. We identified only limited potential additional monk seal conservation efforts associated with implementation of the critical habitat rule, as described in the summary of unquantified economic impacts. Absent a reasonable way to translate these unquantified impacts into quantified improvements to environmental conditions, we cannot quantify the ancillary benefits of the critical habitat rule. Thus we provide a qualitative discussion of potential benefits in Chapter 13.

22. This report includes a Small Business Regulatory Enforcement Fairness Act (SBREFA) analysis (Appendix C) which assesses the potential impact of the Rule on small entities. Importantly, the critical habitat rule regulates only Federal agencies. However, third parties, which may be small entities, may be indirectly affected by the designation if they participate in section 7 consultation or if the requirement that Federal agencies avoid adverse modification of critical habitat affects the scope or scale of their projects. Of potentially affected entities, 94 percent are classified as likely to be "small." These small entities may bear approximately 48 percent of total quantified annualized incremental impacts anticipated as a result of this rule, which may constitute between 0-23 percent of average annual revenues, depending on the industry affected and assumption regarding the number of small entities affected.[10] However, as noted in elsewhere in this report, small entities may also bear impacts that are not quantified in this analysis. Specifically, these might include impacts to bottomfish and coral reef fishery fishermen, developers on Maui and Oahu.

23. Exhibit ES-4 discusses key assumptions and limitations underlying the analysis of impacts across activities. We note that these assumptions lead our analysis to underestimate the potential impacts of the critical habitat rule. To account for this limitation, activities subject to impacts for which uncertainty or data limitations preclude quantification are described in text alongside potential quantified impacts in Exhibit ES-1.

[10] Total annualized impacts to small entities is calculated by first taking the portion of administrative costs that may be borne by third parties. This analysis then assumes that the portion of these impacts that may be borne by small entities is equivalent to the percentage of businesses that are considered small. For example, if 97 percent of entities engaged in development activities in a given unit are considered small, this analysis assumes that 97 percent of impacts for that unit and industry will be borne by small entities.

EXHIBIT ES-2. FORECAST ECONOMIC IMPACTS OF CRITICAL HABITAT DESIGNATION BY SPECIFIC UNIT, 2014-2023 (2013$)

SPECIFIC AREA/ISLAND		TOTAL PRESENT VALUE (2013 DOLLARS)	ANNUALIZED (2013 DOLLARS)	PERCENT OF TOTAL*	UNQUANTIFIEID IMPACTS
1	Kure Atoll	$1,970	$281	0.1%	None expected.
2	Midway Islands	$7,310	$1,040	0.4%	
3	Pearl and Hermes Reef	$1,680	$239	0.1%	
4	Lisianski Island	$2,720	$387	0.1%	
5	Laysan Island	$4,420	$629	0.2%	
6	Maro Reef	$4,800	$683	0.2%	
7	Gardner Pinnacles	$5,550	$790	0.3%	
8	French Frigate Shoals	$7,650	$1,090	0.4%	
9	Necker Island	$3,430	$489	0.2%	
10	Nihoa Island	$1,240	$177	0.1%	
11	Kaula Island	$3,860	$550	0.2%	Fisheries
12	Niihau Island	$23,900	$3,400	1.2%	Fisheries
13	Kauai	$137,000	$19,600	6.7%	Fisheries, Development
14	Oahu	$545,000	$77,600	26.7%	Fisheries, Development
15	Maui Nui	$815,000	$116,000	40.0%	Fisheries
16	Hawaii	$469,000	$66,800	23.0%	Fisheries
	Total	**$2,040,000**	**$290,000**	**100%**	

Note: Costs were estimated using a discount rate of 7 percent. See Appendix A for a presentation of undiscounted impacts, and Appendix B for a discussion of the sensitivity of impacts to varying discount rates.

***** The quantified impacts do not reflect the total impacts of critical habitat designation. This percentage therefore describes the distribution of potential future consultations across the study area, but does not necessarily represent the relative magnitude of total economic impacts across areas. Unquantified impacts may change the relative magnitude of impacts across units.

EXHIBIT ES-3. QUANTIFIED ECONOMIC IMPACTS OF CRITICAL HABITAT DESIGNATION BY ACTIVITY, 2014-2023

ACTIVITY	TOTAL PRESENT VALUE (2013 DOLLARS)	ANNUALIZED (2013 DOLLARS)	PERCENT OF TOTAL*
In-Water & Coastal Construction	$1,650,000	$235,000	80.9%
Fisheries*	$16,000	$2,280	0.8%
Dredging & Disposal of Dredged Material	$1,230	$175	0.1%
Energy Projects	$54,400	$7,740	2.7%
Aquaculture	$7,840	$1,120	0.4%
Military Activities*	$14,900	$2,120	0.7%
Research	$17,500	$2,490	0.9%
Other	$17,800	$2,530	0.9%
Development*	$260,000	$37,100	12.7%
Total	**$2,040,000**	**$290,000**	**100%**

Note: Costs were estimated using a discount rate of 7 percent. See Appendix A for a presentation of undiscounted impacts, and Appendix B for a discussion of the sensitivity of impacts to varying discount rates.
* The quantified impacts do not reflect the total impacts of critical habitat designation. This percentage therefore describes the distribution of potential future consultations across the activities, but does not necessarily represent the relative magnitude of total economic impacts across activities. Unquantified impacts may change the relative magnitude of impacts across activities. In fact, unquantified impacts to fisheries, development, and military activities are likely to change the relative distribution of impacts across activities presented in this exhibit.

EXHIBIT ES-4. KEY ASSUMPTIONS AND LIMITATIONS

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED IMPACTS
Specific future conservation recommendations for future construction and transportation projects are unknown. Based on the list of recommended conservation actions in the 2014 Biological Report, conservation efforts are assumed to largely overlap baseline requirements.	May result in an **underestimate** of costs.	**Potentially major.** While rare for small projects, for large-scale future projects, incremental project modification costs related to conducting additional benthic community studies may be incurred.
Lacking information on the likelihood, frequency, and location of project modification or mitigation measures recommended by DLNR for state and county projects, this analysis does not forecast project modification costs for DLNR projects.	May result in an **underestimate** of costs.	**Potentially major.** While past recommendations for monk seal conservation by NMFS have been modest and are expected to remain largely the same following critical habitat designation, additional conservation efforts that DLNR may recommend are unknown.
Specific future management measures that may be necessary to reduce impacts to the Hawaiian monk seal critical habitat from fisheries activities are uncertain.	May result in an **underestimate** of costs.	**Potentially major.** Impacts associated with restrictions on the bottomfish or coral reef fisheries are not included in projected quantified impacts of the rule. This is because near-term (within the next 10 years) changes to management of these fisheries to accommodate monk seal critical habitat designation appear unlikely. Based on the available information, it appears that these fisheries are having little impact on monk seal foraging areas, and NMFS does not anticipate modifications to the current management of the MHI federally managed fisheries. If such restrictions occur, then impacts reported in this analysis could include changes in allowable catch.
This analysis does not quantify impacts associated with concerns raised about any increased likelihood of third party lawsuits that could occur following critical habitat designation, or the effects of those potential lawsuits.	May result in an **underestimate** of costs. To the extent that third parties intervene in order to influence activities affected by the designation, quantified impacts are understated.	**Potentially major.** While the outcome of future litigation is unknown, should changes to activities such as fisheries management or development occur as a result of future litigation, impacts could be large.

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED IMPACTS
Due to a strong regulatory baseline, critical habitat designation is likely to have a limited effect on coastal development projects.	May results in an **underestimate** of potential impacts.	**Potentially major.** We assume that due to the myriad concerns with respect to the protection of coastal resources, critical habitat designation for Hawaiian monk seal, while adding an additional administrative consideration, will have a relatively limited effect on the scope and scale of conservation measures applied. To the extent that critical habitat designation becomes the limiting factor for a project, however, our analysis may significantly underestimate impacts to particular projects in general, and to development activities overall.

CHAPTER 1 | INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

24. Under the provisions of the Endangered Species Act (ESA), the National Marine Fisheries Service (NMFS) proposes to revise the current critical habitat for the Hawaiian monk seal (*Monachus schauinslandi)*. Critical habitat was designated in and around the Northwestern Hawaiian Islands (NWHI) for the Hawaiian monk seal in 1986, and expanded to include a larger extent of marine habitat in 1988. [11,12] This revision to critical habitat would further extend the current critical habitat for the monk seal in the NWHI and add six new areas of critical habitat on the Main Hawaiian Islands (MHI).[13]

25. Section 4(b)(2) of the ESA requires NMFS to consider the economic, national security, and other impacts of designating a particular area as critical habitat. NMFS may exclude an area from critical habitat if it determines that the benefits of exclusion outweigh the benefits of specifying the area as part of the critical habitat, unless it also determines that the failure to designate the area as critical habitat will result in the extinction of the species concerned.

26. This report employs the best data available to analyze the economic impacts of designating particular areas as critical habitat; these impacts represent the "benefits of exclusion".[14] NMFS presents its formal consideration of the benefits of including particular areas (the "benefits of inclusion") within the designation in a separate report.[15] Together, these two reports support NMFS in determining whether the benefits of excluding any particular area outweigh the benefits of designating that area. These determinations are required under Section 4(b)(2) to support exclusion decisions. Such determinations are documented in NMFS' 4(b)(2) report.[16]

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[11] National Oceanic and Atmospheric Administration, *Critical Habitat; Hawaiian Monk Seal; Endangered Species Act: Notice of Final Rule*, 51 Federal Register 16047, April 30, 1986.

[12] National Oceanic and Atmospheric Administration, *Critical Habitat; Hawaiian Monk Seal; Endangered Species Act: Notice of Final Rule*, 53 Federal Register 18988, May 26, 1988.

[13] National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report, October 2013 and November 2014 drafts, received from NMFS on November 13, 2013 and November 12, 2014, respectively.

[14] An earlier draft of this report was made available to the public for review and comment in January, 2011, when NMFS published its proposed revised critical habitat rule. This draft report incorporates revisions, as appropriate, to respond to comments on the earlier draft.

[15] National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report, October 2013 and November 2014 drafts, received from NMFS on November 13, 2013 and November 12, 2014, respectively.

[16] National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report, October 2013 and November 2014 drafts, received from NMFS on November 13, 2013 and November 12, 2014, respectively.

27. This chapter begins with a summary of relevant statutory and regulatory information concerning the ESA and critical habitat designation. It then provides an overview of the biological requirements, species threats, and revision to critical habitat designation for the Hawaiian monk seal. The chapter finishes with an overview of the rest of the report.

1.2 BACKGROUND

28. In 1976, the U.S. Fish and Wildlife Service (FWS) and NMFS listed the Hawaiian monk seal as an endangered species.[17] Section 4(b)(2) of the ESA requires NMFS to designate critical habitat for threatened and endangered species "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." This section grants the Secretary of Commerce discretion to exclude any area from critical habitat if (s)he determines "the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat." The Secretary may not exclude any particular area if exclusion "will result in the extinction of the species."

29. The ESA defines critical habitat under section 3(5)(A) as:

> (i) the specific areas within the geographical area occupied by the species, at the time it is listed…, on which are found those physical or biological features (I) essential to the conservation of the species, and (II) which may require special management considerations or protection; and
>
> (ii) specific areas outside the geographical area occupied by the species at the time it is listed… upon a determination by the Secretary that such areas are essential for the conservation of the species.

30. Once critical habitat is designated, section 7 of the ESA requires Federal agencies to consult with NMFS to ensure that any action they authorize, fund, or carry out *will not likely result in the destruction or adverse modification of critical habitat*. NMFS may, through the consultation process, recommend changes to these activities (termed "activities with a Federal nexus") that would avoid destruction or adverse modification of critical habitat. The economic impacts of critical habitat designation stem from this process and any modifications to activities implemented as a result of consultation.

31. Section 7 of the ESA also requires Federal agencies to consult with NMFS to ensure that any action they authorize, fund, or carry out *will not likely jeopardize the continued existence of any endangered or threatened species*. Through the consultation process, NMFS may, within its statutory authority, recommend modifications to these activities to avoid jeopardizing the continued existence of the species. Thus, a species listing determination and related jeopardy considerations alone may impose economic impacts, even absent critical habitat designation.

[17] U.S. Fish and Wildlife Service and National Marine Fisheries Service, *Endangered and Threatened Wildlife and Plants, Hawaiian Monk Seal Final Regulations*, 41 Federal Register 51611, November 23, 1976.

32. In some instances, it is difficult to distinguish between impacts stemming exclusively from critical habitat designation (or, more specifically, impacts related to adverse modification) and impacts resulting from other species conservation measures. For example, a specific modification to a particular Federal action may address both jeopardy and critical habitat concerns. Thus, some impacts related to critical habitat could be considered to occur coextensively with other causes. This difficulty can complicate assessment of the incremental impacts of critical habitat designation.

33. In 2001, the U.S. Tenth Circuit Court of Appeals instructed the FWS to conduct a full analysis of all of the economic impacts of proposed critical habitat, regardless of whether those impacts are attributable coextensively to other causes.[18] The court's decision was based on FWS' reliance on a regulatory definition of adverse modification that has since been invalidated. Subsequently, other courts have held that an incremental analysis of impacts stemming solely from the critical habitat rulemaking is proper.[19]

34. As described more fully in Chapter 2, this analysis relies on the best available data to estimate the incremental impacts of critical habitat designation. This approach is consistent with recent judicial rulings and with the U.S. Office of Management and Budget's (OMB) guidelines for conducting economic analysis of regulations. OMB's guidelines direct Federal agencies to measure the costs of a regulatory action against a baseline, which it defines as the "best assessment of the way the world would look absent the proposed action."[20] In other words, the baseline includes the existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users potentially affected by the designation of critical habitat. Impacts that are incremental to that baseline (i.e., occurring over and above existing constraints) are attributable to the proposed critical habitat.

1.3 OVERVIEW OF SPECIES AND HABITAT

35. As indicated by the ESA's definition of critical habitat, important factors in delineating a critical habitat designation include the species' life history, historical distribution and abundance, and habitat requirements. To derive a measure of economic impacts occurring within discrete areas of critical habitat, this analysis: (1) characterizes existing or potential threats to the species and its habitat occurring within these areas; (2) links these threats to particular human activities; (3) identifies the modifications to these activities that would avoid or minimize the threats; and (4) to the extent feasible, quantifies and monetizes the economic impact of the modifications.

1.3.1 HAWAIIAN MONK SEAL BIOLOGY AND HABITAT REQUIREMENTS

[18] New Mexico Cattle Growers Assn v. United States Fish and Wildlife Service, 248 F.3d 1277 (10th Cir. 2001).

[19] See, for example: *Cape Hatteras Access Preservation Alliance v. Department of Interior*, 344 F. Supp. 2d 108 (D.D.C.); CBD v. BLM, 422 F. Supp/. 2d 1115 (N.D. Cal. 2006); Center for Biological Diversity et al., Plaintiffs, v. Bureau of Land Management et al., Defendants and American Sand Association, et al., Defendant Intervenors. Order re: Cross Motions for Summary Judgment. Case 3:03-cv-02509 Document 174 Filed 03/14/2006. Pages 44-45.

[20] OMB, "Circular A-4," September 17, 2003.

36. The Hawaiian monk seal is a wide-ranging, air-breathing aquatic carnivore. The seals spend a majority of their time in the ocean for foraging, socializing, mating and traveling, but rely on terrestrial habitat to rest, avoid predators, molt, pup (give birth), and nurse. Hawaiian monk seals are considered solitary animals, often hauling out individually, though they may congregate in small numbers. The range for the species, identified by sighting data, includes the Hawaiian Archipelago and Johnston Atoll. As of 2009, the Hawaiian monk seal population was estimated at 1,212 individuals.[21]

37. Exhibit 1-1 summarizes, at a general level, the physical and biological features of habitat essential to the conservation of the Hawaiian monk seal.[22]

EXHIBIT 1-1. PHYSICAL AND BIOLOGICAL FEATURES OF HAWAIIAN MONK SEAL CRITICAL HABITAT

4. **Terrestrial areas and adjacent shallow, sheltered aquatic areas with characteristics preferred by monk seals for pupping and nursing.** These include sandy, protected beaches located adjacent to shallow sheltered aquatic areas, where the mother and pup may nurse, rest, swim, thermoregulate, and shelter from extreme weather. Substrates used for pupping include sand, shallow tide-pools, coral rubble, and rocky substrates that provide accessibility to seals for hauling out.
5. **Marine areas from 0 to 200 m in depth that support adequate prey quality and quantity for juvenile and adult monk seal foraging.** Hawaiian monk seals are foraging generalists that feed on a wide variety of bottom-associated prey species and utilize a wide range of benthic habitat. Inshore, benthic and offshore teleosts, cephalopods, and crustaceans are commonly described as monk seal prey items and foraging areas include sand terraces and talus slopes, which provide substrate and materials for preferred benthic and cryptic prey species to hide.
6. **Significant areas used by monk seals for hauling out, resting, or molting. Hawaiian monk seals utilize terrestrial habitat to haul out for resting, and molting.** These are generally characterized by sandy beaches, sand spits, or low shelving reef rocks accessible to seals. These areas are defined by the frequency with which local populations of seals use a stretch of coastline or particular beach.
Source: National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report, October 2013 and November 2014 drafts, received from NMFS on November 13, 2013 and November 12, 2014, respectively.

1.3.2 THREATS AND HUMAN ACTIVITIES

38. Threats to the physical and biological features of the monk seal's habitat may affect the potential for recovery of the species. Based on a review of potential impacts, NMFS has identified the following activities that may adversely affect the physical or biological features of critical habitat for the Hawaiian monk seal:

- In water and coastal construction – construction and maintenance of roads, bridges, or culverts; dredging; bank stabilization; installation and maintenance of

[21] National Oceanic and Atmospheric Administration, "U.S. Pacific Marine Mammal Stock Assessments: 2012, " available at http://www.nmfs.noaa.gov/pr/pdfs/sars/po2012sehm-hi.pdf as of October 31, 2013. For a detailed review of biological information, see: National Marine Fisheries Service, August 2007, Recovery Plan for the Hawaiian Monk Seal (*Monachus schauinslandi*).

[22] National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report, October 2013 and November 2014 drafts, received from NMFS on November 13, 2013 and November 12, 2014, respectively.

vegetation, pilings, moorings, and bulkheads; boat ramp construction or maintenance; and construction or repair of pipelines;

- Dredging – dredging in areas not already dredged is the principal related threat; however, maintenance dredging (the primary dredging-related activity occurring in the MHI) and disposal of dredged material from maintenance dredging may also pose a threat;
- Energy development (renewable energy projects) – including ocean thermal energy, wave energy, geothermal energy, and wind energy, all of which will or may require placement of undersea transmission cables or anchors in the marine environment;
- Activities that generate water pollution – including both point and non-point sources such as agricultural pesticide applications, industrial discharge, and stormwater runoff;
- Aquaculture – including marine nearshore, pelagic commercial, research-related, algae farming, and use of traditional fish ponds;
- Fisheries - Certain federally managed commercial and recreational fisheries, and fishery-related projects or activities that are supported by federal funds;
- Oil spills, spills of other substances, vessel grounding, and marine debris response activities - while these incidents are accidental in nature, the response and recovery efforts are planned, and special considerations and management efforts may be necessary; and,
- Military activities – including in-water training, research, and construction.

Determining how these activities may be modified as a result of critical habitat designation, and estimating the costs of these potential modifications, is the crux of this analysis. In addition, to support the Section 4(b)(2) decision-making process, the analysis identifies the spatial distribution of these activities and, where possible, disaggregates impacts to particular geographic areas. Thus, a clear description of the study area is important.

1.3.3 DESCRIPTION OF STUDY AREA

39. The area NMFS originally included in the 2011 proposed revised designation included 16 Specific Areas, throughout the MHIs and NWHIs. Habitat on the NWHI 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 the seaward boundary of the 500-m depth contour" on each of the islands listed below in Exhibit 1-3.[23] Habitat on the MHI included "terrestrial habitat 5 m inland from the shoreline…through the shoreline into the marine environment out to the 500-m depth contour" around each of the

[23] 2011 Proposed Rule, 76 FR 32034.

islands listed below in Exhibit 1-3.[24] Since the proposed rule publication, NMFS has reviewed new tracking information on monk seals in the MHI and revised the boundaries of the marine habitat to a 200-m depth contour. The study area for this report incorporates these refinements to the 2011 proposed boundaries. All revisions to the designation are discussed in detail in the 2014 Biological Report and the final rule.

EXHIBIT 1-2. LIST OF SPECIFIC AREAS OF HAWAIIAN MONK SEAL CRITICAL HABITAT

SPECIFIC AREA	ISLANDS INCLUDED
Northwestern Hawaiian Islands (NWHI)	
1	Kure Atoll
2	Midway Islands (Sand, Eastern, and Spit)
3	Pearl and Hermes Reef
4	Lisianski Island
5	Laysan Island
6	Maro Reef
7	Gardner Pinnacles
8	French Frigate Shoals
9	Necker Island
10	Nihoa Island
Main Hawaiian Islands (MHI)	
11	Kaula Island
12	Niihau Island
13	Kauai
14	Oahu
15	Maui Nui (Molokai, Lanai, Kahoolawe, and Maui)
16	Hawaii (the Big Island)

Source: National Marine Fisheries Service, *Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report*, October 2013 and November 2014 drafts, received from NMFS on November 13, 2013 and November 12, 2014, respectively, 76 FR 32034-32038.

40. Importantly, a number of areas on the MHI that fall in these broad habitat delineations are not included in the proposal, are ineligible for inclusion as critical habitat, or are being considered for exclusion. These include a) a number of areas used by the military considered for exclusion under section 4(b)(2) of the Act or ineligible for designation under 4(a)(3), and b) various shoreline areas that do not meet the definition of suitable habitat, including harbors, bays, manmade structures, shoreline hardening, and areas such as lava flows that do not contain the physical and biological features essential to monk seal conservation (e.g., Na Pali coast cliffs).

[24] 2011 Proposed Rule, 76 FR 32036.

Military Installations Ineligible under 4(a) (3) (indicated by *) and Excluded under 4(b)(2):[25]

- Specific Area 11, Kaula: Kaula Island*;
- Specific Area 12, Niihau: Kingfisher Underwater Training Area; coastal and marine areas around Niihau out to 10 m in depth*;
- Specific Area 13, Kauai: Pacific Missile Range Facility (PMRF) Offshore areas, including PMRF restricted areas and the Shallow Water Training Range (SWTR);
- Specific Area 14, Oahu: Naval Defensive Sea Area (NDSA)*, Nimitz beach and White Plains beach*, Barbers Point Underwater Range*, Ewa Training Minefield*, Puuloa Underwater Training Range, Puuloa Training Facility on the Ewa coastal plain*, the 500 yard marine area surrounding the Marine Corps Base Hawaii at Kaneohe Bay.*
- Specific Area 15: Maui Nui: Shallow Water Minefield Sonar Training Range of Kahoolawe.
- Additionally, the 2014 Biological Report identifies as not included areas such as terrestrial stretches or hardened shoreline positioned between accessible haul-out locations "with manmade structures (e.g., docks, fishponds, seawalls, piers, roads, pipelines), and the land on which they are located, in existence prior to the effective date of the rule". These are not included due to the fact that these areas lack the essential features and do not meet the definition of critical habitat."[26]

41. Exhibit 1-3A-G presents a map of the study area, focusing on those areas explicitly identified as excluded from the designation in the first and second categories above.

1.4 ORGANIZATION OF REPORT

42. The remainder of this report proceeds through nine additional chapters. Chapter 2 discusses the framework and methods employed in the analysis. Chapters 3 through 12 then cover the assessment of potential economic impacts, organized by economic activity:

- Chapter 3 – in-water and coastal construction;
- Chapter 4 - fisheries;
- Chapter 5 – dredging and disposal activities;
- Chapter 6 – energy projects;
- Chapter 7 - development;

[25] Information provided by NMFS on October 28, 2013.

[26] 2011 Proposed Rule, 76 FR 32036; National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report, October 2013 and November 2014 drafts, received from NMFS on November 13, 2013 and November 12, 2014, respectively.

- Chapter 8 - aquaculture;
- Chapter 9 – water pollution;
- Chapter 10 – oil spills, spills of other substances, vessel grounding, and marine debris response activities;
- Chapter 11 – military activities;
- Chapter 12 – activities on the NWHI and other activities, such as Native Hawaiian, beach recreation, research, and miscellaneous activities.

43. In addition, the report includes three appendices: Appendix A, which presents the undiscounted stream of impacts; Appendix B, which includes tables with the sensitivity of the economic impact estimates to alternative discount rates; and Appendix C, the regulatory flexibility and energy impacts analyses.

EXHIBIT 1-3A. MAPS OF NWHI STUDY AREA ON KURE ATOLL, MIDWAY ATOLL, AND PEARL AND HERMES ATOLL (SPECIFIC AREAS 1, 2, AND 3)

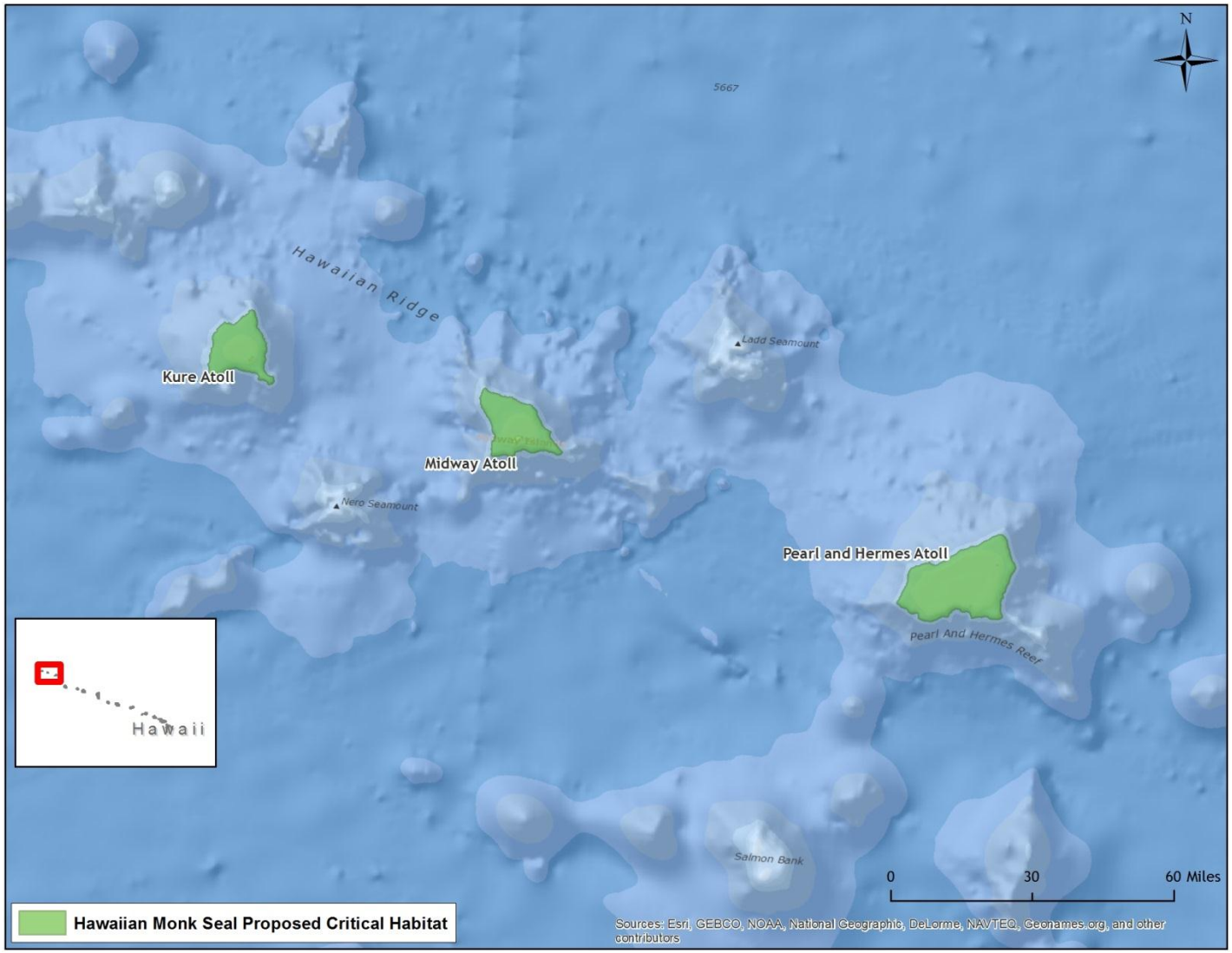


EXHIBIT 1-3B. MAPS OF NWHI STUDY AREA ON LISIANSKI ISLAND, LAYSAN ISLAND, MARO REEF, AND GARDNER PINNACLES (SPECIFIC AREAS 4, 5, 6, AND 7)

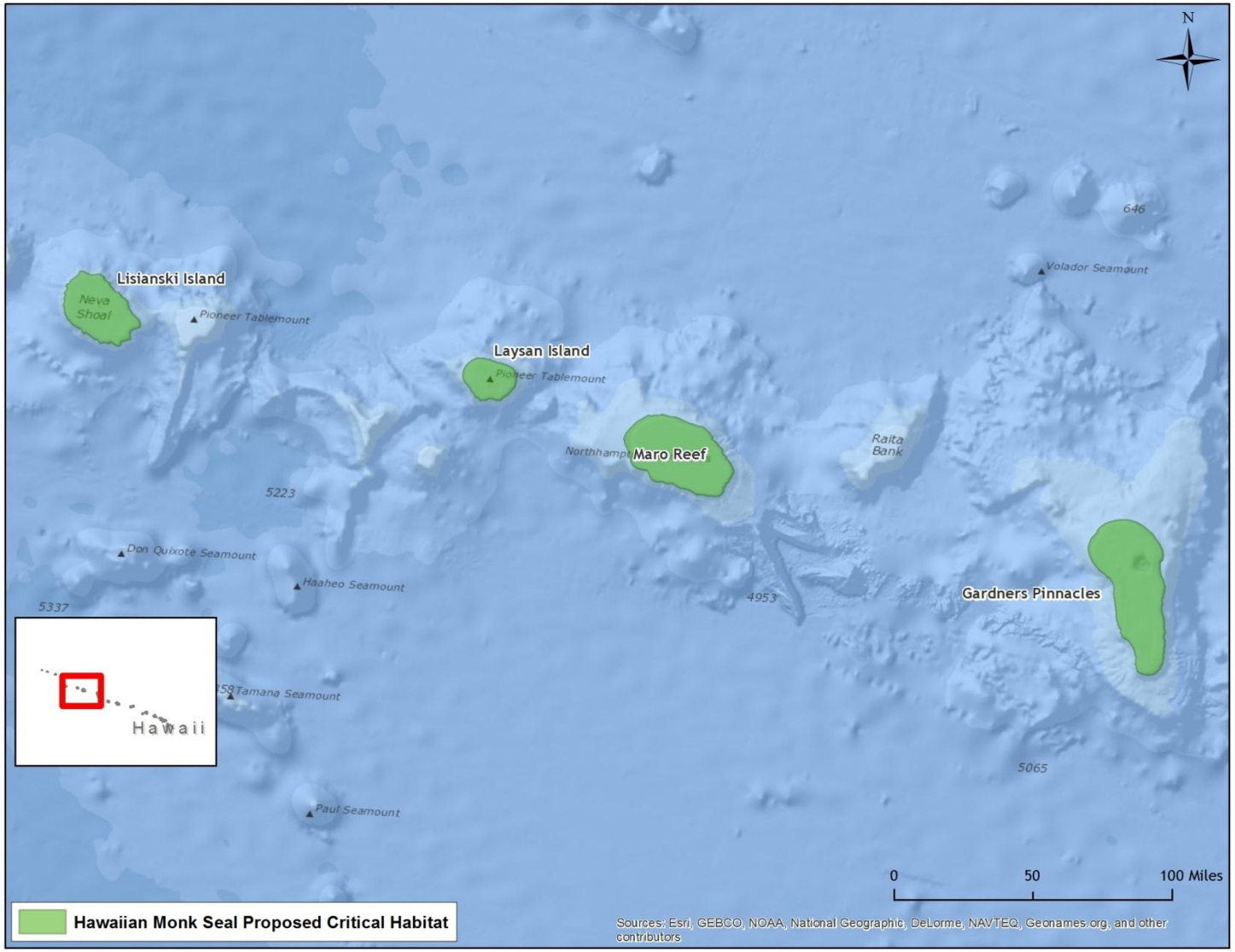


EXHIBIT 1-3C. MAPS OF NWHI STUDY AREA ON FRENCH FRIGATE SHOALS, NECKER ISLAND, AND NIHOA (SPECIFIC AREAS 8, 9, AND 10)

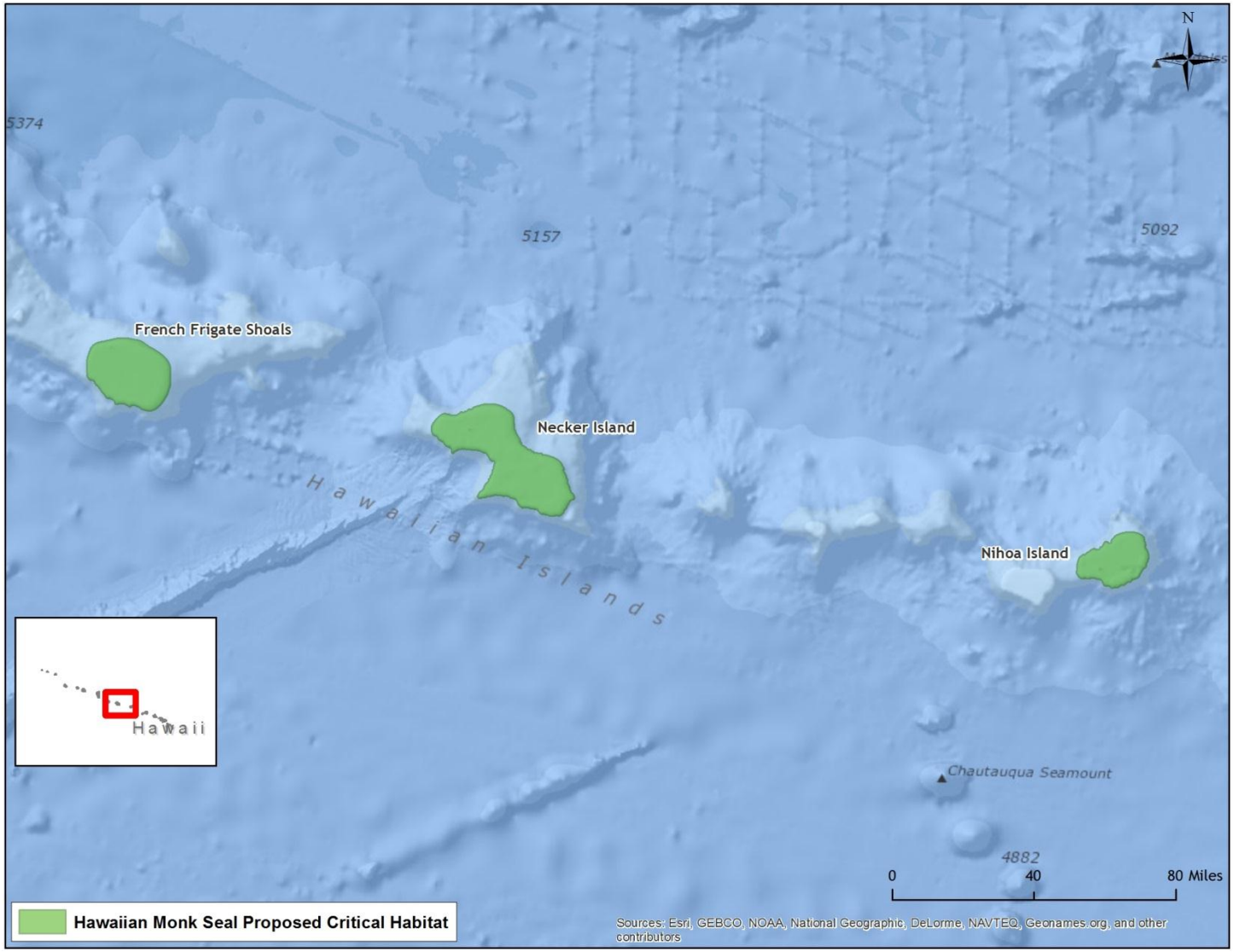


EXHIBIT 1-3D. MAPS OF MHI STUDY AREA IN KAULA, NIIHAU, AND KAUAI (SPECIFIC AREAS 11, 12, AND 13)

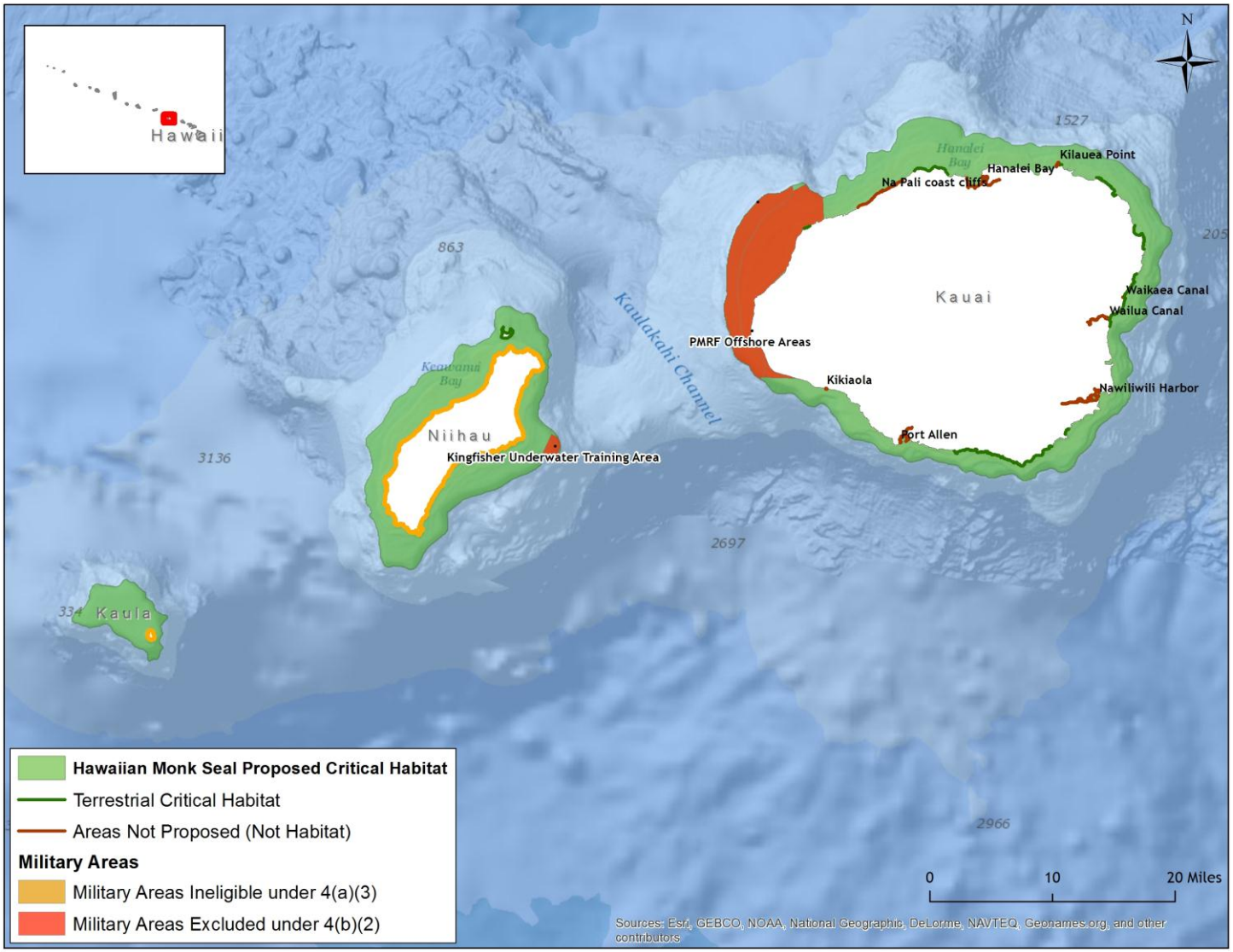


EXHIBIT 1-3E. MAPS OF MHI STUDY AREA ON OAHU (SPECIFIC AREA 14)

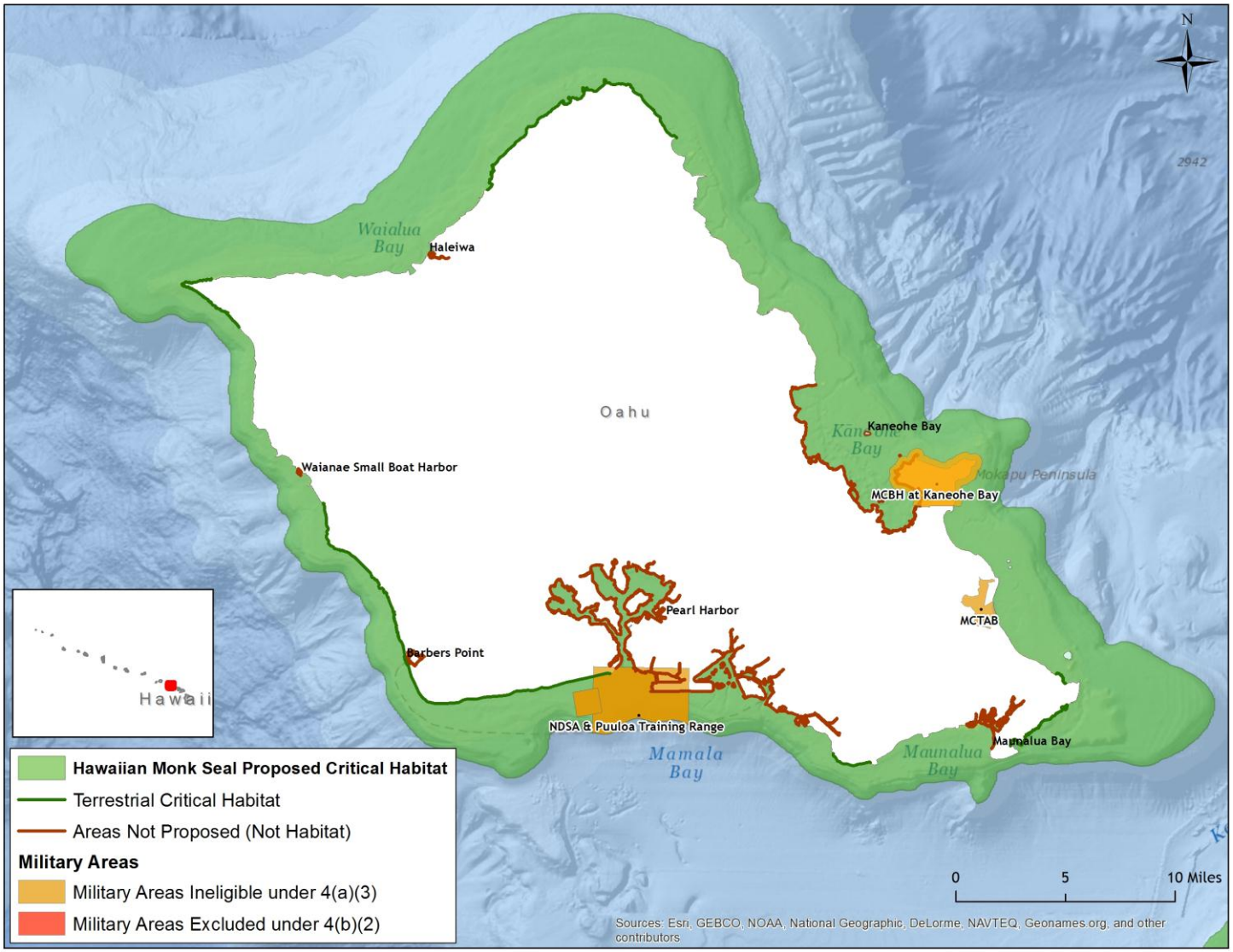


EXHIBIT 1-3F. MAPS OF MHI STUDY AREA ON MAUI NUI (SPECIFIC AREA 15)

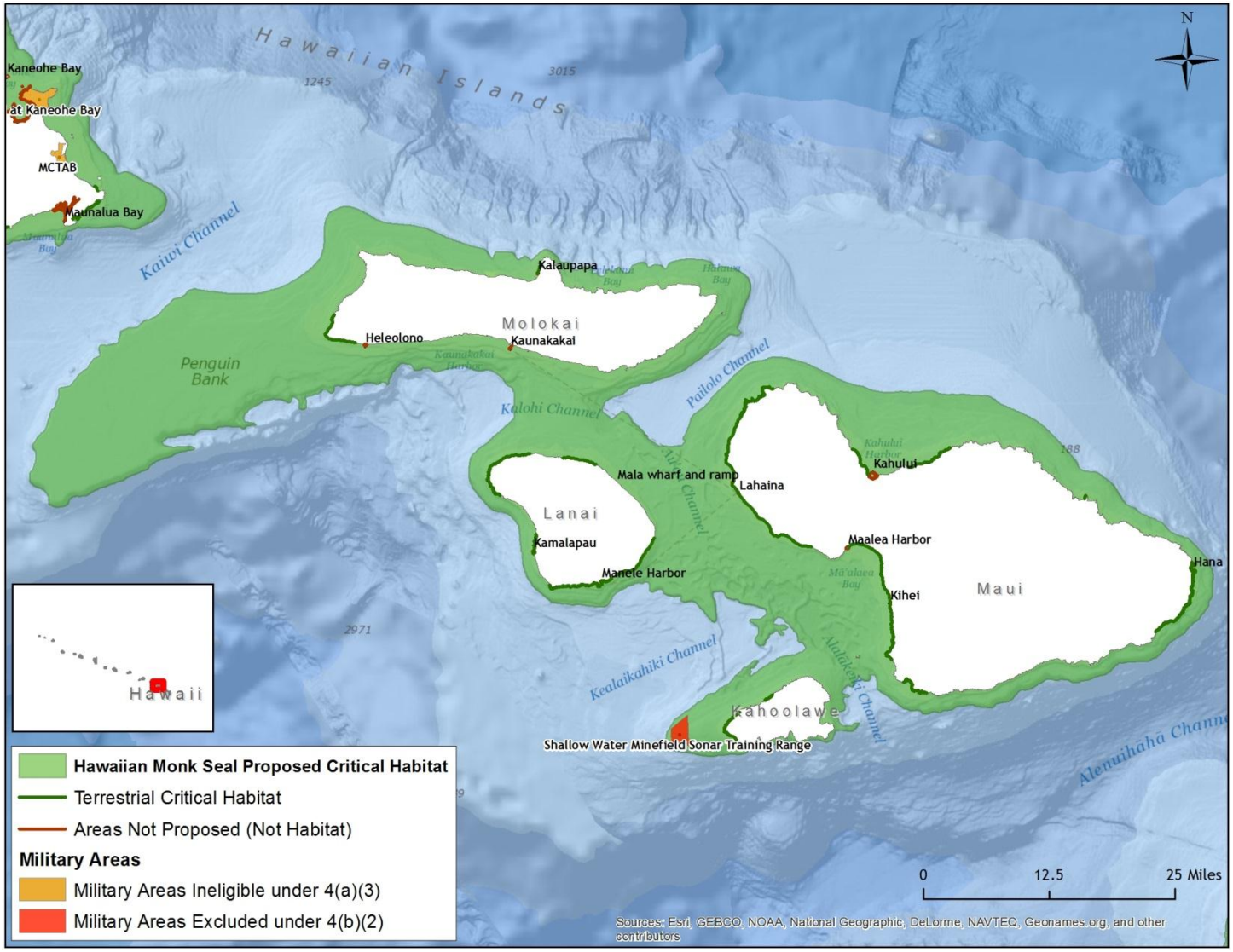
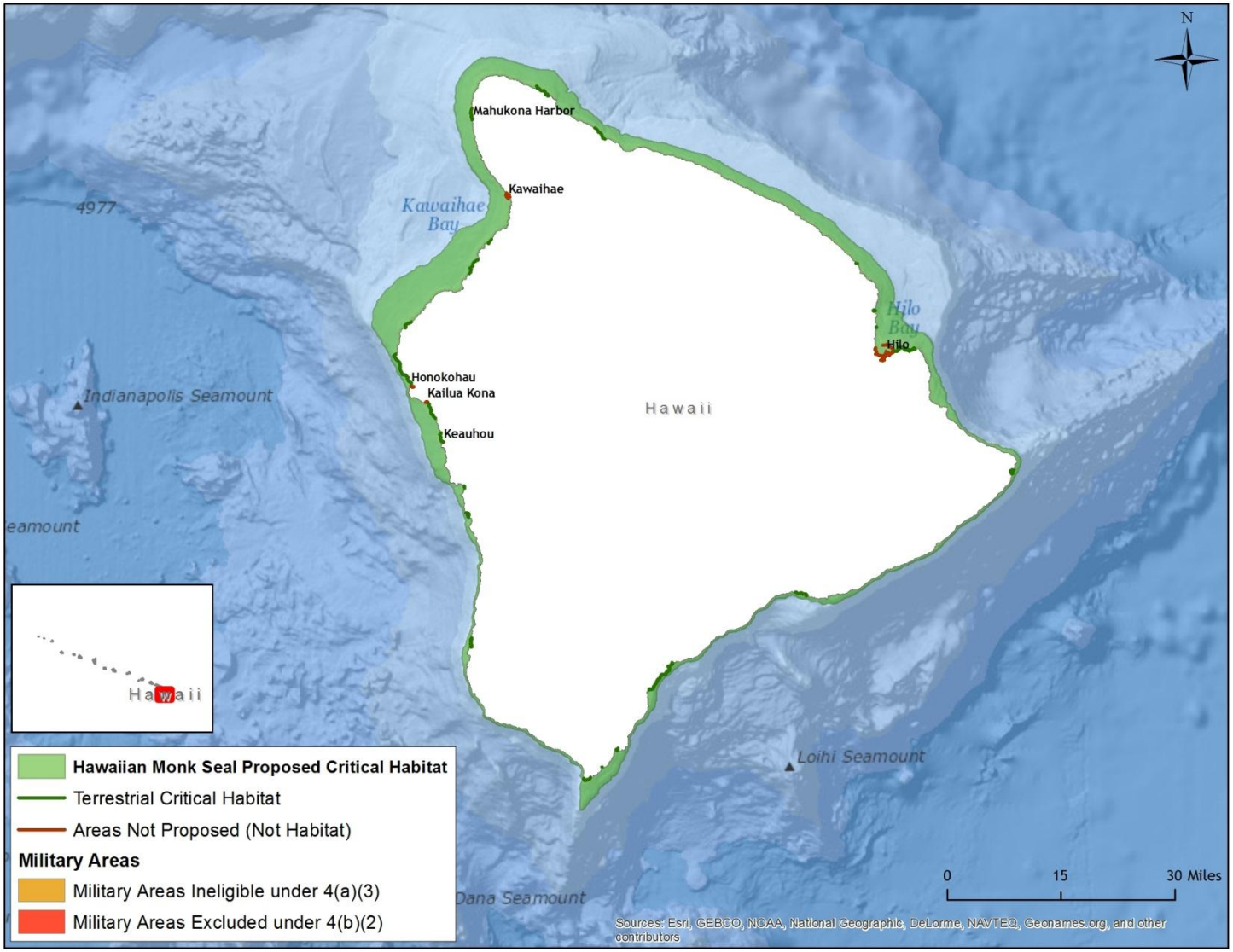


EXHIBIT 1-3G. MAPS OF MHI STUDY AREA ON HAWAII (SPECIFIC AREA 16)



CHAPTER 2 | FRAMEWORK FOR THE ANALYSIS

2.1 INTRODUCTION

44. The purpose of this report is to identify and analyze the potential economic impacts associated with the revised designation of critical habitat for the Hawaiian monk seal. The analysis examines the impacts to land and marine use generated by the designation of critical habitat. This chapter presents the framework applied to analyze the economic impacts of critical habitat designation, including an outline of the broader 4(b)(2) process and a specific framework for the economic analysis.

2.2 GENERAL ANALYTIC FRAMEWORK FOR THE 4(b)(2) PROCESS

45. NMFS is applying a modified cost-effectiveness analysis to support the revised designation of critical habitat for the Hawaiian monk seal. This framework informs the section 4(b)(2) decision-making process by allowing NMFS to compare an assessment of the "benefits of exclusion" that includes both monetized and unquantified impacts, against an indicator of the biological "benefits of inclusion" for any particular area.[27] This section first discusses the selection of the modified cost-effectiveness analysis framework and then describes the 4(b)(2) exclusion process.

2.2.1 BENEFIT-COST ANALYSIS AND COST-EFFECTIVENESS ANALYSIS

46. When economic activities have biological effects or other consequences for conservation, analyses of the impacts of regulating those activities can take a number of approaches. Two possible approaches are benefit-cost analysis and cost-effectiveness analysis. Each of these approaches has strong scientific support as well as support from the Office of Management and Budget (OMB) through its guidelines on regulatory analysis.[28] Each also has well known drawbacks, both theoretical and practical, as discussed in the following section in the context of critical habitat designation.

47. Benefit-cost analysis (BCA) is the first choice for analyzing the consequences of a regulatory action such as critical habitat designation.[29] BCA is a well-established procedure for assessing the "best" course or scale of action, where "best" is that course

[27] National Marine Fisheries Service, Northwest Fisheries Science Center. August 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs. Section 2.2 of this report is an abbreviated form of the framework discussion provided in the West Coast salmon critical habitat analysis by the Northwest Fisheries Science Center.

[28] U.S. Office of Management and Budget, "Circular A-4," September 17, 2003, available at http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf.

[29] *Ibid.*

which maximizes net benefits.[30] Because BCA assesses the value of an activity in net benefit terms, it requires that a single metric, most commonly dollars, be used to gauge both benefits and costs. The data and economic models necessary to estimate costs may be difficult or costly to gather and develop, and a comprehensive analysis of the costs associated with a regulatory action is not always feasible. Nonetheless, the principle is straightforward, and it is generally possible in practice to develop a monetary estimate of at least some portion of regulatory costs. This is the case for critical habitat designation, which has direct impacts on activities carried out, funded, or permitted by the Federal government. (Conceptually, the "benefits of exclusion," which is the language used in section 4(b)(2) of the Endangered Species Act (ESA), are identical to the "costs of inclusion," and so estimates of these costs could be used in a benefit-cost framework.)

48. Assessing the benefits of critical habitat designation in a BCA framework is also straightforward in principle but much more difficult in practice. To the extent that the critical habitat provisions of the ESA increase the protections afforded the Hawaiian monk seal and its habitat, they produce real benefits to the species. In principle, these benefits can be measured first by a biological metric, and then by a dollar metric. A biological metric could take the form of the expected decrease in extinction risk, increase in the annual population growth rate, and so forth. A BCA would then value these quantified biological benefits in terms of willingness-to-pay, the standard economic measure of economic value recommended by OMB.[31] This would produce a dollar estimate of the benefits of critical habitat designation, which could then be compared directly to the costs. In the case of Hawaiian monk seal, however, the data required to complete an analysis of the monetary estimate of benefits of the critical habitat designation are not available.

49. Recognizing the difficulty of estimating economic values in cases like this one, OMB has recently acknowledged cost-effectiveness analysis (CEA) as an appropriate alternative to BCA:

> Cost-effectiveness analysis can provide a rigorous way to identify options that achieve the most effective use of the resources available without requiring monetization of all of [the] relevant benefits or costs. Generally, cost-effectiveness analysis is designed to compare a set of regulatory actions with the same primary outcome (e.g., an increase in the acres of wetlands protected) or multiple outcomes that can be integrated into a single numerical index (e.g., units of health improvement).[32]

50. Ideally, CEA quantifies both the benefits and costs of a regulatory action but uses different metrics for each. A common application of this method is to health care

[30] Zerbe, R., and D. Dively, 1994. Benefit Cost Analysis in Theory and Practice, New York: HarperCollins.

[31] OMB, 2003.

[32] *Ibid.*

strategies, where the benefits of a strategy are quantified in terms of lives saved, additional years of survival, or some other quantitative, health-related measure.

51. In principle, conducting a CEA of critical habitat designation proceeds along the same lines identified above for BCA, except that the last step of assigning economic (dollar) values to biological benefits is not taken. Different configurations of critical habitat could be gauged by both metrics, with the cost-effectiveness (ratio of units of biological benefits to monetized and unquantified cost impacts) evaluated in each case. If alternatives have the same level of biological benefits, the most cost-effective is the one with the lowest cost.

52. Standard CEA presumes that benefits can be measured with a cardinal or even continuous measure. For critical habitat designation, however, constructing such a measure for biological benefits may be problematic. Although critical habitat designation for the Hawaiian monk seal is expected to have benefits, it is not yet feasible, given the state of the science, to quantify benefits reliably with a single biological metric. Thus, applying CEA in its standard form is not possible.

53. NMFS is applying an alternative form of CEA used in designating critical habitat for the Hawaiian monk seal. Although it is difficult to monetize or quantify the benefits of critical habitat designation, it may be possible to differentiate among habitat areas based on their relative contribution to conservation. This qualitative evaluation of the relative biological benefits may then be combined with estimates of the monetized and unquantified economic costs of critical habitat designation in a framework that essentially adopts that of CEA. Individual habitat areas are assessed using both their biological evaluation and economic cost, so that areas with high conservation value and lower economic cost have a higher priority for designation, and areas with a low conservation value and higher economic cost have a higher priority for exclusion. By proceeding in order of these priorities (either in terms of inclusion or exclusion), the critical habitat designation can be expected to minimize or at least reduce the overall economic cost of achieving any given level of conservation.

2.2.2 PROCESS FOR 4(B)(2) EXCLUSION DECISIONS

54. Specific areas that satisfy the definition of critical habitat are not automatically designated as critical habitat. Section 4(b)(2) (16 U.S.C. 1533(b)(1)(A)) requires the Secretary to first consider the impact of designation and permits the Secretary to exclude areas from designation under certain circumstances.

> "The Secretary shall designate critical habitat, and make revisions thereto, under subsection (a)(3) of this section 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."

55. To this end, NMFS undertakes the following steps to implement section 4(b)(2):

    1. Identify particular areas for possible exclusion from critical habitat designation;
    2. Determine the benefit of designation (biological benefits) of each particular area;
    3. Determine the benefit of exclusion (economic costs) of each particular area;
    4. Determine whether the benefits of exclusion outweigh the benefits of designation; and
    5. Determine whether the exclusions (if any) will result in extinction of the species.

56. This analysis focuses primarily on the third step, quantifying the benefits of excluding particular areas from critical habitat. The following section details the framework of this economic analysis.

2.3 FRAMEWORK FOR THE ECONOMIC ANALYSIS

57. This analysis examines the state of the world with and without the designation of critical habitat for the Hawaiian monk seal. The "without critical habitat" scenario represents the baseline for the analysis, considering protections already afforded the habitat of the Hawaiian monk seal under other Federal, State, and local regulations. The "with critical habitat" scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species. The incremental impacts quantified in this analysis are those not expected to occur absent the designation of critical habitat.

58. The impacts of critical habitat designation generally reflect “opportunity costs” associated with the commitment of resources required to accomplish species and habitat conservation. For example, the costs incurred by a Federal action agency to consult with NMFS under section 7 represent opportunity costs of monk seal conservation, as the time and effort associated with those consultations may have been spent on other endeavors absent the critical habitat designation.

59. At the guidance of the Office of Management and Budget (OMB) and in compliance with Executive Order 12866, "Regulatory Planning and Review," Federal agencies measure changes in economic efficiency to understand how society, as a whole, will be affected by a regulatory action. Economists generally characterize opportunity costs in terms of changes in producer and consumer surpluses in affected markets.[33]

60. To quantify the economic impacts of modifications to land uses, the analysis involves the following general steps:

[33] For additional information on the definition of "surplus" and an explanation of consumer and producer surplus in the context of regulatory analysis, see: Gramlich, Edward M., A Guide to Benefit-Cost Analysis (2nd Ed.), Prospect Heights, Illinois: Waveland Press, Inc., 1990; and U.S. Environmental Protection Agency, Guidelines for Preparing Economic Analyses, EPA 240-R-00-003, September 2000, available at http://yosemite.epa.gov/ee/epa/eed.nsf/webpages/Guidelines.html.

1. Identify the baseline of economic activity and the statutes and regulations that constrain that activity in the absence of the critical habitat designation;
2. Identify the types of activities that are likely to be affected by critical habitat designation;
3. Estimate the costs of administrative effort and, where applicable, project modifications needed for the activity to comply with the ESA's critical habitat provisions;
4. Project over space and time the occurrence of the activities and the likelihood they will in fact need to be modified; and
5. Aggregate the costs up to the particular area level. The analysis reports impacts at the particular area level both for individual activities (e.g., in-water and coastal construction) and across activities.

These steps and other aspects of the analysis are described in greater detail below.

2.3.1 BASELINE FOR THE ECONOMIC ANALYSIS

61. The first step in the economic analysis is to identify the baseline level of protection already afforded the Hawaiian monk seal's habitat. This section provides a description of the methodology used to identify baseline conditions and incremental impacts in the study area stemming from the designation of critical habitat.

62. The baseline for this analysis is the existing state of regulation, prior to the designation of critical habitat that provides protection to the species under the ESA, as well as under other Federal, State and local laws and guidelines. The baseline includes sections 7, 9, and 10 of the ESA, and economic impacts resulting from these protections to the extent that they are expected to occur absent the designation of critical habitat for the species.

- Section 7 of the Act, absent critical habitat designation, requires Federal agencies to consult with NMFS to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species. The portion of the administrative costs of consultations under the jeopardy standard, along with the impacts of project modifications resulting from consideration of this standard, are considered baseline impacts.
- Section 9 defines the actions that are prohibited by the Act. In particular, it prohibits the "take" of endangered wildlife, where "take" means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[34] The economic impacts associated with this section generally manifest themselves in sections 7 and 10.
- Under section 10(a)(1)(B) of the Act, an entity (e.g., a landowner or local government) may develop a Habitat Conservation Plan (HCP) for a listed species of fish or wildlife to meet the conditions for issuance of an incidental

[34] 16 U.S.C. 1532.

take permit in connection with the development and management of a property.[35] The requirements of the HCP may have economic impacts associated with the goal of ensuring that the effects of incidental take are adequately minimized and mitigated. The development and implementation of HCPs is 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.

63. The protection of listed species and habitat is not limited to the ESA. Other Federal agencies, as well as State and local governments, may also seek to protect the natural resources under their jurisdiction. If compliance with the Marine Mammal Protection Act, Clean Water Act, or State environmental quality laws, for example, protects habitat for the species, such protective efforts are considered to be baseline protections and costs associated with these efforts are not quantified as impacts of critical habitat designation.

2.3.2 IDENTIFYING INCREMENTAL IMPACTS OF CRITICAL HABITAT DESIGNATION

64. This analysis focuses on the incremental impacts of critical habitat designation. The purpose of the incremental analysis is to determine the impacts on land uses and activities from the designation of critical habitat beyond those impacts due to existing required or voluntary conservation efforts being undertaken due to other Federal, State, and local regulations or guidelines.

65. When critical habitat is designated, section 7 requires Federal agencies to ensure that their actions will not result in the destruction or adverse modification of critical habitat (in addition to ensuring that the actions are not likely to jeopardize the continued existence of the species). The added administrative costs of including consideration of critical habitat in section 7 consultations and the additional impacts of implementing project modifications to protect critical habitat are the direct result of the designation of critical habitat. These costs are not in the baseline, and are considered incremental impacts of the rulemaking.

66. Incremental impacts may include the direct costs associated with additional effort for consultations (including consultations that otherwise would have been limited to jeopardy issues, reinitiated consultations, or new consultations occurring specifically because of the designation) as well as the direct costs associated with project modifications that would not have been required under the jeopardy standard. Additionally, incremental impacts may include indirect impacts resulting from reaction to the potential designation of critical habitat and triggering of additional requirements under State or local laws intended to protect sensitive habitat. Uncertainty and perceptional effects on markets may also result. The nature of these impacts is described in greater detail below.

2.3.2.1 Direct Impacts

[35] U.S. Fish and Wildlife Service, "Endangered Species and Habitat Conservation Planning," August 6, 2002, accessed at http://endangered.fws.gov/hcp/.

67. The direct, incremental impacts of critical habitat designation stem from the consideration of the potential for destruction or adverse modification of critical habitat during section 7 consultations. The two categories of direct, incremental impacts of critical habitat designation are: 1) the administrative costs of conducting section 7 consultation; and 2) implementation of any project modifications requested by NMFS through section 7 consultation to avoid or minimize potential destruction or adverse modification of critical habitat.

Administrative Section 7 Consultation Costs

68. Parties involved in section 7 consultations include NMFS or the U.S. Fish and Wildlife Service (FWS), a Federal action agency, and in some cases, a private entity involved in the project or land use activity. The Federal Action agency is responsible for compliance with section 7. While consultations are required for activities that are authorized, funded, or carried out by a Federal agency (termed activities with a "Federal nexus") and may affect the species regardless of whether critical habitat is designated, the designation may increase the effort for consultations if the project or activity in question may affect critical habitat.

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

1. **Additional effort to address adverse modification in a new consultation -** New consultations taking place after critical habitat designation may require additional effort to address critical habitat issues above and beyond those raised by the listing of the species. In this case, only the additional administrative effort required to consider critical habitat is considered an incremental impact of the designation.
2. **Re-initiation of consultation to address adverse modification -** Consultations that have already been completed on a project or activity may require re-initiation to address critical habitat. In this case, the costs of re-initiating the consultation, including all associated administrative and project modification costs, are considered incremental impacts of the designation.
3. **Incremental consultation resulting entirely from critical habitat designation -** Critical habitat designation may trigger additional consultations that would not occur absent the designation (e.g., for an activity that may affect the critical habitat but not the species). All administrative and project modification costs associated with incremental consultations are considered incremental impacts of the designation.

70. We expect that the first category is most relevant to the critical habitat designation for Hawaiian monk seal as project proponents are generally already consulting on activities within the areas identified for critical habitat area. The administrative costs of a given consultations vary depending on the type and specifics of the project, and it may not be possible to predict the level of effort required for each future consultation. Discussions with NMFS' section 7 biologists and a number of Federal action agencies generated our

estimated average, incremental administrative costs employed in this analysis. These estimates are based on the expected amount of time spent considering adverse modification as part of future section 7 consultations. Subsequent chapters provide information on the specific values employed to estimate the cost of consultations associated with particular activities.

Section 7 Project Modification Impacts

71. Section 7 consultation considering critical habitat may also result in project modification recommendations specifically addressing potential destruction or adverse modification of critical habitat. For new consultations that otherwise would have been limited to jeopardy issues and for re-initiations of past consultations to consider critical habitat, the economic impacts of project modifications undertaken to avoid or minimize adverse modification are considered incremental impacts of critical habitat designation. For consultations that are forecast to occur specifically because of the designation (incremental consultations), impacts of all associated project modifications are assumed to be incremental impacts of the designation.

72. Specific analytic methods employed to project the likelihood of consultation and the likelihood of modification, as well as the methods employed to quantify the economic impacts of project modifications, vary by land use activity and modification type. These methods are discussed in detail later in this report as part of each activity-specific analysis. In general, however, the significant baseline protection afforded to the study area due to existing regulations and policies governing activities occurring in coastal Hawaii are expected to limit the incremental impacts of critical habitat designation on these activities. The potential for critical habitat designation to generate additional project modifications is discussed in each activity-specific chapter.

2.3.2.2 Indirect Impacts

73. The designation of critical habitat may, under certain circumstances, affect actions that do not have a Federal nexus and thus are not subject to the provisions of section 7 of the Act. Indirect impacts are those unintended changes in economic behavior that may occur outside of the Act, through other Federal, State, or local actions that are caused by the designation of critical habitat. This section identifies common types of indirect impacts that may be associated with the designation of critical habitat. When these types of conservation efforts and economic effects occur as a result of critical habitat designation, they are appropriately considered incremental impacts.

Other State and Local Laws

74. Under certain circumstances, critical habitat designation may provide new information to a State or local government about the sensitive ecological nature of a geographic region, potentially triggering additional economic impacts under State or local laws. In cases where these impacts would not have been triggered absent critical habitat designation, they are considered indirect, incremental impacts of the designation. For example, the potential for counties to differently approach review of development permit applications following critical habitat designation is described in Chapter 7.

Additional Indirect Impacts

75. In addition to the indirect effects noted above, project proponents, land managers and landowners may face additional indirect impacts, including the following:

- **Time Delays -** Both public and private entities may experience incremental delays for projects and other activities due to requirements associated with the need to reinitiate the section 7 consultation process and/or compliance with other laws triggered by the designation. To the extent that delays result from the designation, they would be indirect, incremental impacts of the designation.
- **Regulatory Uncertainty** - 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, government agencies 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 as consultations are completed and additional information becomes available on the effects of critical habitat on specific activities. It is difficult to identify whether and how regulatory uncertainty could change individual's behavior (e.g., resulting in individual's avoiding activities within critical habitat). However, we recognize the potential for such changes in behavior to generate indirect economic impacts due to critical habitat designation.
- **Stigma -** In some cases, the public may perceive that critical habitat designation may result in limitations on private property uses above and beyond those associated with anticipated project modifications or regulatory uncertainty. Public attitudes about the limits or restrictions that critical habitat may impose can cause real economic effects, regardless of whether such limits are actually imposed. All else equal, a property that is designated as critical habitat may have a lower market value than an identical property that is not within the boundaries of critical habitat due to perceived limitations or restrictions. As the public becomes aware of the true regulatory burden imposed by critical habitat, the impact of the designation on property markets may decrease. To the extent that potential stigma effects on markets are probable and identifiable, these impacts are considered indirect, incremental impacts of the designation.

2.4 PRESENTATION OF RESULTS

2.4.1 GEOGRAPHIC SCOPE

76. The 4(b)(2) exclusion process is conducted for a "particular area," not for the critical habitat as a whole. This analysis is therefore conducted at a geographic scale that divides the area under consideration into smaller subareas. The statute does not specify the exact geographic scale of these "particular areas." For the purposes of this analysis, a

"particular area" is defined as the 16 specific areas identified by NMFS, as described in Chapter 1.

2.4.2 ANALYTIC TIME FRAME

77. The analysis estimates impacts based on activities that are reasonably foreseeable, including activities that are currently authorized, permitted, or funded, or for which proposed plans are currently available to the public. In general, the time frame over which data are available to project land uses in the study area is ten years. In most cases, therefore, the analysis estimates economic impacts from 2014 (the year of expected final revised critical habitat designation) through 2023.

2.4.3 DISCOUNTING IMPACTS OVER TIME

78. The analysis employs standard discounting techniques to calculate the present value of economic impacts that are projected to occur in the future. The present value (PV_c) of impacts projected to occur from year t to T is measured in 2013 dollars according to the following standard formula:

$$PV_c = \sum_{t=t_0}^{t=T} \frac{C_t}{(1+r)^{t-2013}}$$

C_t = cost of species conservation efforts in year t

r = discount rate

79. To calculate present values, guidance provided by OMB specifies the use of a real discount rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates, such as three percent, which some economists believe better reflects the social rate of time preference.[36] Accordingly, the analysis presents impacts at seven percent and provides a sensitivity analysis in Appendix B, summarizing impacts by particular area assuming a discount rate of three percent.

2.5 SUMMARY

80. The economic framework applied in this report sums project-level impacts (quantified and unquantified) to estimate the total impact of designating particular areas as critical habitat. This framework provides NMFS meaningful information for the 4(b)(2) exclusion process to distinguish between areas that have a relatively high or low benefit of exclusion. This information supports the use of a modified cost-effectiveness approach in designating critical habitat.

[36] U.S. Office of Management and Budget, Circular A-4, September 17, 2003 and U.S. Office of Management and Budget, "Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations; Notice," 68 Federal Register 5492, February 3, 2003.

CHAPTER 3 | IN-WATER AND COASTAL CONSTRUCTION ACTIVITIES

3.1 INTRODUCTION

81. This chapter evaluates the potential effects of critical habitat designation for the HMS on in-water and coastal construction activities, as well as transportation projects, in the study area. These projects may include such activities as residential and commercial construction, road construction and maintenance, stream bank stabilization, marina expansions, and construction of boat docks and piers.

82. NMFS has determined that in-water and coastal construction pose a potential threat to the essential features of critical habitat for HMS in specific areas 2, 8, 13, 14, 15, and 16 (Midway Islands and French Frigate Shoals in the NWHI, and the Main Hawaiian Islands of Kauai, Oahu, Maui Nui, and the Big Island).[37] NMFS states that transportation and other in-water construction activities may affect the physical and biological features of HMS habitat in the following ways:

1) construction and development in marine habitats or along the coast may alter the quantity or quality of preferred pupping, haul-out, or foraging areas;
2) in-water or coastal structures (such as breakwaters, docks, piers, bridges, marinas, pilings, bulkheads, boat ramps, rip-rap, jetties, groins, revetments or seawalls) may reduce the amount of accessible coastline available for preferred haul-out or pupping areas;
3) in-water or coastal structures may also have the potential to alter coastal dynamics and the surrounding coastal environments, resulting in increased erosion or loss of nearby shorelines;
4) coastal construction may impact the quality of preferred pupping and haul-out areas by greatly altering the remoteness of the area (or change the current accessibility to that area);
5) increased development in remote coastal areas may result in increased anthropogenic disturbance to preferred pupping or haul-out areas, which may result in abandonment;
6) in-water construction, especially the placement of large structures, may reduce the quantity or quality of prey resources in foraging areas, and may reduce the amount of available foraging habitat or may alter marine dynamics in these areas;

[37] 2011 Proposed Rule, 76 FR 32039.

7) changes to the ocean dynamics such as increased turbidity or sedimentation may alter the quality of benthic foraging habitats and subsequently the quantity of available prey resources.[38]

83. Section 7 consultations that consider critical habitat for the Hawaiian monk seal may occur for transportation and other in-water construction activities that are subject to a Federal nexus, either through the receipt of funding from Federal agencies, such as the Federal Highway Administration (FHWA), or through Federal permitting programs, such as those administered by the U.S. Army Corps of Engineers (USACE) under the authority of the Clean Water Act (CWA) or Rivers and Harbors Act (RHA).

84. USACE and the Hawaii Department of Transportation (HDOT), via FHWA, most often initiate consultation on in-water and coastal construction projects in monk seal habitat. Other agencies, such as U.S. Department of Defense (DOD), Federal Aviation Administration (FAA), the Maritime Administration (MARAD), and the Federal Emergency Management Agency (FEMA) may also consult on these activities.

85. In addition to Federal actions, Hawaii Department of Land and Natural Resources (DLNR) is headed by a Board that decides on the issuance of permits, licenses, and leases for state-owned lands and waters (upland beaches and all submerged lands) and also issues permits for private landowner actions that involve development or modification of habitat for the use of state designated Conservation Districts (private and public lands such as beaches, wetlands, and many coastal lands). DLNR states that "it is common for State or County permitting processes to identify the presence of federally listed Endangered Species and critical habitats and require added protections for state or county actions if the project affects a federally listed species or designated critical habitat. In the case of permits or approvals of actions in State of Hawaii Conservation Districts, impacts to designated critical habitat may require additional mitigation."[39] As such, critical habitat has the potential to result in indirect incremental impacts on DLNR-permitted actions, particularly in Conservation Districts, even if a Federal nexus is not present.

86. The remainder of this chapter is divided into four sections. The first provides a profile of transportation and other in-water construction activities in the study area. The second discusses current management of these activities, highlighting any overlap with project modifications that may be recommended via section 7 consultation to protect the species and its habitat. The third section describes the methods employed to estimate the impacts of critical habitat designation on transportation and other in-water construction activities and presents the resulting forecast of economic impacts across the study area. The chapter concludes with a presentation of key assumptions in the analysis and resultant areas of uncertainty.

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[38] NMFS Protected Resources Division, Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report 2013, via personal communication with Jean Higgins, NMFS, on January 14, 2013.

[39] Email communication with Paul Conry, HI DLNR, on October 1, 2012.

KEY FINDINGS OF THE IN-WATER AND COASTAL CONSTRUCTION ANALYSIS

Quantified Impacts:

- This analysis estimates a total present value impact of $1.65 million ($235,000 annualized) to in-water and coastal construction activities occurring within Hawaiian monk seal habitat in the next 10 years. These impacts include incremental administrative costs associated with:
  - Approximately three informal consultations and two technical assistances forecast in each year of the analysis (forecast based on the past rate of consultation on construction and transportation-related actions);
  - 11 informal consultations related to transportation projects identified in the state's STIP that intersect proposed critical habitat areas;
  - Two consultations, assumed to be similar in effort to formal consultations, associated with reinitiation and reissuance of the Pac-SLOPES programmatic consultation; and,
  - Approximately 35 efforts by DLNR annually to include monk seal critical habitat considerations in issuing permits and leases on a wide-variety of activities on State-owned lands and waters.

Unquantified Impacts:

- This analysis concludes that the use of Best Management Practices (BMPs) and compliance with existing regulations and permits, in combination with established conservation efforts to address the presence of monk seals, are likely to adequately address the potential impacts of future activities on monk seal critical habitat for most projects. Thus, critical habitat is not expected to generate additional project modifications. However, for some projects, additional conservation efforts may be requested that are not yet known. Implementation of these measures will depend largely on the location and scope of specific future projects.

Geographic Distribution of Impacts:

- Impacts are greater on the MHI than on the NWHI due to the larger number of construction and transportation-related actions forecast on the MHI. Of the MHI specific areas, Maui Nui is expected to experience the greatest costs (approximately 40 percent of the total cost), the vast majority of which are attributed to the island of Maui, followed by Oahu (nearly 30 percent of the total cost). Hawaii and Kauai are expected to experience the next greatest costs, respectively.

Key Uncertainties:

- To the extent that incremental project modifications to construction and transportation may be necessary for future projects, this analysis underestimates costs.
- The majority of projected costs are attributed to DLNR permits and projects through state protection. These costs are based on the 2012 permits reviewed by the DLNR in locations where critical habitat is being proposed. Whether the level of permitting activity is likely to increase or decrease in critical habitat in the future, either due to the designation, or due to outside factors, such as a change in economic conditions, is uncertain.

3.2 PROFILE OF TRANSPORTATION AND OTHER COASTAL CONSTRUCTION ACTIVITIES

3.2.1 TRANSPORTATION INFRASTRUCTURE

87. Most major State and county road projects involve a Federal nexus for consultation on endangered species, should relevant habitat cross project action areas. This is primarily related to the prevalence of Federal funding of these projects. In recent years, Federal sources have provided approximately 44 percent of the annual funding the HDOT uses for the construction, repair, and maintenance of roads, highways, and bridges. Over the past decade, HDOT has received, on average, more than $150 million of Federal funding per year for improvements to the state's roads, highways, and bridges.[40] While most roads are inland, NMFS is concerned about potential impacts from transportation construction and maintenance in nearshore areas that may drain into monk seal habitat. In addition, HDOT conducts regular shoreline protection projects adjacent to nearshore roadways.

88. As presented in Exhibit 3-1, Hawaii currently has approximately 4,350 miles of public roads, most of which are maintained by individual counties. Within the study area are 1,130 bridges, just over 40 percent of which are in some way deteriorated below design standards, and may undergo maintenance or replacement in the near future (see Exhibit 3-2).[41, 42]

EXHIBIT 3-1. PUBLIC ROAD LENGTH BY OWNERSHIP (MILES)

OWNER	MILES	PERCENT
County	3,239	74.3
State	945	21.7
Town	0	0.0
Other	60	1.4
Federal	118	2.7
Total	**4,362**	**100%**

Source: Federal Highway Administration, Highway Statistics 2008, accessed at: http://www.fhwa.dot.gov/policyinformation/statistics/abstracts/hi.cfm.

[40] 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.

[41] U.S. DOT, Federal Highway Administration, National Bridge Inventory, "Bridges by State and County", as of August 2009, accessed at http://www.fhwa.dot.gov/bridge/nbi/county09.cfm#hi on July 20, 2012.

[42] Hawaii Department of Transportation (HDOT), "Statewide Transportation Improvement Program: Revision #6 Draft FFY2011 thru FFY2014 (FFY 2015-2016 Informative Only)", May 31, 2012. Available at: http://hawaii.gov/dot/highways/STIP/fy2011-2014.htm.

EXHIBIT 3-2. BRIDGES AND DEFICIENT BRIDGES BY COUNTY

COUNTY	BRIDGES	DEFICIENT BRIDGES	PERCENT DEFICIENT
Kauai	75	43	57%
Honolulu	661	257	39
Maui	158	98	62
Hawaii	236	91	39
Total	**1,130**	**489**	**43%**

Source: U.S. DOT, Federal Highway Administration, National Bridge Inventory, "Bridges by State and County", as of August 2009, accessed at http://www.fhwa.dot.gov/bridge/nbi/county09.cfm#hi on July 20, 2012.

3.2.2 IN-WATER AND COASTAL INFRASTRUCTURE

89. Hawaii depends on ocean transport via harbors, bays, and airports for much of its economic activity. These activities require boat ramps, buoys, docks, launches, and other in-water infrastructure. Additionally, many airports are on or near the coast. The 2014 Biological Report considers that areas such as built-up harbors and bays and manmade shorelines, lack the physical and biological features essential to the conservation of Hawaiian monk seals. Maps and descriptions of these areas are provided in Chapter 1.

90. In addition to these areas lacking critical habitat features, buoys, utility infrastructure, navigational aids, airport runways, and other structures are maintained within Hawaiian monk seal habitat. Exhibit 3-3 provides the distribution of these types of structures across the islands on the Main Hawaiian Islands. Though many of these are concentrated in already excluded areas, others are disbursed throughout areas that meet the definition of Hawaiian monk seal habitat.

EXHIBIT 3-3. EXISTING IN-WATER INFRASTRUCTURE

ISLAND	BOATING FACILITIES[1]	AIDS TO NAVIGATION[2]	CABLES[3]	OFFSHORE SEWER LINES[4]	OFFSHORE INSTALLA-TIONS	COASTAL AIRPORTS[5]
Kauai	13	22	1	0	8	2
Oahu	24	158	22	13	21	4
Maui Nui	16	51	6	1	5	3
Hawaii	14	28	2	1	29	3
Total	**67**	**259**	**27**	**15**	**63**	**12**

Source: Data from NOAA Nautical Charts, DLNR/DOBOR; Digitized by Hawaii Office of Planning; Accessed at http://hawaii.gov/dbedt/gis/download.htm, "Aids to Navigation" (2002), "Boating Facilities" (2002), "Cables" (2002), "Offshore Installations" (2002), "Offshore Sewer Lines" (2002), "Submerged Buoys" (2002).
1 Of the 67 boating facilities (small harbors, piers, launch ramps, and anchorages), ten are county owned, 38 are HI Division of Boating and Recreation (DOBOR) facilities, four are federal, seven are private, and the remaining are community owned or restricted.
2 Includes beacons, buoys, and lights.
3 The total number of cables is less than the sum for each island since some cables have an origin or end at two islands, and are counted for each island shoreline they intersect.
4 Refers to sewer lines located in marine waters within the vicinity of the MHI and recorded on nautical charts.
5 Kauai airports include Lihue and Port Allen Airports; Oahu airports include Honolulu Int'l, Dillingham, Kalaeloa, and Ford Island Airports; Maui Nui airports include Kalaupapa, Hana, and Kahului Airports; Hawaii airports include Hilo Int'l, Kona Int'l, and Upolu Airports (Source: http://hawaii.gov/dot/airports/, accessed August 15, 2012; Ford Island NALF was identified using Google maps/ESRI GIS software).

3.3 REGULATION OF IN-WATER AND COASTAL CONSTRUCTION ACTIVITIES

91. Transportation and other in-water construction projects in Hawaii are currently subject to a suite of state and Federal requirements, several of which provide for conservation efforts that benefit the Hawaiian monk seal and its habitat. These existing protections are outlined and described in Section 2.3.1 of this report. These include requirements enacted both before and after the listing of monk seal as an endangered species. Irrespective of the factors that led to their enactment, many of these requirements currently offer protection to the monk seal and its habitat. These requirements will remain in effect regardless of the designation of critical habitat for the species.

3.3.1 DEPARTMENT OF LAND AND NATURAL RESOURCES PERMITTING[43]

92. The DLNR issues permits, licenses, and leases for activities on state-owned lands and waters (including upland beaches and all submerged lands). DLNR also issues permits for private landowner actions that involve development or modification of habitat for the use of state designated Conservation District lands (e.g., private and public lands such as beaches, wetlands, and many coastal lands). This designation spans both state-owned and privately-held lands.

[43] Email communication with Paul Conry, HI DLNR, on October 1, 2012.

93. These activities requiring DLNR permits, licenses, and leases could require a Federal section 7 consultation if a nexus occurs; however, DLNR may impose additional mitigation requirements for actions in Conservation Districts not requiring consultation.[44] Environmentally sensitive areas, such as critical habitat, are identified in the process of delineating subzones of State Conservation Districts.[45] During permitting in these zones, where potential for impact to monk seal and their habitat is identified, DLNR would consult with wildlife and/or aquatic officials and include their conservation recommendations in permit conditions, to the extent that they are consistent with the permitting agency's jurisdiction and within the jurisdiction of DLNR.

3.3.2 GENERAL PERMIT FOR SMALL SCALE BEACH NOURISHMENT[46]

94. In addition to these protections, a programmatic general permit was issued in 2005 by the USACE to the State of Hawaii, through the Department of Land and Natural Resources (DLNR) for small-scale beach nourishment and restoration projects. This general permit applies to common in-water and coastal projects and provides protections for monk seal and its habitat. Consistent with Hawaii's statutory objectives for beach protection (HRS Ch. 205A, Coastal Zone Management), the permit aims to discourage hard shoreline armoring and encourage beach restoration projects. It includes the following provisions:

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

95. The general permit is integrated with another from EPA under two distinct Federal government programs: the USACE regulatory authority regarding discharge of dredged materials (under section 404 of the CWA), and EPA's authority to regulate the discharge of pollutants into U.S. waters (under section 401 of CWA). State regulations applicable to the permit stipulate that "[n]o activity will be authorized under this permit which is likely to adversely affect a federally listed, threatened, or endangered species or a species

[44] Email communication with Paul Conry, HI DLNR, on October 1, 2012.

[45] *Conservation District*, Chapter 5 Hawaii Administrative Rules (Department of Land and Natural Resources).

[46] Discussion from the Draft Economic Analysis of Critical Habitat Designation for the Hawaiian Monk Seal (Prepared for NMFS by ECONorthwest, January 2011).

proposed for such a designation, including the destruction or modification of its designated critical habitat, a recognized sanctuary or refuge."[47]

96. For activities in Hawaii covered by the general permit, a sponsor must provide written notification of an activity before it begins, in accordance with reporting requirements established by the USACE. The Honolulu District of the USACE has developed Regional Conditions applicable to all types of Nationwide Permits (NWPs) to provide additional protection for Hawaii's aquatic environment, including a list of measures applicable to protected and endangered species, which requires monitoring, on-site worker education, surveys, and reporting requirements, and a list of standard best management practices (BMPs) intended to minimize impacts to species and habitat during activity.[48]

3.3.3 STANDARD LOCAL OPERATING PROCEDURES FOR ENDANGERED SPECIES IN THE CENTRAL AND WESTERN PACIFIC REGION (PAC-SLOPES)

97. In 2010, USACE conducted a programmatic consultation with NMFS PRD on a set of endangered species SOPs for regulated projects, called Pac-SLOPES. Pac-SLOPES constitutes a set of approved programmatic guidance criteria under which the USACE Honolulu District can issue permits for common nearshore and in-water activities in the central and western Pacific region, including the main and Northwest Hawaiian Islands. The permit covers 14 activities, with certain limitations and restrictions, including:

- Site preparation for above- or over-water construction;
- Survey activities;
- Marina or harbor repair & removal;
- Piling repair and removal;
- Buoy installation & repair;
- Maintenance dredging;
- Other minor discharges and dredging/excavation;
- Utility line installation & repair;
- Outfall structure repair & replacement;
- Bank stabilization;
- Stream clearing;
- Road construction, repair, and improvement;

[47] 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.

[48] U.S. Army Corps of Engineers, "Public Notice for Federal Register Notice Announcing New Nationwide Permits," March 19, 2012. Accessed on July 20, 2012 at http://www.poh.usace.army.mil/Media/PublicNotices/tabid/972/Article/689/announcement.aspx.

- Bridge repair & replacement; and
- Vessel removal.

98. Pac-SLOPES is intended to serve as a forum between NMFS, USACE, and permit applicants to streamline the consultation process, while reducing or eliminating adverse effects of regulated actions on ESA-listed marine species and their designated critical habitat.

99. All projects proposed for authorization under Pac-SLOPES will undergo review by NMFS Protected Resources Division (PRD) to ensure they fit into the range of approved effects. Projects outside of the range will undergo separate project-specific consultation with NMFS. Pac-SLOPES includes comprehensive best management practices (BMPs) that are specific to each of the 14 project types outlined above. These BMPs are intended to minimize the potential for, or effect of, direct and indirect impacts on protected marine species and their habitats.

3.4 METHODOLOGY FOR EVALUATING IMPACTS TO IN-WATER AND COASTAL CONSTRUCTION ACTIVITIES

100. This section discusses the expected frequency of future in-water and coastal construction activity across the study area that may be subject to section 7 consultation, and/or additional review by DLNR. We then discuss project modifications that NMFS may request through the course of these consultation efforts.

101. Most in-water and coastal construction projects taking place in Hawaii have a nexus with the Federal government through funding or permitting which triggers section 7 consultation.[49] For example, the transportation projects discussed in this chapter are supervised, permitted, or funded by FHWA, through HDOT, in addition, in-water construction projects are typically subject to USACE Clean Water Act or Rivers and Harbors Act permitting. Further, docks and piers located in navigable waters are subject to Federal permitting requirements established under Section 10 of the Rivers and Harbors Appropriation Act of 1899, as administered by USACE.

3.4.1 PROJECTED LEVEL OF FUTURE IN-WATER AND COASTAL CONSTRUCTION ACTIVITY

102. To estimate the number of future in-water and coastal construction and transportation projects that will be subject to section 7 consultation in the study area, this analysis relies on three data sets:

- the history of past consultations on related project types that have been identified as occurring within the study area;
- For transportation projects, projects identified in the State's Transportation Improvement Program (STIP) that are planned to occur on or near shoreline areas.

[49] 33 U.S.C. § 403.

- For non-transportation related projects, the number of DLNR permit actions considered in 2012.

103. With regard to airports, HDOT AIR Division indicates that capital improvement projects and routine maintenance have the potential to be impacted by the designation. The AIR Division also indicates that FAA rules and regulations automatically prioritize flight safety and operations, and that improvement projects would already be subject to NEPA requirements.[50] Despite the concern related to Hawaii's 12 coastal airports, only one consultation has been conducted regarding airport operations. This consultation was conducted on a runway replacement project that did not intersect the potential critical habitat area.[51] Exhibit 3-3 presents the locations of Hawaiian airports in relation to the study area.

104. A total of 325 consultation actions that included monk seals on in-water and coastal construction projects occurred between 2000 and May of 2012. This represents 60 percent of all consultation actions related to monk seals during this period. These included 179 informal consultations and zero formal consultations. The informal consultations included one informal programmatic consultation with the USACE on commonly permitted activities (see discussion of Pac-SLOPES in Section 3.3). Of the relevant projects, 67 (approximately 20 percent) fall in areas that meet the definition of critical habitat for Hawaiian monk seals. Most of the consultation actions occurred in harbors and bays in areas not included in the MHI units. Consultation actions are summarized in Exhibit 3-4.

105. Hawaii's STIP is a comprehensive listing of transportation projects that the State of Hawaii and each individual island county plans to fund and undertake within the next six years, though subject to modification. STIP projects have been endorsed and approved by the FHWA and the FTA. This analysis uses maps provided by HDOT of estimated future project locations to determine a subset of the full suite of STIP projects which have the potential to impact monk seal critical habitat.[52] As shown in Exhibit 3-5, we estimate that 11 proposed projects may intersect with the study area or otherwise affect areas identified for critical habitat for monk seals.

[50] Written communication from Hawaii Department of Transportation, October 12, 2012.

[51] Consultation history provided by NMFS, June 2012.

[52] GIS data was not available for all projects in the STIP. Projects were therefore identified as potentially impacting the areas identified for critical habitat if locations identified on HDOT STIP maps appeared to be within an estimated distance of 500 m of the shoreline. For bridge projects on streams draining to monk seal habitat, a larger buffer of approximately 1 km from shoreline was used. Maps of project locations are available online at: http://hawaii.gov/dot/highways/STIP/fy2011-2014.htm. Oahu project location data was provided in GIS.

EXHIBIT 3-4. IN-WATER AND COASTAL CONSTRUCTION CONSULTATION ACTIONS FOR THE MONK SEAL, 2000 THROUGH 2012[53]

ACTION TYPE	ALL RELEVANT ACTIONS			IN CRITICAL HABITAT
	INFORMAL	TECHNICAL ASSISTANCE[1]	TOTAL[2]	TOTAL
Beach Nourishment	4	5	9	4
Bridges and roadway construction/ maintenance	19	23*	42	9
Buoys & Moorings	23	7*	30	17
Cables	10	3	13	9
Docks, Harbors, Piers, and Marinas	74	67*	141	3
Habitat Restoration and Building	18	7	25	13
Shoreline Reinforcement	17	10*	27	5
Other Construction (residential related, pipeline repairs, etc.)	14	24*	38	7
TOTAL	**179**	**146**	**325**	**67**

Source: Consultation history provided by NMFS, June 2012.

[1] A * indicates that technical assistances were provided for projects covered under the USACE Pac-SLOPES programmatic consultation in this activity type. These actions are not included in the totals here.

[2] Includes actions in areas not proposed for HMS critical habitat.

EXHIBIT 3-5. HAWAII STIP PROJECTS ON OR NEAR SHORELINE CRITICAL HABITAT AREAS FOR THE MONK SEAL (2014 THROUGH 2016)

SPECIFIC AREA/ISLAND		SHORELINE PROTECTION	BRIDGE REHAB/ REPLACEMENT	ROAD IMPROVEMENTS/ EXTENSIONS	BIKE PATH	TOTAL
13	Kauai	0	0	1	1	**2**
14	Oahu	0	2	0	1	**3**
15	Maui Nui	2	0	1	0	**3**
16	Hawaii	0	1	2	0	**3**
Total		**2**	**3**	**4**	**2**	**11**

Source: Hawaii Department of Transportation (HDOT), "Statewide Transportation Improvement Program: Revision #6 Draft FFY2011 thru FFY2014 (FFY 2015-2016 Informative Only)", May 31, 2012. Available at: http://hawaii.gov/dot/highways/STIP/fy2011-2014.htm.
Notes: This includes five projects projected for 2015 and 2016 which are considered to be "illustrative years for information purposes only". They are not financially constrained or endorsed/approved by FHWA and FTA.
Not included in this estimate are statewide programs such as bridge inspections, discretionary pest and invasive species control, and pedestrian facilities which do not have specific locations assigned to them.

[53] Includes consultation actions through May of 2012.

106. For purposes of this analysis, we assume that each project will result in a future informal consultation.[54] However, this may overstate the actual number of future consultations because 1) FHWA or HDOT may determine that some projects are unlikely to affect the monk seal or its habitat; 2) some projects may be combined under a single consultation (in particular, projects anticipated to be constructed in stages which may receive multiple entries in the STIP forecast).

107. This analysis assumes that STIP consultations will be conducted in addition to those projects already anticipated based on analysis of the consultation history. To the extent that such projects also appear in the consultation history, this analysis may overstate potential impacts related to such projects.

108. In addition to the above section 7 consultation actions, DLNR has stated that they may require additional conservation efforts for permits issued under their purview following critical habitat designation for monk seals.[55] To be conservative, we assume that the administrative effort associated with considering monk seal critical habitat in permit issuances is equivalent to effort involved in an informal consultation. We estimate the number of annual actions based on the number of requests for permits, licenses or leases of state lands or permits for development or modification of lands in the Conservation District over a one year period that DLNR identified as potentially affecting Hawaiian monk seal critical habitat. Exhibit 3-6 presents the estimated number of permit actions by each DLNR division conducting the permit. According to DLNR, permit reviews by the Land Division cover activities such as for seawalls (easements and after-the-fact approvals). Actions reviewed by the Office of Conservation and Coastal Lands (OCCL) included beach nourishment, seawall violations, and other enforcement actions.[56] This analysis assumes that DLNR will participate in a similar number of consultation efforts annually for the period of the analysis.

109. Finally, the Pac-SLOPES programmatic consultation will need to be reinitiated in 2014 to account for the addition of monk seal critical habitat. Subsequent to that reinitiation, the NMFS NLAA determination will expire after five years, and USACE will be required to consult on the program again. This analysis includes the incremental cost of considering adverse modification of monk seal critical habitat for the one formal consultation in 2014 for the reinitiation of the Pac-SLOPES program, and the incremental cost of considering adverse modification of monk seal critical habitat for an additional formal consultation in 2018 for reissuance.

[54] NMFS notes that it is possible for some STIP projects to be large enough in scope to warrant a formal consultation; however, since no formal consultations of this type have occurred in the consultation history, this analysis attributes an informal consultation to each.

[55] Public comments of William J. Aila, DLNR, January 6, 2012; Teleconference communication with DLNR staff, August 30, 2012.

[56] Email communication with Francis Oishi, HI DLNR, on November 9, 2012.

EXHIBIT 3-6. NUMBER OF DLNR PERMIT REVIEW ACTIONS IN MONK SEAL CRITICAL HABITAT AREAS, BY DLNR DIVISION (2012)

SPECIFIC AREA/ISLAND		LAND DIVISION	DIVISION OF AQUATIC RESOURCES	OFFICE OF CONSERVATION AND COASTAL LANDS	TOTAL
13	Kauai	1	0	0	**1**
14	Oahu	1	5	3	**9**
15	Maui Nui	5	2	4	**11**
16	Hawaii	5	1	0	**6**
11-16	State of Hawaii	-	8	-	**8**
Total		**12**	**16**	**7**	**35**

1 Actions for permits issued that affect various locations throughout the islands.
2 Represents proportion of total Land Division activities.
Source: Email communication with Francis Oishi, HI DLNR, on November 9, 2012.
Notes: Represents DLNR Board agenda items over the 12 month period that would occur in the new MHI monk seal critical habitat and would require additional review and potentially mitigation with those added administrative and project implementation costs.

110. Exhibit 3-7 below displays the number of annual consultations estimated to occur over the period of analysis for both in-water construction as well as transportation-related projects, by specific area.

EXHIBIT 3-7. NUMBER OF FORECAST CONSULTATIONS OCCURRING ON EACH ISLAND FOR IN-WATER AND COASTAL CONSTRUCTION ACTIVITIES IN MONK SEAL CRITICAL HABITAT (2014-2023)[57]

SPECIFIC AREA/ISLAND		ANNUAL INFORMAL	ANNUAL TECHNICAL ASSISTANCE	STIP PROJECTS (INFORMAL)	ANNUAL DLNR PERMIT REVIEWS	TOTAL BY UNIT (ANNUAL)
Northwest Hawaiian Islands						
1	Kure Atoll	0.000				0.000
2	Midway Atoll	0.000				0.000
3	Pearl and Hermes Reef	0.000				0.000
4	Lisianski Island	0.000				0.000
5	Laysan Island	0.077				0.077
6	Maro Reef	0.000				0.000
7	Gardner Pinnacles	0.000				0.000
8	French Frigate Shoals	0.077				0.077
9	Necker Island	0.000				0.000
10	Nihoa Island	0.000				0.000
Main Hawaiian Islands						
11	Kaula Island	0.00	0.00		0.08	0.085

[57] Consultation costs associated with reinitiation and reissuance of Pac-SLOPES are not included here, but are expected to apply only to the Main Hawaiian Islands.

SPECIFIC AREA/ISLAND		ANNUAL INFORMAL	ANNUAL TECHNICAL ASSISTANCE	STIP PROJECTS (INFORMAL)	ANNUAL DLNR PERMIT REVIEWS	TOTAL BY UNIT (ANNUAL)
12	Niihau Island	0.16	0.00		0.36	0.528
13	Kauai	0.48	0.24	2 in 2014	1.84	2.755
14	Oahu	1.12	0.56	2 in 2014; 1 in 2016	10.13	12.121
15	Maui Nui	0.61	0.80	2 in 2014; 1 in 2015	15.29	16.997
16	Hawaii	0.61	0.32	2 in 2015; 1 in 2016	7.30	8.524
	Total	**3.14**	**1.92**	**11 (total)**	**35.00**	**41.164**

3.4.2 IMPACTS OF ADDITIONAL CONSERVATION EFFORTS

111. Exhibit 3-8 presents conservation measures NMFS may recommend for in-water and coastal construction. According to NMFS, implementation of these measures will depend on the location and scope of the project. To the extent that these actions are not already expected to occur under current permit requirements, these actions could represent incremental costs of the critical habitat designation for monk seals.

EXHIBIT 3-8. POTENTIAL MONK SEAL HABITAT CONSERVATION EFFORTS ASSOCIATED WITH IN-WATER CONSTRUCTION AND TRANSPORTATION ACTIVITIES

POTENTIAL MODIFICATION	ACTIVITY TYPE
Restrictions on the spatial extent of the project	In-water & coastal construction
Increased educational efforts with an emphasis on habitat protection	In-water & coastal construction
Monitoring efforts to identify impacts to the benthic community	In-water construction
Monitoring efforts to identify impacts to monk seal use	Coastal construction
Limitations on providing new or increased access to remote areas	Coastal construction
Source: Personal communication with NMFS, January 14, 2013.	

112. USACE permits typically include conservation efforts likely to benefit monk seal critical habitat even absent critical habitat designation for the monk seal. NMFS typically recommends a set of previously established BMPs for in-water work to avoid impacts to marine protected species for all permits.[58] NMFS recommended conservation actions that are likely to be protective of monk seal critical habitat largely overlaps this pre-existing set of BMPs. A review of the consultation history also suggests that even prior to

[58] NMFS Protected Resources Division, "Best Management Practices (BMPs) for General In- and Near-Water Work Including Boat and Diver Operations," June 2011.

critical habitat designation, few additional conservation efforts have been requested for the Hawaiian monk seal to date related to in-water construction activities.[59] As discussed above, despite over 300 consultation actions, none resulted in formal consultation.

113. The majority of past construction and in-water projects affecting monk seal have been relatively small in scope. Because agencies responsible for issuing permits for transportation and other in-water and coastal construction projects are already implementing most of the suggested conservation efforts that would benefit the monk seal and its habitat, additional project modifications stemming from the designation of critical habitat (i.e., changes above and beyond the types of conservation efforts that are already being requested for these projects) are likely to be rare, particularly as related to small projects. For large-scale future projects, incremental project modification costs related to conducting additional benthic community or seal foraging behavior studies may be incurred. However, the specific locations and sizes of planned projects in areas identified for monk seal critical habitat is unknown.

114. Regarding DLNR review of permit applications for actions in areas identified for critical habitat, the nature of conservation measures, and the likelihood that DLNR will impose them as a result of the designation, is uncertain. According to DLNR, the agency generally identifies potential impact to listed species or critical habitat in the area of a requested permit. If identified, DLNR would consult with the wildlife or aquatic officials, and include recommended conservation measures as permit conditions, to the extent that they are consistent with the permitting agency's jurisdiction and within the jurisdiction of the DLNR.[60] To the extent that DLNR requires mitigation, or project modifications as a result of the designation, these costs would be considered incremental impacts of the critical habitat rulemaking.

3.4.3 ADMINISTRATIVE COSTS

115. Our analysis assumes that Action agencies will continue to consult on in-water construction activities and transportation-related activities within the study area, and will require additional administrative effort to consider the impacts of their actions on Hawaiian monk seal critical habitat. To account for this impact, the analysis estimates the incremental administrative costs, beyond what is required to address jeopardy to the species, associated with these consultations. Based on the review of past section 7 consultations, most projects undergo informal consultation or are considered as part of instances of technical assistance.

116. During a section 7 consultation, NMFS, the Federal agency involved in the activity (e.g., USACE), and the third party applying for Federal funding or permitting (if applicable) incur administrative costs as they coordinate to avoid destruction or adverse modification of critical habitat. The duration and complexity of these interactions depends on a number of variables, the species, the activity of concern, the potential effects of the

[59] Note that energy projects are discussed in chapter 6 of this report.

[60] Personal communication with F. Oishi, DLNR, December 28, 2012.

proposed activity on the species and its critical habitat, and the action agencies and third parties involved.

117. For this analysis, administrative costs per consultation are based on information provided by NMFS biologists that participate in section 7 consultations regarding the monk seal in Hawaii, and a survey of Federal agencies that have participated in section 7 consultations considering critical habitat considering critical habitat for other marine species.[61] For most in-water and coastal construction activities, parties expected to be included in the consultation process are NMFS the USACE, FHWA, FTA and other Federal agencies. Different types of consultation require varying amounts of administrative effort, resulting in distinct cost estimates for various types of consultation. Exhibit 3-9 shows the incremental administrative costs for individual consultations across the various consultation categories. As described above, no formal consultations are anticipated.

EXHIBIT 3-9. INCREMENTAL ADMINISTRATIVE CONSULTATION COSTS FOR IN-WATER AND COASTAL CONSTRUCTION ACTIVITIES IN HAWAIIAN MONK SEAL CRITICAL HABITAT (2013$)

CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRTY PARTY	TOTAL COST
Technical Assistance	$277	$0	$277	**$554**
Informal	$104	$2,860	$2,860	**$5,810**
Formal	$1,040	$4,700	$4,700	**$10,400**
DLNR Permit Review	$104	$0	$2,860	**$5,810**

Source: Communication with NMFS, September 2012; U.S. Department of Commerce, National Marine Fisheries Service. 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.
Notes: Technical assistance consults assumed to involve only NMFS and third parties, although Federal agencies can be the third party involved.
Includes average of time spent on previous consultations for utility work, in-stream work, and transportation projects. This analysis assumes that DLNR effort to include a review of monk seal critical habitat in their permit review process would be similar to that of an informal consultation for the third party (DLNR), with potential minor effort for NMFS review or assistance.

3.5 RESULTS OF IN-WATER AND COASTAL CONSTRUCTION ANALYSIS

118. As presented in Exhibit 3-10, the present value impacts to in-water construction and transportation projects are estimated to be approximately $1.65 million over the period of the analysis, or $235,000 annually (discounted at seven percent). Exhibit 3-10 also presents the distribution of the forecast impacts by specific area. As shown, the majority of impacts are expected to occur on Oahu, Maui Nui, and the Island of Hawaii.

119. Most of the quantified costs are associated with anticipated efforts by DLNR to include consideration of monk seal critical habitat in their permit process. Other costs include administrative consultation costs associated with USACE and HDOT consultations on monk seal critical habitat. Costs associated with future conservation efforts are not

[61] U.S. Department of Commerce, National Marine Fisheries Service. 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.

quantified. As noted above, because agencies responsible for issuing permits for transportation and other in-water and coastal construction projects are already requesting most of the suggested conservation efforts that would benefit the monk seal and its habitat, additional project modifications stemming from the designation of critical habitat (i.e., changes above and beyond the types of conservation efforts that are already being requested for these projects) are likely to be rare, particularly as related to small projects. For large-scale future projects, incremental project modification costs may be incurred, and will be assessed based on location and scope of the project. However, the specific locations and sizes of planned projects in areas identified for critical habitat is unknown.

120. Regarding DLNR review of permit applications for actions in areas identified for critical habitat, the nature of mitigation measures, and the likelihood that DLNR will impose them as a result of the designation, is uncertain. To the extent that DLNR requires mitigation, or project modifications as a result of the designation, these incremental costs may be underestimated in this analysis.

EXHIBIT 3-10. TOTAL ESTIMATED INCREMENTAL COSTS OF FUTURE IN-WATER AND COASTAL CONSTRUCTION CONSULTATIONS IN MONK SEAL CRITICAL HABTIAT (2014 – 2023, 2013$, SEVEN PERCENT DISCOUNT RATE)

	SPECIFIC AREA/ISLAND	TOTAL PRESENT VALUE	ANNUALIZED
Northwest Hawaiian Islands			
1	Kure Atoll	$0	$0
2	Midway Islands	$0	$0
3	Pearl and Hermes Reef	$0	$0
4	Lisianski Island	$0	$0
5	Laysan Island	$3,140	$447
6	Maro Reef	$0	$0
7	Gardner Pinnacles	$0	$0
8	French Frigate Shoals	$3,140	$447
9	Necker Island	$0	$0
10	Nihoa Island	$0	$0
Main Hawaiian Islands			
11	Kaula Island	$3,600	$513
12	Niihau Island	$22,200	$3,160
13	Kauai	$108,000	$15,300
14	Oahu	$484,000	$69,000
15	Maui Nui	$678,000	$96,500
16	Hawaii	$346,000	$49,300
Total		$1,650,000	$235,000

3.5.1 IMPACTS SPECIFIC TO NORTHWEST HAWAIIAN ISLANDS

121. Due to the limited extent of human populations, remote location, and conservation status, in-water and coastal construction activities on NWHI are expected to be far less common than on the MHI. This finding is supported by the consultation history in which, despite its past status as Hawaiian monk seal critical habitat, less than two percent of past consultations on in-water and coastal construction have occurred in the NWHI. The majority of these consultations were associated with building maintenance, habitat restoration, and environmental clean-up activities.

EXHIBIT 3-11. ASSUMPTIONS AND LIMITATIONS

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED IMPACTS
Specific future conservation recommendations for future construction and transportation projects are unknown. Based on the list of recommended conservation actions in the 2014 Biological Report, conservation efforts are assumed to largely overlap baseline requirements.	May result in an **underestimate** of costs.	**Potentially major.** While rare for small projects, for large-scale future projects, incremental project modification costs related to conducting additional benthic community or seal foraging behavior studies may be incurred.
Lacking information on the likelihood, frequency, and location of project modification or mitigation measures recommended by DLNR for state and county projects, this analysis does not forecast project modification costs for DLNR projects.	May result in an **underestimate** of costs.	**Potentially major.** While past recommendations for monk seal conservation by NMFS have been modest and are expected to remain largely the same following critical habitat designation, additional conservation efforts that DLNR may recommend are unknown.
We assume that all future DLNR permits will require additional administrative effort that is equivalent to that expected for an informal consultation.	May result in an **overestimate** of costs.	**Likely minor.** It seems unlikely that all permit actions will require an effort equal to the effort required of an informal consultation.
STIP project locations are estimated, and those identified as requiring consultation are determined using best professional judgment.	May result in an **overestimate** of costs.	**Likely minor.** The number of STIP transportation projects identified as likely to be in critical habitat is not substantially different from what the consultation history reflects.
STIP projects may already be accounted for in the projection of the consultation history, resulting in potential double-counting of project consultations.	May result in an **overestimate** of costs.	**Likely minor.** At most, a small portion of the total projected consultations would be double-counted. Additionally, the costs associated with these projects are small (only the incremental portion of an informal consultation, or a technical assistance).
Project modifications beyond what is currently prescribed will not be recommended in consultation.	May result in an **underestimate** of costs.	**Likely minor.** It is unlikely that additional measures will be necessary to avoid impacts to Hawaiian monk seal habitat beyond what is currently provided to the seal; however, to the extent that new projects require additional conservation measures, this estimate may be an underestimate of future costs.

CHAPTER 4 | FISHERIES

4.1 INTRODUCTION

122. NMFS has identified fisheries as a potential threat to the essential features of Hawaiian monk seal critical habitat in specific areas 12 through 16 (Niihau, Kauai, Oahu, Maui Nui, and Hawaii Island), because some fishing activities may impact the quantity of available prey species within monk seal foraging areas due to extraction of prey resources or changes to the habitat. However, protections (or modifications to fishery activities) associated with critical habitat are limited only to fishery activities that result in the destruction or adverse modification of monk seal critical habitat, and which have a federal nexus.

123. The 2014 Biological Report identifies that, at the family taxonomic level, some overlap exists between the species targeted by monk seals and the species managed under the Hawaiian Archipelago Fisheries Ecosystem Plan. Unlike the NWHI population, MHI monk seals do not appear to be food limited, rather seals in the MHI are robust in size and the population is increasing in the MHI, which suggests adequate prey availability in MHI foraging areas. Based on the available information, it appears that these fisheries are having little impact on monk seal foraging areas, and NMFS does not anticipate modifications to the current management of the MHI federally managed fisheries.

124. However, the 2014 Biological Report cautions that the broad diet of the Hawaiian monk seal, along with ecologically favorable conditions in the MHI, may be concealing fishery impacts that are currently occurring, but cannot be identified until more information is gained regarding monk seal foraging ecology and/or the relative importance of certain prey species. The 2014 Biological Report identifies "reduction to the annual catch limit" to federally-managed fisheries under the Fishery Ecosystem Plan for the Hawaiian Archipelago (Hawaii FEP) as possible future modifications should information indicate that fishing activities are resulting in the destruction or adverse modification of critical habitat and management measures are necessary to avoid such impacts. This chapter presents information so that the reader may understand the potential economic impacts that restrictions on fishing activities could have on the MHI fisheries. Other sectors of Hawaii's fishing and seafood industry, such seafood retailers and restaurants, which would not be directly affected by critical habitat designation are not further considered in this analysis. We recognize that these industries could be indirectly affected if fisheries management were to change such that less overall seafood is available, prices change, or the location and availability of supply is altered. In addition, the analysis forecasts administrative costs associated with anticipated future consultations on fisheries activities issues over the next ten years.

KEY FINDINGS OF THE FISHERIES ANALYSIS

Quantified Impacts and Conclusions:

- We estimate administrative costs associated with including consideration of monk seal critical habitat in future consultations to be approximately $16,000 over the next 10 years, or $2,280 annually.

Unquantified Impacts:

- Restrictions on the annual catch limits of bottomfish, coral reef fisheries, including crustacean, precious coral and akule, are possible. However, near-term (within the next 10 years) changes to management of these fisheries to accommodate monk seal critical habitat designation appear unlikely. Based on the available information, it appears that these fisheries are having little impact on monk seal foraging areas, and NMFS does not anticipate modifications to the current management of the MHI federally managed fisheries.
- Approximately 916 fishermen holding Hawaii commercial marine licenses reported commercial catch of bottomfish between 2008 and 2012. Sales of bottomfish in Hawaii were $2.0 million in 2013. Sales of Hawaiian coral reef fishes were $3.2 million in 2013. Sales of all other reef fisheries combined, including crustaceans, precious corals and the coastal pelagic akule accounted approximately $0.8 million in 2011. In addition to recorded sales, these fisheries provide cultural value to local and native Hawaiian communities. Expenditures by fishermen also stimulate local economies.
- Recreational anglers spent $475.5 million for fishing equipment and services within the State of Hawaii in 2006, the most recent year expenditure data is available.
- Impacts to the pelagic fisheries are not expected because these fishing activities are not focused on bottom-associated prey species or the foraging habitat important to monk seal critical habitat, and are typically not targeted by monk seals. Additionally, these fishing activities are primarily conducted seaward of the outer boundary of proposed critical habitat areas.

Geographic Distribution of Impacts:

- We expect impacts to be distributed across all specific areas in the MHI. Fishing is not currently considered a threat to monk seal critical habitat in the NWHI.

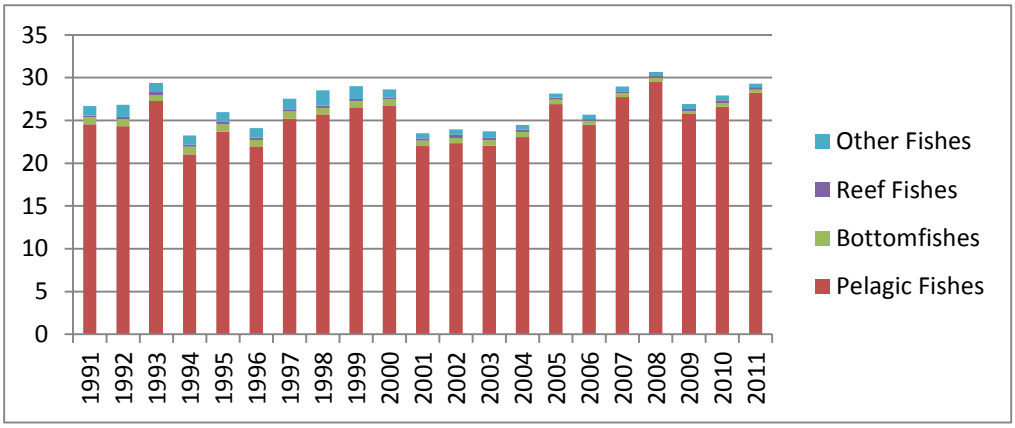
Key Uncertainties:

- Specific future management measures that may be necessary to avoid destruction or adverse modification to the monk seal critical habitat from fisheries activities are uncertain. Impacts associated with restrictions on fisheries are not included in projected quantified impacts. If such restrictions occur, then impacts reported in this analysis would be understated.
- There is some public concern that critical habitat could create a vehicle for third parties to limit fishing activities in Hawaii. Because the likelihood of litigation and its potential outcomes are unknown, this analysis does not quantify impacts associated with any increased likelihood of third party lawsuits that could occur following critical habitat designation.
- This analysis relies on patterns of historical consultation to forecast future rates of consultation activity. This analysis assumes that past consultations provide a good indication of future activity.

4.2 PROFILE OF REGIONAL FISHING INDUSTRY

125. In 2012, commercial fishermen sold approximately 32 million pounds of fish in Hawaii, valued at $115 million.[62] Of the total catch, 96 percent of the landings by volume and value were pelagic fish species, most of which were caught offshore and beyond the seaward boundary of areas identified for critical habitat for the Hawaiian monk seal.[63] These pelagic species are typically large fish (e.g., tuna, which are not included in typical monk seal diet).[64] This general relationship between pelagic fish species catch and value and total Hawaii-based fisheries catch has been apparent over at least the past 20 years. Total fish landings in Hawaii between 1991 and 2011 are summarized in Exhibit 4-1. The State of Hawaii reported that in 2009, there were 4,299 licensed commercial fishermen.[65]

EXHIBIT 4-1. COMMERCIAL FISHERIES LANDINGS FOR PELAGIC, BOTTOM, REEF, AND OTHER FISHERIES CATEGORIES, MILLIONS OF POUNDS, 1991-2011



Source: Pacific Islands Fisheries Science Center, Western Pacific Fisheries Information Network (WPacFIN), Hawaii Fishery Statistics. Accessed at: http://www.pifsc.noaa.gov/wpacfin/ on October 1, 2012.

126. As stated above, fishing activities that may impact Hawaiian monk seal critical habitat primarily include those where harvested species are part of the Hawaiian monk seal diet, or which have the potential to impact the quantity of available prey species for Hawaiian monk seal. Thus, fisheries potentially affected by Hawaiian monk seal critical habitat include the bottomfish and seamount groundfish fishery, coral reef ecosystem fisheries, precious coral fisheries, and crustacean fisheries, all of which are managed under the

[62] Pacific Islands Fisheries Science Center, Western Pacific Fisheries Information Network (WPacFIN), Hawaii Fishery Statistics. Accessed at: http://www.pifsc.noaa.gov/wpacfin/ on December 13, 2013.

[63] For example, the Hawaii-based limited access longline fishery is the largest of all the pelagic Hawaiian fisheries. Longline fishing has been prohibited within 50 nautical miles of the MHI and NWHI. As of 2012, as part of the Take Reduction Plan, the longline fishing prohibition was expanded. Pacific Islands Fisheries Science Center, Western Pacific Fisheries Information Network (WPacFIN), Hawaii Fishery Statistics. Accessed at: http://www.pifsc.noaa.gov/wpacfin/ on October 1, 2012.

[64] Written communication with NMFS Pacific Islands Regional Office, November 16, 2012.

[65] Division of Aquatic Resources and the Western Pacific Fishery Information Network, "State of Hawaii 2009 Fishery Statistics," December 2011.

Hawaii FEP in areas identified for critical habitat. While together they comprise less than five percent of the overall value of commercial fish landed in Hawaii, changes to management of these fisheries could be important to local economies, in addition to having as social and cultural implications. The following sections describe each fishery in more detail.

4.2.1 BOTTOMFISH AND SEAMOUNT GROUNDFISH FISHERIES

127. Bottomfish in the Hawaiian Archipelago are a multi-species complex of snappers (uku and taape), groupers, and shallow water species of jacks (white and black ulua). Most fishing effort focuses on seven species (known as the Deep 7): onaga (*Etelis coruscans*), ehu (*Etelis carbunculus*), gindai (*Pristipomoides zonatus*), kalekale (*Pristipomoides sieboldii*), hapuupuu (*Epinephelus quernes*), opakapaka (*Pristipomoides filamentosus*), and lehi (*Aphareus rutilans*). The deep-slope habitat targeted by this fishery are concentrated between 30 to 150 fathoms in depth (180 to 900 feet or 55 to 274 meters).[66] In the MHI, approximately 40 to 50 percent of the bottomfish habitat lies in State waters.[67] Bottomfish grounds in Federal waters include Middle Bank and Penguin Bank, as well as 45 nautical miles of habitat in 100-fathom depth (600 feet) in the Maui-Lanai-Molokai complex.[68] Penguin Bank is a major fishing ground for reef and bottomfish, and is a particular hotspot for gindai, hapuupuu, kalekale, ehu, onaga, and opakapaka.[69]

128. The fishery is an open access fishery, with catch reaching a peak in 1988 at approximately 1.2 million pounds. After 1988, bottomfish catch in Hawaii declined. In 2005, NMFS determined that overfishing was occurring in the Hawaiian archipelago, and that localized depletion in the MHI was the cause. In 2007, the Western Pacific Fishery Management Council (Council) took action and recommended NMFS institute an emergency summer closure of the MHI bottomfish fishery. In October 2007, a total allowable catch (TAC) management regime was instituted for the Deep 7 species, with a commercial quota of 178,000 pounds. As summarized by Hospital and Beavers (2012), "this represented a stark shift in fisheries management in Hawaii, as no other comparable fishery in the MHI has ever been subject to a quota."[70] In 2009, the Deep 7 bottomfish

[66] Western Pacific Regional Fishery Management Council, "Fishery Ecosystem Plan for the Hawaii Archipelago," September 24, 2009. (Chapter 4)

[67] Parke, M. 2007. Linking Hawaii Fishermen Reported Commercial Bottomfish Catch Data to Potential Bottomfish Habitat and Proposed Restricted Fishing Areas Using GIS and Spatial Analysis. September 2007. U.S. Dept. Commer., NOAA Tech Memo., NOAA-TM-NMFS-PIFSC-11, pp 39; Western Pacific Regional Fishery Management Council, "Amendment 14 to the Fishery Management Plan for Bottomfish and Seamount Groundfish Fisheries of the Western Pacific Region," December 2007.

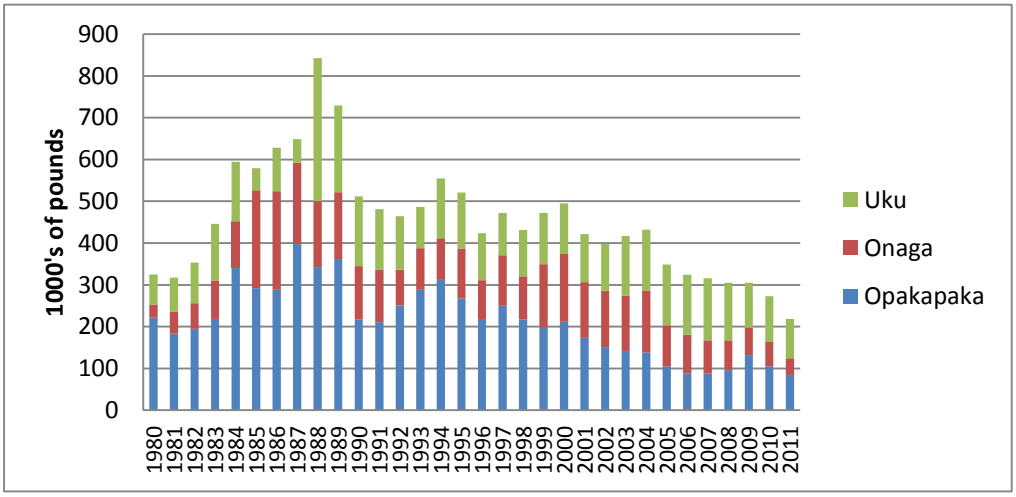
[68] Western Pacific Regional Fishery Management Council, "Fishery Ecosystem Plan for the Hawaii Archipelago," December 2005.

[69] Comments on the Draft Economic Analysis of Critical Habitat for the Hawaiian Monk seal, Western Pacific Region Fishery Management Council, November 8, 2012.

[70] Hospital, Justin and Courtney Beavers. 2012. "Economic and Social Characteristics of Bottomfish Fishing in the Main Hawaiian Islands. NOAA, Pacific Islands Fisheries Science Center. April.

TAC in the MHI was 254,050 pounds.[71] The fishing season was open from September 1, 2009 to April 20, 2010 (approximately six months). For 2010 fishing season, the same TAC was specified and was reached on March 12, 2011, (76 FR 10524, February 25, 2011). In 2011, NMFS implemented an annual catch limit (ACL) for the fishery to comply with new requirements in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and set the ACL at 346,000 pounds but instituted an annual catch target of at 325,000 pounds.[72] The ACT was not reached (76 FR 54715, September 2, 2011). The same ACL and ACT was specified for fishing year 2012 (77 FR 56751, September 14, 2012), which was again not reached. NMFS removed the ACT and set the ACL at 346,000 pounds for the 2013 fishing year, which is currently ongoing (78 FR 59626, September 27, 2013). The trend in catch between 1980 and 2011 for the three most commonly caught bottomfish species is presented in Exhibit 4-2. In 2011, the ex-vessel value of bottomfish in Hawaii was approximately $1.5 million.[73] In 2013, a total of 367,467 pounds of bottomfish were sold for a total revenue of approximately $2.0 million.[74]

EXHIBIT 4-2. HAWAII ANNUAL REPORTED COMMERCIAL LANDINGS OF OPAKAPAKA, ONAGA, AND UKU (THOUSANDS OF POUNDS),1980-2011



Source: Pacific Islands Fisheries Science Center, Western Pacific Fisheries Information Network (WPacFIN), Hawaii Fishery Statistics. Accessed at: http://www.pifsc.noaa.gov/wpacfin/ on October 1, 2012.

[71] Hospital, Justin and Courtney Beavers. 2012. "Economic and Social Characteristics of Bottomfish Fishing in the Main Hawaiian Islands. NOAA, Pacific Islands Fisheries Science Center. April.

[72] NMFS. 2011. Environmental Assessment for Annual Catch Limit Specifications and Accountability Measures for Main Hawaiian Islands Deep 7 Bottomfish in 2011-12. July 15, 2011.

[73] Pacific Islands Fisheries Science Center, Western Pacific Fisheries Information Network (WPacFIN), Hawaii Fishery Statistics. Accessed at: http://www.pifsc.noaa.gov/wpacfin/ on October 1, 2012.

[74] Hawaii Department of Land and Natural Resources. Division of Aquatic Resources dealer data, summarized by the NOAA Fisheries Pacific Islands Fisheries Science Center Socioeconomic Group on August 11, 2014.

129. Bottomfish fishing was part of the culture and economy of indigenous people long before Europeans first arrived, and continues to play an important role in the local culture in Hawaii. As summarized in a 2012 report by Hospital and Beavers, "today's MHI bottomfish fishery is composed of a complex mix of commercial, recreational, cultural, or subsistence fishermen whose fishing behaviors do not fit easily into existing legal and regulatory frameworks, thereby complicating the monitoring and management aspects of the fishery."[75] Approximately 916 fishermen holding Hawaii commercial marine licenses reported commercial catch of bottomfish between 2008 and 2012.[76] As shown in Exhibit 4-3, these fishermen are distributed across the four Hawaiian counties, with the largest fishermen populations being registered in Oahu and Hawaii.

130. Any person who sells a fish commercially is required to obtain a commercial marine license and submit records on his/her fishing activity and catch to the State of Hawaii. Owners and operators of bottomfish operations often fish for recreation and subsistence, and sell small amounts of fish to cover expenses, making ambiguous the distinction between commercial, recreational, and subsistence fishing. Respondents to a survey by Hospital and Beavers indicated that approximately 62 percent of commercially licensed bottomfish fishermen sold about half or less than half of the bottomfish fish they caught in the 12 months prior to the survey.[77]

131. Approximately 250 to 500 vessels target bottomfish each season in the MHI.[78] The commercial bottomfish fishery generally utilizes small boats, with typical vessels measuring approximately 23 feet in length, which are typically owner-operated.[79] Across a fairly heterogeneous survey, fishermen reported an average number of annual trips per commercial boat of approximately 15, with an average trip length of approximately 11 hours.[80] Within the bottomfish fishery, fishermen reported that more than half of their bottomfish trips (66 percent) occurred in State waters only, with only 13.5 percent of trips occurring only in Federal waters (more than three miles offshore).[81] Exhibit 4-3 presents survey results from Hospital and Beavers reporting the relative number of trips taken by bottomfish fishermen to State and Federal waters, by County.

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[75] Hospital, Justin and Courtney Beavers. 2012. "Economic and Social Characteristics of Bottomfish Fishing in the Main Hawaiian Islands. NOAA, Pacific Islands Fisheries Science Center. April.

[76] Hospital, Justin and Courtney Beavers. 2012. "Economic and Social Characteristics of Bottomfish Fishing in the Main Hawaiian Islands. NOAA, Pacific Islands Fisheries Science Center. April.

[77] Hospital, Justin and Courtney Beavers. 2012. "Economic and Social Characteristics of Bottomfish Fishing in the Main Hawaiian Islands. NOAA, Pacific Islands Fisheries Science Center. April.

[78] Western Pacific Regional Fishery Management Council, "Fishery Ecosystem Plan for the Hawaii Archipelago," December 2005.

[79] Hospital, Justin and Courtney Beavers. 2012. "Economic and Social Characteristics of Bottomfish Fishing in the Main Hawaiian Islands. NOAA, Pacific Islands Fisheries Science Center. April.

[80] Hospital, Justin and Courtney Beavers. 2012. "Economic and Social Characteristics of Bottomfish Fishing in the Main Hawaiian Islands. NOAA, Pacific Islands Fisheries Science Center. April.

[81] Hospital, Justin and Courtney Beavers. 2012. "Economic and Social Characteristics of Bottomfish Fishing in the Main Hawaiian Islands. NOAA, Pacific Islands Fisheries Science Center. April.

132. Fishing for Hawaii seamount groundfish, which include Pelagic armorhead (*Pseudopentaceros wheeleri)*, alfonsin (*Beryx splendens*), and raftfish (*Hyperoglyphe japonica*), has been prohibited since 1986. The prohibition had been implemented through a series of 6-year moratoria at the Hancock Seamount, the most recent of which expired on August 31, 2010. The fishery is now subject to a moratorium on fishing for bottomfish and seamount groundfish at seamounts until the pelagic armorhead stocks are rebuilt.[82]

EXHIBIT 4-3. NUMBER OF LICENSED BOTTOMFISH FISHERMEN AND PERCENT OF BOTTOMFISH TRIPS IN STATE VERSUS FEDERAL WATERS

COUNTY	NUMBER OF COMMERCIAL FISHERMEN (% TOTAL)	PERCENTAGE OF BOTTOMFISH TRIPS IN:		
		STATE WATERS ONLY	FEDERAL AND STATE WATERS	FEDERAL WATERS ONLY
Kauai	112 (12.3)	87.1	7.6	**5.3**
Oahu	300 (32.9)	49.5	25.2	**25.3**
Maui	187 (20.5)	63.9	27.9	**8.2**
Hawaii	314 (34.4)	85.9	11.3	**2.8**
TOTAL/AVERAGE	916*	66.2	20.2	**13.5**

Source: Hospital, Justin and Courtney Beavers. 2012. Economic and Social Characteristics of Bottomfish Fishing in the Main Hawaiian Islands. NOAA, Pacific Islands Fisheries Science Center. April. Table 17.
*Total includes three fishermen with mainland addresses, who are not included in above counts.

4.2.2 CORAL REEF ECOSYSTEM FISHERIES

133. Coral reef species provided a major part of the customary protein diet of the earliest inhabitants of the Hawaiian Islands. Fishing activities were governed by season, tide, and time, and activities were divided by gender and age group. Fishing practices were developed to exploit and conserve resources that communities relied upon, including netting, trapping, hand gathering, and using hook and line as appropriate.[83] These nearshore fishing practice continues to support the culture and tradition of Native Hawaiians today. The number of fishermen participating in Hawaii coral reef fisheries has risen from a little over 200 fishermen in 1966 to a peak of nearly 1,200 in 1996. Since then, the number of fishermen has slowly declined to about 800 in 2001.[84] Commercial catch of coral reef fishes include surgeonfishes, goatfishes, squirrelfishes, unicornfishes,

[82] 75 FR 69015, November 10, 2010.

[83] Comments on the Draft Economic Analysis of Critical Habitat for the Hawaiian Monk Seal, Western Pacific Region Fishery Management Council, November 8, 2012.

[84] DeMello, J. (2004). Commercial Marine Landings from Fisheries on the Coral Reef Ecosystem of the Hawaiian Archipelago. *In:* A. Friedlander (ed), State of Hawaii's Coastal Fisheries in the New Millennium. 2004 Revised Edition. Proceedings of the 2001 Fisheries Symposium. The American Fisheries Society, Hawaii Chapter.

and parrotfishes. Coastal pelagic akule (bigeye scad) is the most important coral reef-associated fishery in the State in terms of pounds caught and value. Because of its importance, WPacFIN tracks the akule fishery separately from the broader "reef fish" fishery. Akule is also valued culturally, as much of the commercial catch is given away or shared with community from which it was harvested.[85] However, NMFS notes that recent examinations of monk seal diet do not show akule as a food source.[86] Also included in coral reef fisheries are crabs, octopuses, seaweed, limpets, and other species.

134. 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. Mean MHI coral reef fishery catch between 2005 and 2009 was 394,000 pounds (179,000 kg), of which 83 percent were caught in State waters.[87] In 2012, 284,000 pounds of akule were caught, of which 206,000 pounds were sold for an ex-vessel value of $689,000.[88] The total MHI catch of coral reef fishes other than akule (excluding crustaceans) in the MHI in 2012 was 512,000 pounds, and was valued at approximately $1.5 million.[89] In 2013, 726,781 pounds of coral fish were sold for a total revenue of approximately $2.3 million.[90] Currently there are no active coral reef fisheries in the NWHI.

4.2.3 CRUSTACEAN FISHERIES

135. Ula (lobster) was a traditional food source for Native Hawaiians. After a long history of production following European arrival, lobster (spiny and slipper) production peaked in the 1980's at over 400,000 pounds, then dropped sharply by 1990.[91] The NHWI lobster fishery closed in 2000, and MHI fishing is limited. Statewide annual landings between 1984 and 2004 averaged 8,800 pounds per year.[92] Most catch is done by hand. Intermittent deepwater shrimp fishing has occurred in the MHI since the late 1960s. Between 2002 through 2011, an average of 8,000 pounds of lobster and 550 pounds of

[85] Written communication with NMFS Pacific Islands Regional Office, November 16, 2012.

[86] Written communication with NMFS Pacific Islands Regional Office, November 16, 2012.

[87] Western Pacific Regional Fishery Management Council, "Hawaii Archipelago Fishery Ecosystem Plan 2009 Annual Report." January 2011.

[88] Pacific Islands Fisheries Science Center, Western Pacific Fisheries Information Network (WPacFIN), Hawaii Fishery Statistics. Accessed at: http://www.pifsc.noaa.gov/wpacfin/ on December 13, 2013.

[89] Pacific Islands Fisheries Science Center, Western Pacific Fisheries Information Network (WPacFIN), Hawaii Fishery Statistics. Accessed at: http://www.pifsc.noaa.gov/wpacfin/ on December 13, 2013.

[90] Hawaii Department of Land and Natural Resources. Division of Aquatic Resources dealer data, summarized by the NOAA Fisheries Pacific Islands Fisheries Science Center Socioeconomic Group on August 11, 2014.

[91] Western Pacific Regional Fishery Management Council, "Fishery Ecosystem Plan for the Hawaii Archipelago," December 2005.

[92] Kelly, Kevin E. and Andrea Messer. "Main Hawaiian Island Lobster: Commercial Catch and Dealer Data Analysis (1984-2004), prepared for the Western Pacific Regional Fishery Management Council and the State of Hawaii. October 2005.

shrimp were landed in the MHI.[93] In 2011, 10,013 pounds of lobster were sold, valued at $104,000. Commercial landings of Kona crab (*Ranina ranina*) peaked in 1972 with over 72,000 pounds landed. However, landings have declined since that time with catches ranging between 6,500 and 14,000 pounds between 2000 and 2009. Landings in 2009 were 9,292 pounds valued at $44,787.[94]

4.2.4 PRECIOUS CORAL FISHERIES

136. Precious coral harvesting for pink, black and gold corals has occurred historically in waters surrounding the MHI since the late 1950's at depths ranging from 90 to 1,500 feet (27 to 457 meters).[95] Most of the black coral harvest occurs in State waters between 90 and 300 feet (27 to 91 meters). Despite minimal fishing efforts, information regarding invasive species and growth rates has led to conservation measures in the black coral fishery, including minimum harvest size limits. The pink and gold corals occurring at 1,300 to 1,600 feet in depth (400 to 500 meters) have had minimal harvesting. Currently, harvest of gold coral is subject to a five-year moratorium, until June 30, 2018. Landings of precious corals averaged 3,084 pounds between 1990 and 1997, and continues at low levels. Data availability for precious coral landings is limited due to the fact that data confidentiality laws dictate that NMFS cannot disclose catch information in years with fewer than three participants in the fishery, unless data are aggregated to include three or more participants.

4.2.5 RECREATIONAL FISHING

137. NMFS has conducted a series of annual national surveys of recreational anglers about their participation in recreational fishing activities, including reporting the number and weight of fish caught, since the 1980's.[96] Recreational fishermen in Hawaii who do not possess a current and valid saltwater recreational fishing license issued by the State, are required to sign up with the National Saltwater Angler Registry if they fish in Federal waters. These entries may be used to contact anglers as part of NMFS surveys. Exhibit 4-4 presents data on the number of recreational anglers in Hawaii who fished in Federal waters since 2005, as estimated by NMFS. On average, NMFS estimates that 317,000 recreational anglers caught 19 million pounds of fish in Hawaii between 2005 and 2011.[97] Of the reported weight of fish landed, 86 percent was reported as being caught in Federal waters. According to NMFS data, Hawaii ranks as the14th state in terms of overall fish

[93] Pacific Islands Fisheries Science Center, Western Pacific Fisheries Information Network (WPacFIN), Hawaii Fishery Statistics. Accessed at: http://www.pifsc.noaa.gov/wpacfin/ on October 1, 2012.

[94] NMFS 2011. Environmental Assessment for Annual Catch Limit Specifications and Accountability Measures for Pacific Island Crustacean and Precious Coral Fisheries in 2012 and 2013, including a Regulatory Impact Review. December 13, 2011.

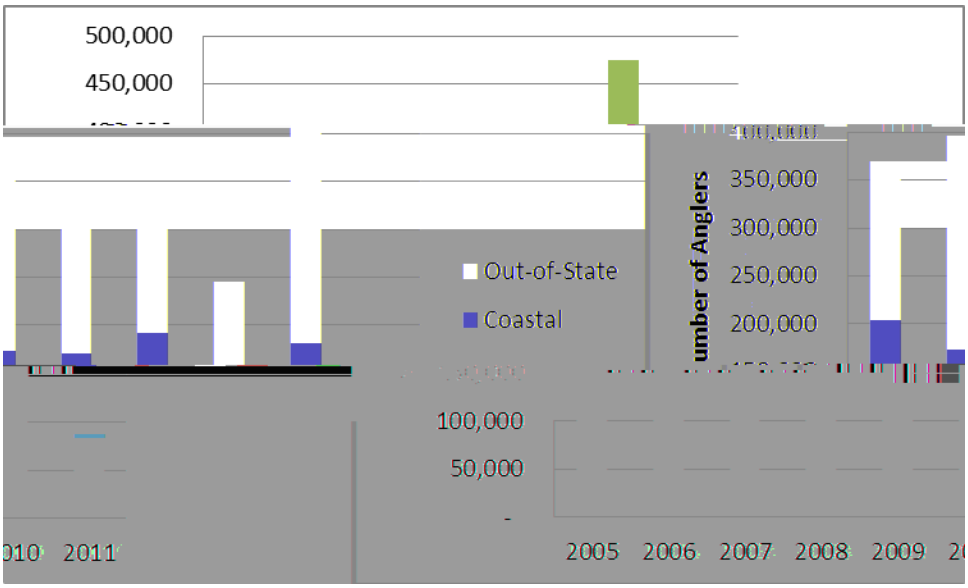
[95] Western Pacific Regional Fishery Management Council, "Fishery Ecosystem Plan for the Hawaii Archipelago," December 2005.

[96] National Saltwater Angler Registry. Accessed at http://www.fpir.noaa.gov/SFD/SFD_rcf_mrip.html

[97] Marine Recreational Information Program, Query Catch and Trip Statistics for 2011. Accessed at: http://www.countmyfish.noaa.gov/index.html on October 2, 2012.

catch.[98] As of 2006, NMFS estimates recreational anglers spent $475.5 million on fishing equipment and services within the State of Hawaii.[99]

EXHIBIT 4-4. RECREATIONAL ANGLER PARTICIPATION IN HAWAII, AS REPORTED BY NOAA'S MRIP, 2005-2011



Source: Marine Recreational Information Program, Query Catch and Trip Statistics for 2011. Accessed at: http://www.countmyfish.noaa.gov/index.html on October 2, 2012.

138. Exhibit 4-5 presents a summary of recreational fish catch in 2011 by species group, weight, and number of fish caught. As shown, 90 percent of the fish caught by weight in 2011 were tunas, mackerels and dolphinfishes (mahimahi). Tuna and dolphinfishes are pelagic fish that are typically caught outside of areas identified for Hawaiian monk seal critical habitat. While mackerel are more associated with the coral reef system, they are not common prey species for monk seal.[100] The next most commonly caught fish groups were jacks and snappers, which include bottomfish species. While jacks and snappers comprised only seven percent of fish caught by weight, they comprised 36 percent of the number of recreational fish caught in Hawaii in 2011.

139. As noted above, the State of Hawaii requires a commercial license for anyone selling even one fish. As such, much of the fish caught by recreational anglers may also be

[98] Marine Recreational Information Program, Query Catch and Trip Statistics for 2011. Accessed at: http://www.countmyfish.noaa.gov/index.html on October 2, 2012.

[99] Genter, B. and S. Steinback. 2008. The Economic Contribution of Marine Angler Expenditures in the United States, 2006. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-94, 301 p.

[100] Written communication with NMFS Pacific Islands Regional Office, November 16, 2012.

reported as commercial catch, and as such recreational estimates are not additive with commercial estimates.

EXHIBIT 4-5. RECREATIONAL FISH CATCH IN HAWAII, AS REPORTED BY NOAA'S MRIP 2011

SPECIES GROUP	RECREATIONAL HARVEST BY WEIGHT (LBS)	PERCENT OF TOTAL HARVEST BY WEIGHT	TOTAL FISH CAUGHT (NUMBER)	PERCENT OF TOTAL FISH CAUGHT
Tunas and mackerels	9,294,760	80%	294,136	11%
Dolphinfishes (mahimahi)	1,140,338	10%	62,783	2%
Jacks	575,476	*5%*	*836,564*	*31%*
Snappers	233,355	*2%*	*126,679*	*5%*
Crabs, eels, mackerel scad, shrimp, needlefishes, mullets, and others	194,569	2%	396,108	15%
Surgeonfishes	111,916	1%	404,018	15%
All other fish species	107,867	0.9%	547,423	21%
Total	**11,658,281**	**100%**	**2,667,711**	**100%**

Notes: The organization of fish species in this exhibit is limited to data available through the NMFS survey.
Source: Marine Recreational Information Program, Query Catch and Trip Statistics for 2011. Accessed at: http://www.countmyfish.noaa.gov/index.html on October 2, 2012.

4.3 REGULATION OF FISHING ACTIVITIES IN THE STUDY AREA

140. Areas identified for Hawaiian monk seal critical habitat includes areas within the Exclusive Economic Zone (EEZ)[101], which is the area between 3 and 200 miles offshore of the coastline (Federal waters), as well as State waters (within 3 miles of the shoreline), as shown in Exhibit 4-6. As authorized under the Magnuson-Stevens 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.

[101] As defined for purposes of the Magnuson-Stevens Conservation and Management Act.

EXHIBIT 4-6A. ALL ISLANDS

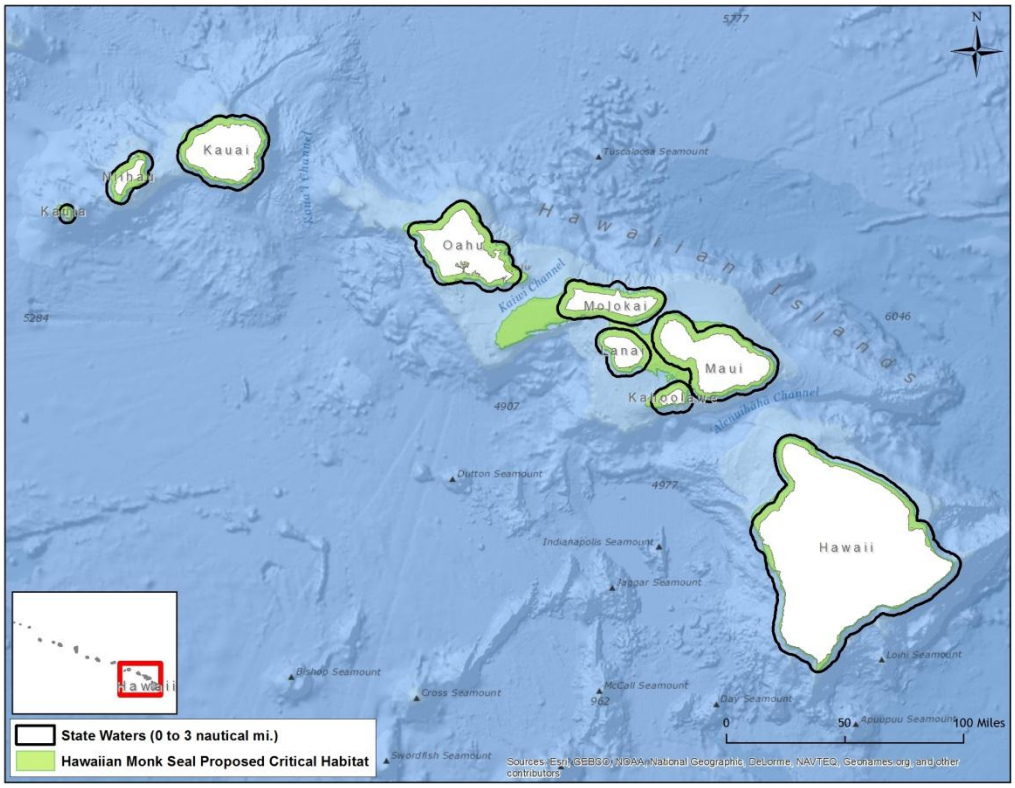


EXHIBIT 4-6B. KAULA, NIIHAU, AND KAUAI

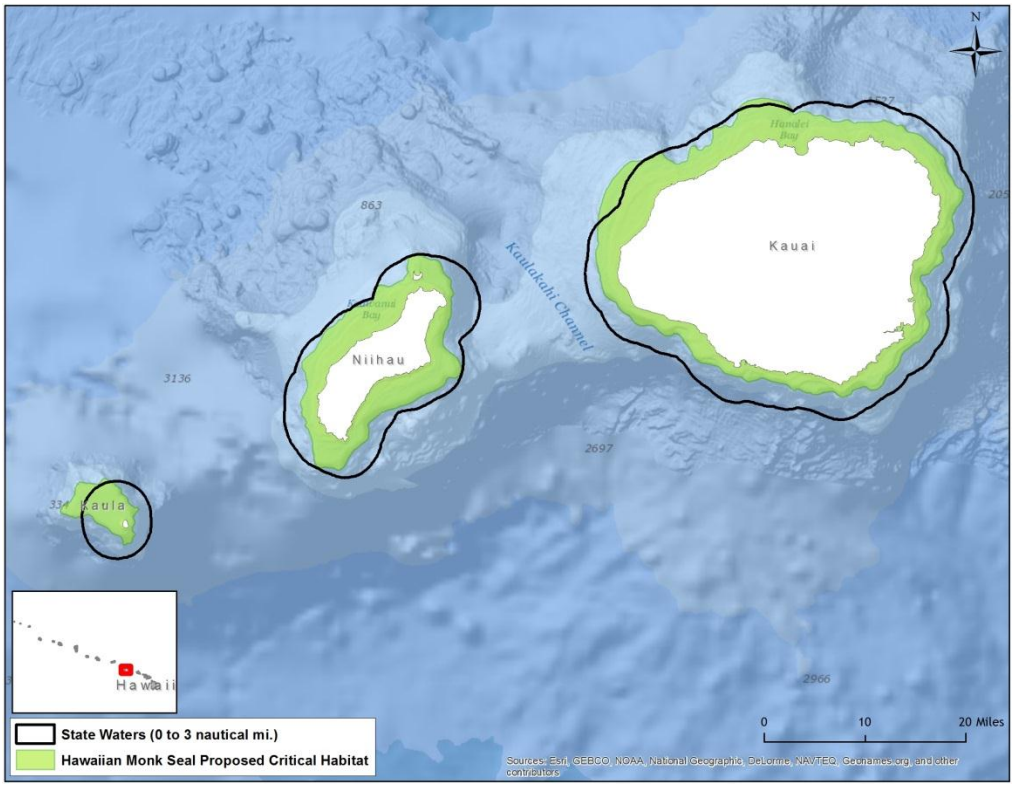


EXHIBIT 4-6C. OAHU

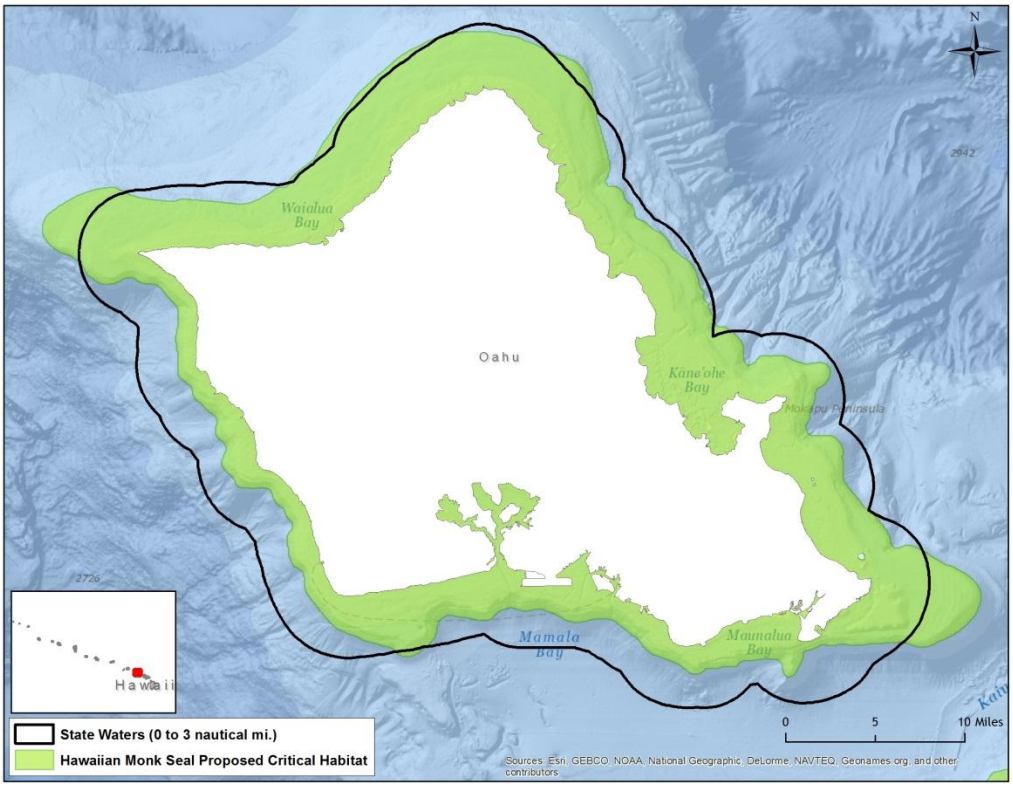


EXHIBIT 4-6D. MAUI NUI

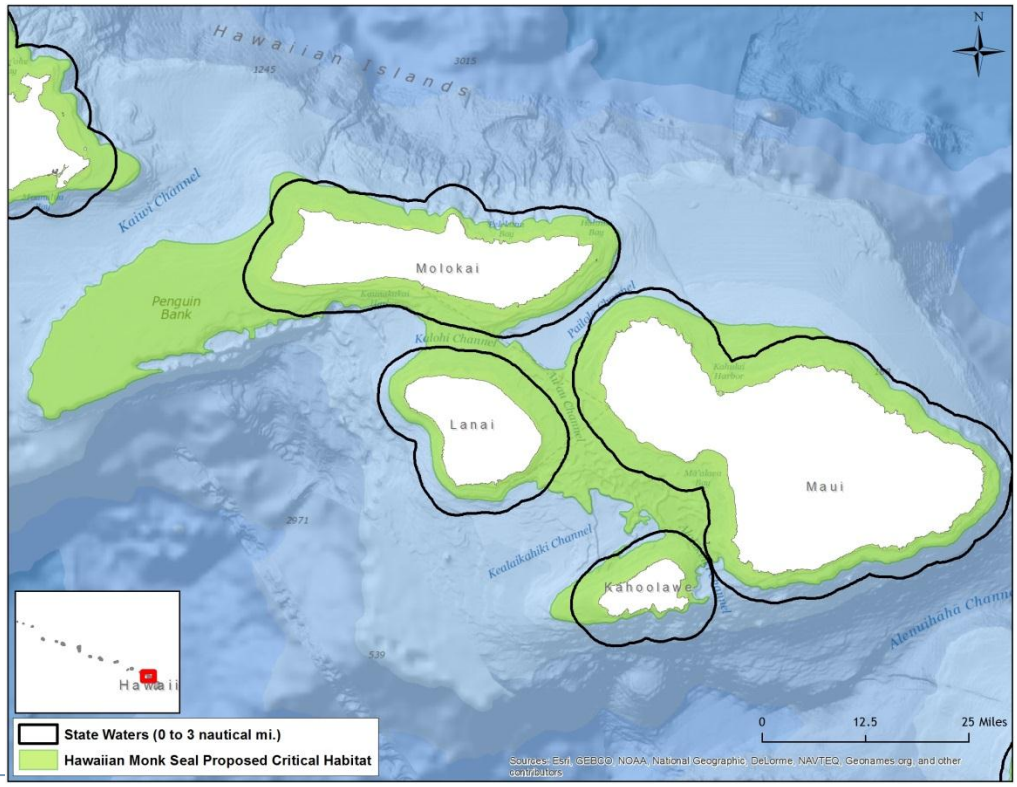
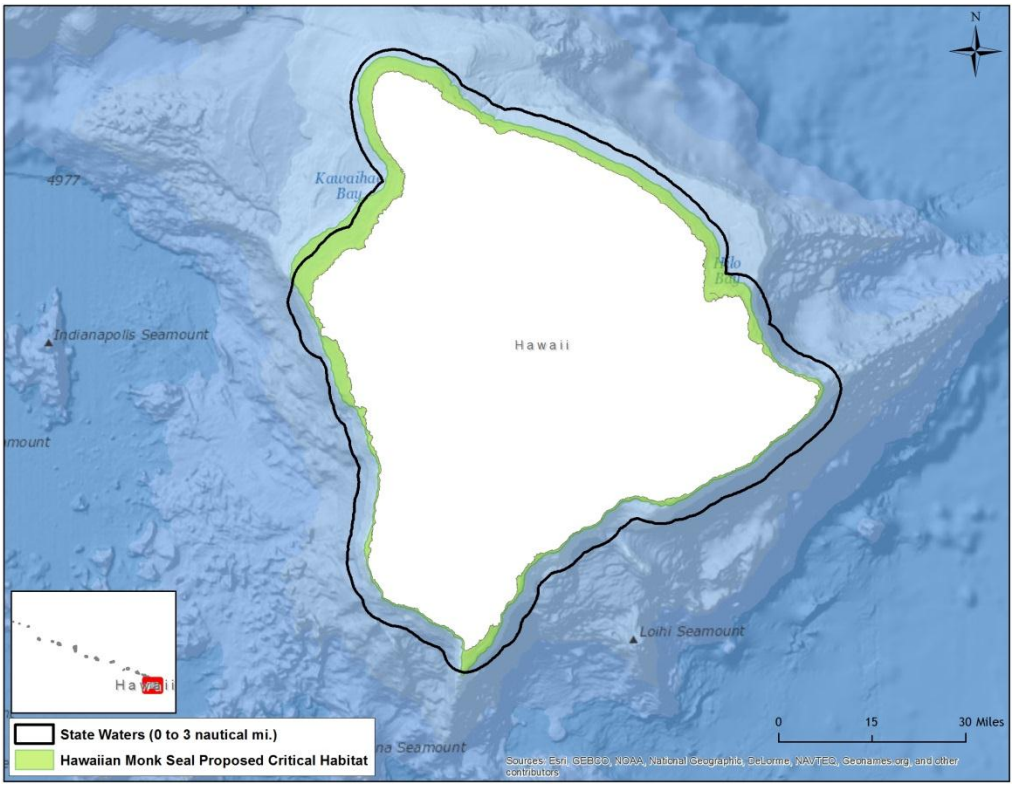


EXHIBIT 4-6E. HAWAII (BIG ISLAND)



141. The Council, one of eight regional fishery management councils established by the Magnuson-Stevens Act, recommends management measures to NMFS for the Pacific Islands fisheries in Federal waters. The Council also works cooperatively with the State of Hawaii to develop management measures for fishing activities within State waters. Recommended management measures implemented by NMFS for the Pacific Islands fisheries in Federal waters are then enforced by the NOAA Office of Law Enforcement, the U.S. Coast Guard, and local enforcement agencies.

142. In 2009, the Council adopted and NMFS implemented the Hawaii FEP as an FMP, a plan which outlines an ecosystem-based approach for managing fisheries in the Hawaii Archipelago.[102] This plan reorganizes and amends the Council's Bottomfish and Seamount Groundfish, Coral Reef Ecosystems, Crustaceans, and Precious Corals FMPs. Pelagic species continue to be managed separately under the Pacific Pelagic FEP. The Hawaii and Pelagic FEPs expand the scope of management to include the sustainability of a place-based ecosystem rather than the more traditional approach, which focuses on

[102] 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.

sustainability of individual species groups. Management objectives for the offshore bottomfish, crustacean, precious coral and coral reef ecosystems fisheries are found in the Hawaii FEP. The ecosystem-based approach to this plan recognizes several objectives that should complement the aim of protecting the essential features of critical habitat. Objectives of the plan relating to ecosystem-based approaches to management include:

- 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.
- To minimize fishery bycatch and waste to the extent practicable.
- To manage and co-manage protected species, protected habitats, and protected areas.

Thus, the plan recognizes the importance of protecting habitats for protected species, and aims to take appropriate fishery-management actions toward this end. Data collected from Hawaiian fisheries are analyzed in annual reports and utilized by the Council to modify management to adapt to the changing needs in accordance with the FEP. To date, management measures to protect fisheries resources and other protected resources have included ACL, gear modifications, permits, the identification of essential fish habitat, and time or area closures. Specifically, In accordance with the Magnuson-Stevens Act, NMFS specified annual catch limits for all Hawaii bottomfish, crustaceans, precious corals and coral reef fisheries (78 FR 15885, March 13, 2013; 78 FR 488075, August 7, 2013; and 78 FR 59626, September 27, 2013). These management measures are likely to provide some protection for Hawaiian monk seal critical habitat.

143. As described above, NMFS determined in 2005 that overfishing of the bottomfish multi-species complex was occurring in the MHI.[103] In response to a notice from NMFS that overfishing was occurring, the Council recommended and NMFS approved Amendment 14 to the Bottomfish FMP, which implemented an annual total allowable catch limit (TAC) system for landings of Deep 7 species by the MHI commercial fishery, established federal non-commercial bottomfish permits, and reporting requirements, non-commercial bag limit of five Deep 7 species per trip, and a closed season for fishing for Deep 7 species in the MHI. Amendment 14 also defined the MHI Deep 7 bottomfish fishing year as September 1 through August 31 and implemented a TAC of 178,000 pounds 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 241,000 lbs. In 2009, the TAC in the MHI was 254,050 pounds. In 2011, NMFS instituted annual catch limits (ACL) for the fishery to comply with Magnuson-Stevens Act requirements and set the ACL at 346,000 pounds, along with an annual catch target (ACT) of 325,000 pounds. The same ACL and ACT was specified for 2012, which was again not reached. NMFS removed the ACT and set the ACL at 346,000 pounds for the 2013 fishing year, which is currently ongoing (78 FR 59626, September 27, 2013). The

[103] 70 FR 34452. June 14, 2005.

Council note that bottomfish stocks are no longer considered to be experiencing overfishing due to more recent stock assessments and improved data on these stocks.[104]

144. Major regulations 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 requires State of Hawaii Commercial Marine License.
- Non-commercial permit and reporting for fishing in EEZ around MHI.
- ACL for Hawaii Restricted Bottomfish Species (Deep 7 bottomfish) based on the best scientific information available (fishing year is September 1 – August 31).
- ACL for all other Non-Deep 7 bottomfish species based on the best scientific information available (fishing year is January 1- December 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.
- ACL for spiny and slipper lobsters, deep water shrimp and kona crab based on the best scientific information available (fishing year is January 1- December 31).

Precious Corals:

- Federal permit and logbook reporting.
- Use of only selective gear.
- Bed specific ACL (fishing year is July 1-June 30).
- Closed areas.
- Minimum height for pink coral.
- Minimum stem diameter for black coral.
- Moratorium on gold coral.

[104] Comments on the Draft Economic Analysis of Critical Habitat for the Hawaiian Monk Seal, Western Pacific Region Fishery Management Council, November 8, 2012.

Coral Reef Ecosystem:

- Special permit, and reporting requirements.
- Notification for 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.
- ACL quotas for coral reef fisheries, generally at the family taxonomic level based on the best scientific information available (fishing year is January 1- December 31).

4.3.1 RECREATIONAL FISHING MANAGEMENT

145. There is one federal permit and reporting requirement for participants in recreational (non-commercial) fishing in Hawaii. In 2008, NMFS issued a final rule implementing a Federal permit and reporting requirement for non-commercial bottomfish fishing (73 FR 18451, April 4, 2008). Additionally, non-commercial bottomfish fishermen are also subject to a five Deep 7 bottomfish per trip bag limit. As of September 5, 2013, NMFS has issued seven non-commercial permits; however, catch data from non-commercial logbook data is currently unavailable.[105] As noted previously, the distinction between commercial and recreational fishing is complex. NMFS believes that the number of federal permits is small because many recreational fishermen have chosen to obtain a State of Hawaii commercial fishing license instead of a NMFS non-commercial bottomfish permit as the federal permit limits their catch to 5 Deep 7 bottomfish per trip.[106]

146. On January 1, 2010, a new regulatory measure went into effect that requires anglers who fish in Federal waters to register with the National Saltwater Angler Registry (NSAR). The requirement aims to gather more information about recreational fish catch in the U.S. 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 expenditures on recreational fishing activities. The requirement does not apply to anglers fishing in State waters, anglers who possess a valid and current saltwater recreational fishing license issued by a State, or to commercial fishermen or charter operators, who are licensed under separate rules. Native Hawaiians who fish in Federal waters are required to register, but will be exempted from having to pay any future fees associated

[105] NMFS. PIRO Fishing Permits Page. Accessed at: http://www.fpir.noaa.gov/SFD/SFD_permits_index.html on November 12, 2013.

[106] Written communication with NMFS Pacific Islands Regional Office, November 16, 2012.

with the program. The Council and other public commenters have expressed concern that NSAR represents a Federal nexus through which NMFS could conduct ESA section 7 consultation and influence recreational fishery management.[107] The Council and public commenters are also concerned that monk seal critical habitat and the existing Federal MHI non-commercial bottomfish permit could leave managing agencies vulnerable to litigation by any person or organization that may suspect that recreational, non-commercial and subsistence fishing could be impacting Hawaiian monk seal habitat."[108] The likelihood of such future litigation, as well as any potential outcomes, are unknown.

147. As shown in Exhibit 4-5, Hawaii's recreational fisheries harvest some monk seal prey species. Additionally, some studies suggest that non-commercial and recreational catch of coral reef and bottomfish may be equal or greater than commercial catch.[109] However, there is uncertainty about the impacts of recreational fishing activities on Hawaiian monk seal and its habitat. Thus, specific future management measures that may be necessary to avoid destruction or adverse modification to the Hawaiian monk seal critical habitat are also uncertain.

4.3.2 NWHI

148. 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 zero lobsters, 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.

4.4 METHODOLOGY FOR EVALUATING IMPACTS TO FISHING ACTIVITIES

4.4.1 QUANTIFYING THE IMPACTS OF ADDITIONAL CONSERVATION EFFORTS

149. The 2011 proposed rule states that potential modifications to fishing activity due to the Hawaiian monk seal critical habitat revision could include "reduction to the annual catch

[107] See for example: Public comments of Kitty M. Simonds, Western Pacific Regional Fishery Management Council, August 30, 2011; Public hearing comments of Mr. Severance, August 15, 2011 (Hilo); Public hearing comments of Roy Morioka, August 11, 2011 (Oahu).

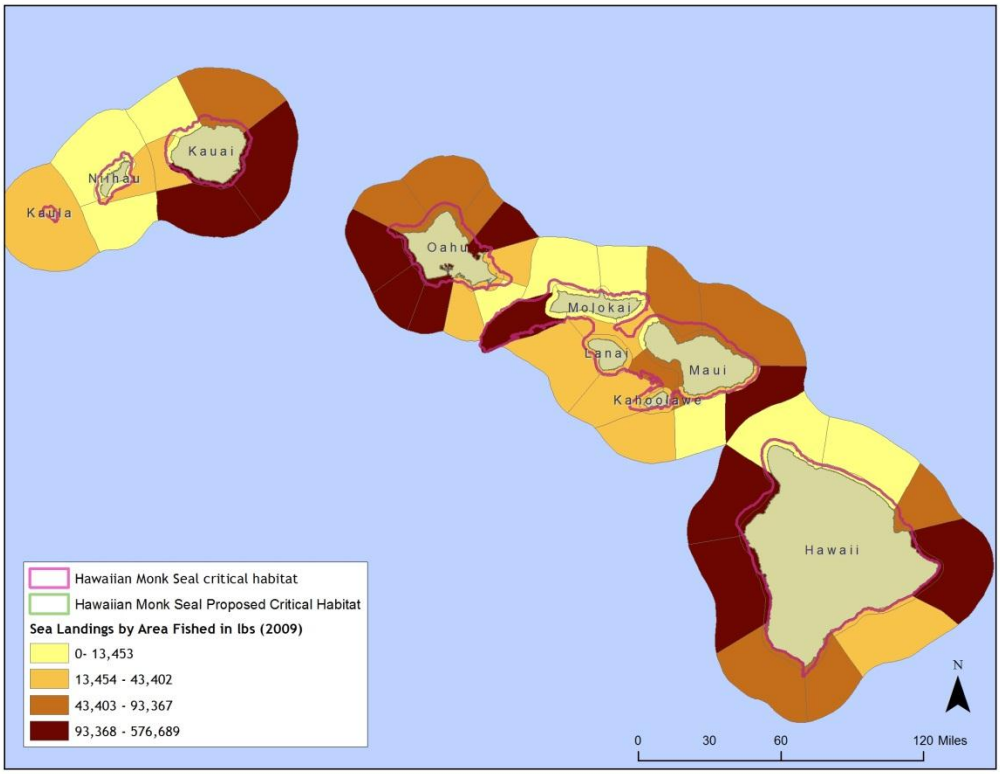
[108] Public comments of Kitty M. Simonds, Western Pacific Regional Fishery Management Council, August 30, 2011.

[109] Zeller, D.. Booth, S. and D. Pauly. 2007. Historical catch reconstruction for coral reef- and bottomfish fisheries in the U.S. State of Hawaii, 1950-2002. University of British Columbia.

limit" to "federally managed fisheries of the Hawaii FEP" as possible modifications due to critical habitat.[110] NMFS received a large number of public comments from fishermen expressing concern about potential closures and other management changes that could result from Hawaiian monk seal critical habitat designation.[111]

150. Exhibit 4-7 presents spatial data on the location of total Hawaiian fish catch by area in 2009 (in pounds). As shown, areas along the southern shore of Kauai, the western shore of Oahu, the western and southern shores of Molokai, and the western and eastern shores of Hawaii reported the greatest overall catch in 2009. Although data is reported separately for inshore versus coastal fish catch units, data was only readily available for the combined inshore/coastal unit sets. A more detailed analysis of catch by area or effort by catch area could be conducted if more disaggregated data were available.

EXHIBIT 4-7. TOTAL HAWAIIAN FISH CATCH BY STATISTICAL FISH CATCH AREA (2009, POUNDS)



Source: NMFS and State of Hawaii, Department of Land and Natural Resources, Division of Aquatic Resources, "Commercial Marine Landings Summary Trend Report," Calendar Year 2009.

151. The overlap of areas identified for critical habitat areas with fish catch statistical areas (FCSA) is not evenly distributed. Exhibit 4-8 compares the overall size of fish catch units

[110] Written communication with NMFS Pacific Islands Regional Office, November 16, 2012.

[111] See for example: Public comments of Kitty M. Simonds, Western Pacific Regional Fishery Management Council, August 30, 2011; Public comments of Frank Jr. Farm, August 28, 2011; Public comments of Roy Morioka, August 31, 2011, Public comments of James Hori January 4, 2012, Public comments of Andrew Tellio, September 27, 2011.

with the area identified for critical habitat. As shown, critical habitat includes a relatively large percentage of State (inshore) waters compared with Federal waters. For example, 78 percent of the inshore fish catch areas that overlap the Kauai Unit are identified as important to Hawaiian monk seal critical habitat. In contrast, only one percent of the coastal fishing units near Kauai are included in critical habitat.

EXHIBIT 4-8. OVERLAP OF FISH CATCH STATISTICAL AREAS WITH CRITICAL HABITAT FORMAT

UNIT/LOCATION	SIZE OF FCSA (ACRES)	OVERLAP WITH CHD (ACRES)	PERCENT OVERLAP
Hawaii	**3,653,581**	**258,492**	**7%**
Coastal	3,223,962	41,757	1%
Inshore	429,619	216,735	50%
Kauai	**2,080,796**	**137,740**	**7%**
Coastal	1,925,836	16,661	1%
Inshore	154,960	121,079	78%
Kaula	**842,386**	**16,518**	**2%**
Coastal	832,276	10,325	1%
Inshore	10,110	6,192	61%
Maui Nui	**3,501,902**	**920,177**	**26%**
Coastal	3,027,004	513,464	17%
Inshore	474,897	406,712	86%
Niihau	**1,081,467**	**73,730**	**7%**
Coastal	1,009,059	14,319	1%
Inshore	72,408	59,411	82%
Oahu	**2,561,332**	**235,900**	**9%**
Coastal	2,344,494	50,724	2%
Inshore	216,838	185,176	85%
Total	**13,721,463**	**1,642,556**	**12%**

Source: NMFS 2012 and Hawaii Department of Natural Resources, "Hawaii Commercial Fish Catch Statistical Areas." Accessed as "fishchart2008." Hawaii Office of Planning. Http://hawaii.gov/dbedt/gis/fish_catch_areas.htm on February 4, 2013.

152. Based on the Hawaiian monk seal's biology, pelagic fisheries are unlikely to be affected by critical habitat for Hawaiian monk seal. While pelagic fisheries management activities will consider critical habitat in the consultation process, there is little concern about modification to the fisheries because these fisheries do not target monk seal prey species and are not operating off the bottom (where monk seal critical habitat is most important.

[112] As stated above, catch of pelagic fish account for over 95 percent of Hawaiian commercial fishing catch. Of remaining fisheries, the bottomfish and coral reef-associated fisheries appear to be most at risk of impacts from critical habitat designation. These fisheries operate largely within State waters, but fall under the Hawaii FEP. Native Hawaiians may be overrepresented in the affected fisheries.[113]

153. Potential impacts to recreational fishing activity could also occur if management of the fishery is altered to accommodate Hawaiian monk seal critical habitat designation.

4.4.2 QUANTIFYING THE ADMINISTRATIVE COSTS

154. There have been at least 14 past section 7 consultations on fisheries issues involving Hawaiian monk seals in areas identified for critical habitat areas. Of these, three were internal formal consultations related to fisheries management plans, in which NMFS Protected Resources Division consulted internally with NMFS Sustainable Fisheries Division (SFD). The remaining actions include informal consultations related to FMP amendments (five), receipt of Federal aid related to recreational fishing actions (five), and a permit for a marine national monument anchor (one). All of the past consultations on fisheries issues were associated with the MHI, with the exception of two informal consultations with NMFS SFD in the NWHI.

155. This analysis uses this evidence from past actions to forecast the number of future actions anticipated to require consultation on critical habitat in on an annual basis. For purposes of this analysis, we assume that the past rate of consultation on fisheries actions on Hawaiian monk seal critical habitat will be the same as would have been expected to occur with the species listed without critical habitat. The analysis therefore uses the spatial and temporal distribution of past consultations on fisheries actions to forecast future consultations requiring NMFS action relating to Hawaiian monk seal. Based on the rate of consultation on fisheries projects in recent years, we estimate approximately 1.1 consultations per year relating to Hawaiian monk seal over the next ten years, with the majority expected to cross multiple islands of the MHI, as summarized in Exhibit 4-9.

[112] Written communication with NMFS Pacific Islands Regional Office, November 16, 2012.

[113] Comments on the Draft Economic Analysis of Critical Habitat for the Hawaiian Monk Seal, Western Pacific Region Fishery Management Council, November 8, 2012.

EXHIBIT 4-9. FISHERY CONSULTATION ACTIONS FOR MONK SEAL, 2000 THROUGH 2012

SPECIFIC AREA/ISLAND	FORMAL	INFORMAL	TECHNICAL ASSISTANCE	TOTAL (ALL)*	TOTAL (IN CRITICAL HABITAT)
MHI	2	10	0	12	10
NWHI	0	2	0	2	2
MHI and NWHI	1	1	0	2	2
Total	**3**	**13**	**0**	**16**	**14**

Source: Consultation history provided by NMFS, June 2012.
Note: Includes consultation actions through May 2012.
* Includes actions in areas not proposed for Hawaiian monk seal critical habitat.

156. When undergoing consultation on Hawaiian monk seal critical habitat, Action agencies will need to consider Hawaiian monk seal critical habitat impacts in addition to effort that would have been undertaken absent critical habitat. To account for this additional effort, the analysis estimates the incremental administrative costs beyond those likely to be incurred to consult on the jeopardy standard for the Hawaiian monk seal. For this analysis, administrative costs per consultation are estimated based on information provided by NMFS biologists that participate in section 7 consultations regarding the Hawaiian monk seal in Hawaii, and a survey of Federal agencies that have participated in ESA section 7 consultations considering critical habitat for other marine species.[114] Different types of consultations require varying amounts of administrative effort, resulting in distinct cost estimates for various types of consultation. Exhibit 4-10 shows incremental administrative costs for individual consultations across the various consultation categories.

EXHIBIT 4-10. INCREMENTAL ADMINISTRATIVE COSTS FOR FISHING ACTIVITY IN HAWAIIAN MONK SEAL CRITICAL HABITAT 2014-2023 (2013$)

CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	TOTAL COST
Technical Assistance	$277	$0	$277	$554
Informal	$139	$683	$683	$1,500
Formal	$1,390	$1,480	$1,480	$4,350

Source: Communication with NMFS, September 2012. National Marine Fisheries Service, Northwest Fisheries Science Center. August 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.
Note: Technical assistance efforts are assumed to involve only NMFS and third parties, with no Federal action agency involvement.

4.5 RESULTS OF ANALYSIS

[114] National Marine Fisheries Service, Northwest Fisheries Science Center. August 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.

157. Although NMFS recognizes that restrictions to the annual catch limits in critical habitat area are possible, near-term changes to fisheries management to accommodate Hawaiian monk seal critical habitat designation appear unlikely because current data to link any particular fishery to decline in monk seal prey abundance such that the value of habitat has been compromised does not exist. NMFS states that this connection is made particularly difficult by the Hawaiian monk seal's generalist eating behaviors. For example, in its 2008 biological opinion on the implementation of new bottomfish fishing regulations, NMFS noted that "although [Hawaiian monk] seals feed on deepwater bottomfish…seals feed on a great variety of fish and invertebrate species, and thus are able to readily switch from one prey species to another."[115]

158. In addition, a review of the available consultation history indicates that few conservation efforts have been recommended specifically for Hawaiian monk seal to date on fisheries consultations. The past consultation on the new bottomfish regulations recommended that bottomfish fishermen should remove fishing gear from the water if seals are in the vicinity, and that strandings should be reported. These conservation actions are related to the presence of the species rather than avoidance of habitat impacts.

159. As such, while this analysis recognizes that there is some possibility that bottomfish and coral reef fishery management could change as a result of critical habitat, changes are not quantified because they are considered unlikely at this time. This analysis recognizes, however, that changes to this fishery could have economic, social and cultural implications for the people of Hawaii. The current value of the bottomfish fishery is approximately $1.5 million annually (based on sales in 2011).[116] Sales of Hawaiian coral reef fishes were $1.2 million in 2011. Sales of all other reef fisheries combined, including crustaceans, precious corals and the coastal pelagic akule accounted approximately $0.8 million in 2011.[117] We note that these values represent the maximum potential economic impact the fisheries might experience as a result of future management actions to conserved prey species. Economic impacts resulting from future management measures cannot be quantified at this time, but are expected to be less than the total economic value of the fisheries, because only a complete fishery closure in both State and Federal waters would impact the entire economic value of these fisheries.

160. For these same reasons, the potential economic impacts of future management actions on Hawaii's recreational fishery is expected to be significantly less than the estimated $475.5 million the fishery contributes to the State's economy.

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[115] NMFS, Transmittal of Final Biological Opinion under section 7 of the Endangered Species Act on the effects of implementation of new bottomfish regulations in Federal waters of the Main Hawaiian Islands (Amendment 14) on listed marine species, dated March 18, 2008.

[116] Pacific Islands Fisheries Science Center, Western Pacific Fisheries Information Network (WPacFIN), Hawaii Fishery Statistics. Accessed at: http://www.pifsc.noaa.gov/wpacfin/ on October 1, 2012.

[117] Pacific Islands Fisheries Science Center, Western Pacific Fisheries Information Network (WPacFIN), Hawaii Fishery Statistics. Accessed at: http://www.pifsc.noaa.gov/wpacfin/ on October 1, 2012.

161. Using the past consultation rate to forecast the rate of future consultation actions in areas identified for critical habitat, we estimate that approximately 10 consultations on fisheries issues are likely over the next 10 years. Due to the widely recognized presence of Hawaiian monk seals in the areas, we assume that these consultations would have occurred absent critical habitat. Given our assumptions about costs per consultation, this would result in increased costs of consultations of approximately $16,000, or $2,300 annually due to critical habitat designation. Minimal impacts are expected in the NHWI because fishing is not considered to be a current threat in the NWHI.

162. Exhibit 4-11 summarizes the total forecast administrative costs of these consultations over the ten-year period of analysis, from 2013 to 2022. Present value costs are discounted at seven percent discount rate. Exhibit 4-12 summarizes key assumptions and limitations of the analysis of potential impacts of Hawaiian monk seal critical habitat on fisheries.

EXHIBIT 4-11. INCREMENTAL ADMINISTRATIVE COSTS OF FISHERIES CONSULTATIONS, 2014-2023 ($2013)

	SPECIFIC AREA/ISLAND	TOTAL PRESENT VALUE	ANNUALIZED
1	Kure Atoll	$108	$15
2	Midway Islands	$119	$17
3	Pearl and Hermes Reef	$251	$36
4	Lisianski Island	$407	$58
5	Laysan Island	$191	$27
6	Maro Reef	$674	$96
7	Gardner Pinnacles	$831	$118
8	French Frigate Shoals	$319	$45
9	Necker Island	$514	$73
10	Nihoa Island	$325	$46
11	Kaula Island	$127	$18
12	Niihau Island	$564	$80
13	Kauai	$782	$111
14	Oahu	$1,750	$250
15	Maui Nui	$7,150	$1,020
16	Hawaii	$2,010	$286
	Total	$16,000	$2,280

Note: Forecast costs are based on the NMFS consultation history.

EXHIBIT 4-12. ASSUMPTIONS AND LIMITATIONS

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED IMPACTS
Specific future management measures that may be necessary to reduce impacts to the Hawaiian monk seal critical habitat from fisheries activities are uncertain.	May result in an **underestimate** of costs.	**Potentially major.** Impacts associated with restrictions on the bottomfish or coral reef fisheries are not included in projected quantified impacts of the rule. This is because near-term (within the next 10 years) changes to management of these fisheries to accommodate monk seal critical habitat designation appear unlikely. Based on the available information, it appears that these fisheries are having little impact on monk seal foraging areas, and NMFS does not anticipate modifications to the current management of the MHI federally managed fisheries. If such restrictions occur, then impacts reported in this analysis could range from minor cost increases to changes in allowable catch.
Some commenters are concerned that monk seal critical habitat could leave managing agencies vulnerable to litigation by any person or organization that may suspect that recreational, non-commercial or subsistence fishing could be impacting Hawaiian monk seal habitat. The likelihood of such future litigation, as well as any potential outcomes, are unknown.	May result in an **underestimate** of costs. To the extent that third parties intervene in order to influence fisheries management in order to protect critical habitat, quantified impacts of critical habitat would be understated.	**Potentially major.** While litigation costs are not direct effects of critical habitat, costs have the potential to be large.
This analysis relies on patterns of historical consultation to forecast future rates of consultation activity. This analysis assumes that past consultations provide a good indication of future activity.	**Unknown.** May overestimate or underestimate incremental impacts.	**Likely minor.** Changes to the pattern of consultations on fisheries are unlikely to drastically affect impact estimates.
The costs of additional administrative effort due to the critical habitat designation in Hawaii will be similar to cost estimates developed for other NMFS regions and species.	**Unknown.** May overestimate or underestimate incremental impacts.	**Likely minor.** Activity-specific estimates of incremental efforts associated with critical habitat designation that were developed for other NMFS regions and transferred for use in this analysis are not expected to be substantially different than if Hawaii-specific estimates were developed.

CHAPTER 5 | DREDGING AND DISPOSAL OF DREDGED MATERIALS

5.1 INTRODUCTION

163. This chapter examines the potential economic impacts of critical habitat designation for the Hawaiian monk seal on dredging and the disposal of dredged materials within the study area. Activities considered under this category include dredging of navigation channels, stream mouths, harbors, and bays, and the disposal of dredged material. These projects may occur in conjunction with in-water construction projects described in Chapter 3, or as part of distinct projects aimed at maintaining navigation channels.

164. NMFS has identified dredging and the disposal of dredged materials as activities that may pose a threat to essential features of critical habitat for Hawaiian monk seal in specific areas 2, 12, 13, 14, 15, and 16 (Midway Islands in the NWHI, and Niihau, Kauai, Oahu, Maui Nui, and Hawaii in the MHI).

165. Dredging and disposal of dredged materials may affect the essential features of Hawaiian monk seal habitat in the following ways:

1. Dredging or disposal activities may affect foraging areas by removing prey habitat along the path of the dredge, subsequently affecting the quantity of available prey resources.
2. Dredging or disposal activities may alter the quantity or quality of prey resources in areas adjacent to dredging due to impacts resultant from sedimentation or the re-suspension of contaminants into the water column.
3. Prolonged dredging or disposal activities in areas adjacent to preferred terrestrial pupping or haul-out areas may cause disturbance and subsequent abandonment of haul-out or pupping sites.

166. The remainder of this chapter is divided into five sections. The first provides a description of dredging and disposal activities in the MHI and NWHI. The second discusses current regulation and management of these activities, highlighting overlap with project modifications that may be recommended through section 7 consultation to protect Hawaiian monk seal critical habitat. The third section describes the methods employed to estimate the impacts of critical habitat designation on dredging and disposal activities. The fourth section presents the resulting forecast of economic impacts across the study area, and the chapter concludes with a discussion of assumptions and limitations underlying the analysis of impacts.

KEY FINDINGS OF THE DREDGING AND DISPOSAL ANALYSIS

Quantified Impacts:

- We estimate a total of $1,230 ($175 annualized) in costs to parties involved in operating or regulating dredging or disposal activity occurring within Hawaiian monk seal habitat over the next 10 years. These costs are expected to be distributed across an average of 0.3 projects annually.
- The impacts are incremental administrative costs of future section 7 consultations on dredging and disposal activities. That is, they reflect additional effort spent to consider potential effects on critical habitat, above and beyond the time spent addressing potential jeopardy to the monk seals.
- Impacts are most likely limited to these additional administrative costs of consultation as dredging activities are already managed to avoid effects on monk seals and their habitat, even absent the designation of critical habitat. Maintenance dredging is managed according to an existing programmatic consultation that considers potential effects on monk seal; management of dredging under this consultation is expected to be sufficiently protective of critical habitat. In addition, the use of Best Management Practices (BMPs) and compliance with other State and Federal regulations described in this chapter are expected to adequately address the potential impacts of dredging and disposal activities on Hawaiian monk seal habitat.

Geographic Distribution of Impacts:

- Impacts to dredging and disposal activities are expected in Midway, Niihau, Kauai, Oahu, Maui Nui, and Hawaii.
- Many of the harbors and navigation channels in which dredging activity occurs most frequently are not included in the proposed Hawaiian monk seal critical habitat designation.

Key Uncertainties:

- This analysis relies on patterns of historical consultation to forecast future dredging and disposal activity. This affectively assumes that the frequency and location of past consultations are indicative of future activity.
- We conclude that compliance with existing regulations and permits is likely to adequately address the potential impacts of future activities on monk seal critical habitat, and that no additional project modifications will be required of project proponents. At this time, NMFS does not anticipate critical habitat designation will generate additional project modification requests. To the extent that additional project modifications to avoid adverse modification of critical habitat are requested of future dredging or disposal projects, however, this analysis underestimates costs.

5.2 EXTENT OF DREDGING AND DISPOSAL OF DREDGED MATERIALS

5.2.1 DREDGING

167. Dredging activity in the MHI typically involves maintenance dredging of existing navigation channels into bays or harbors, or dredging to establish new marinas or other coastal facilities. These projects occur most frequently in commercial harbors or bays that are not included in the proposed designation because they lack the essential features of

critical habitat for the monk seal.[118] See Chapter 1 for a map of areas. The U.S. Army Corps of Engineers (USACE) Honolulu District regularly conducts maintenance dredging in order to maintain federally authorized depths within certain commercial ports and small boat harbors. Other dredging projects may be initiated by the Hawaii Department of Transportation (HDOT) Harbor Division, which conducts maintenance dredging in locations within state commercial harbors, the Hawaii Department of Land and Resources (DLNR) Division of Boating and Ocean Recreation, which manages dredging activity in recreational harbors, or the U.S. Navy, which regularly conducts dredging in Pearl Harbor. [119,120] Lastly, other government agencies, municipalities or private entities may also conduct maintenance dredging, but these projects are expected to be infrequent and small in scope. USACE-managed maintenance dredging in commercial harbors typically occurs in eight to ten year cycles, with the next major effort tentatively scheduled for 2015. This effort is expected to address shoals in major harbors throughout the MHI that are not being proposed for critical habitat designation.[121] While the majority of dredging activity in the MHI is occurring in areas not included in the proposed designation, there is potential for some projects to be located within the critical habitat. Between 2000 and 2012, NMFS consulted on three dredging projects within the areas identified for critical habitat for the Hawaiian monk seal.

5.2.2 DISPOSAL

168. The U.S. Environmental Protection Agency has designated five deep-ocean sites for the disposal of dredged materials in Hawaii. Exhibit 5-1 shows the locations of the five sites, which are distributed throughout the MHI. None of these five sites overlap areas identified for critical habitat for the Hawaiian monk seal, which extends out to the 200 meter depth contour. Three of the sites lie relatively deep within the historic range of Hawaiian monk seal foraging areas. The South Oahu disposal site ranges from depths of 400 meters to 475 meters. The Kahului disposal site, near Maui, ranges from depths of 345 meters to 365 meters. The Hilo disposal site extends from depths of 330 meters to 340 meters. The Hilo and Kahului sites have been used sparingly and mainly by the USACE and the HDOT Harbors Division.[122] The South Oahu site has received the majority of the material that has been deposited at the five sites, primarily receiving dredged material deposited by the Navy, the USACE, and the HDOT Harbors Division.

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[118] National Marine Fisheries Service, *Revision of Critical Habitat for Hawaiian Monk Seals: Draft Biological Report*, October 2013, received from NMFS on November 13, 2013.

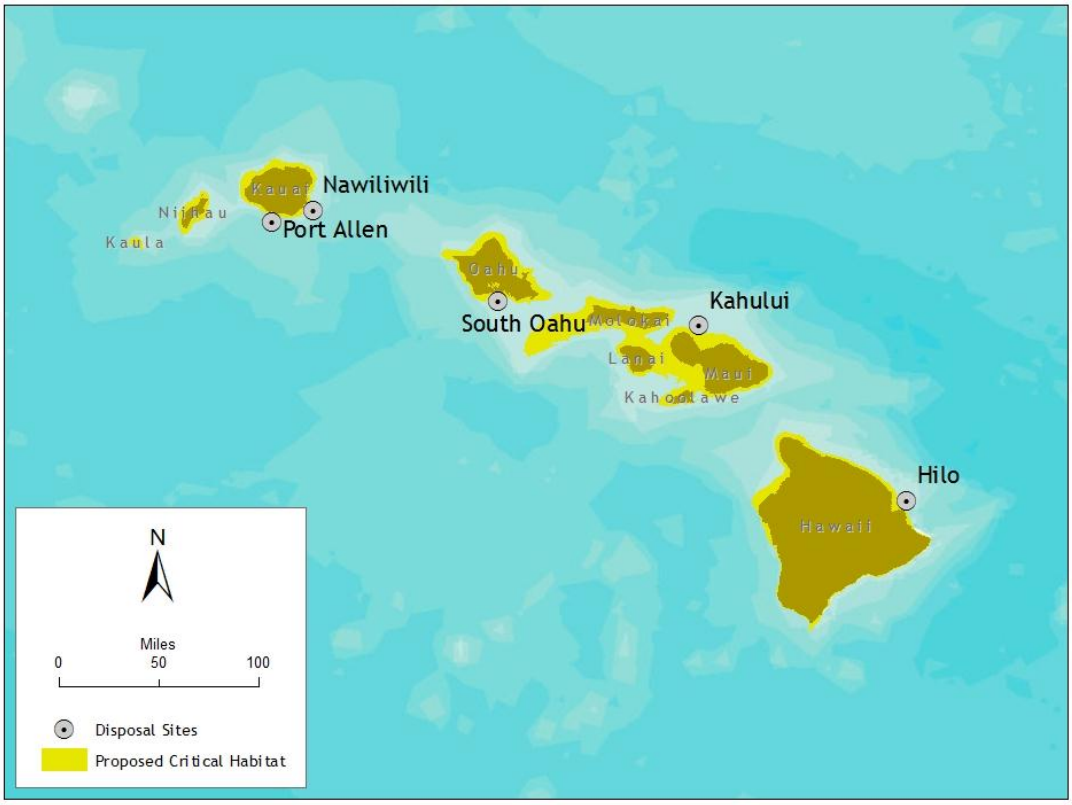
[119] Written communication from Hawaii Department of Transportation, October 12, 2012.

[120] U.S. Army Corps of Engineers. 2000. Long-Term Management Strategy for Dredged Material Disposal for Naval Facilities at Pearl Harbor, Hawaii. ERDC/EL SR-00-3.

[121] Written communication from Hawaii Department of Transportation, October 12, 2012.

[122] ECONorthwest. 2010. Draft Economic Analysis of Critical Habitat Designation for the Hawaiian Monk Seal.

EXHIBIT 5-1. EPA-DESIGNATED OCEAN DISPOSAL SITES



Source: Exhibit prepared by Industrial Economics, Incorporated. Disposal site coordinates taken from: "Final Environmental Impact Statement (EIS) for Hawaiian dredged material disposal sites designation." Prepared by USEPA Oil and Special Materials Control Division, Marine Protection Branch. 1980.

5.3 REGULATION OF DREDGING AND DISPOSAL ACTIVITIES

169. 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. Title I of the Marine Protection, Research, and Sanctuaries Act gives the USACE permit authority specifically over the dumping into ocean waters of dredged spoils. This permitting program constitutes a Federal nexus for projects involving dredging and disposal of dredged materials. Section 7 consultation considering Hawaiian monk seal critical habitat is expected to occur for all dredging and disposal activity requiring a USACE permit, though many dredging projects may fall under a programmatic consultation between USACE and NMFS. This programmatic consultation covers maintenance dredging and other minor dredging projects, but excludes new construction dredging or in-water trenching. General conditions required of all projects considered under the programmatic consultation include:

- Limiting project footprints to the minimum necessary to complete the project;
- Consideration of sensitive resource areas;

- Appropriate project timing to minimize effects on ESA-listed species and their habitats;
- Pollution control measures; and
- Stabilization of disturbed areas following cessation of activities.

Furthermore, the following conditions are required of maintenance dredging projects conducted under the programmatic consultation:

- Operation of heavy equipment from above and out of the water;
- Disposal of dredged material at upland sites or at EPA-designated ocean disposal sites;
- Use of appropriate silt containment devices to avoid impacts to the benthic community; and
- No dredging of coral reefs or sites that support submerged aquatic vegetation.

These conservation measures are designed to minimize the potential for projects authorized under the programmatic consultation to impact Endangered Species Act (ESA)-listed marine animals and their habitat. These measures will be implemented as a matter of course according to the existing Biological Evaluation regardless of critical habitat designation. [123]

170. Under Section 402 of the Clean Water Act, the USEPA maintains permit authority to protect marine waters from pollution, which USEPA has delegated to the Hawaii 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. These requirements include:

- Treating discharges to ensure compliance with EPA effluent limitations, criteria, and BMPs; and
- Monitoring effluent discharged by the permitted activity.[124]

[123] USACE. 2010. Biological Evaluation: Effects of Implementing Standard Local Operating Procedures for Endangered Species in the Central and Western Pacific Region on ESA-Listed Sea Turtles and Marine Mammals.

[124] Hawaii Administrative Rules Title 11 Chapter 55. Water Pollution Controls.

5.4 METHODOLOGY FOR EVALUATING IMPACTS ON DREDGING AND DISPOSAL ACTIVITIES

171. Data are not available on where dredging activities may occur in the future. We therefore expect that recent spatial and temporal trends in dredging and disposal activity provide an accurate indication of where these activities will occur in the future. In order to identify those specific areas most likely to be subject to dredging and disposal activities in the future, we referenced historical consultations on these activities throughout the MHI and NWHI.

5.4.1 IMPACTS OF ADDITIONAL CONSERVATION EFFORTS

172. The 2014 Biological Report lists project modifications that NMFS anticipates recommending as part of section 7 consultation on dredging and disposal projects in order that projects avoid adverse modification of monk seal critical habitat (Exhibit 5-2). These modifications may be necessary depending on the location and scope of the dredging project. New dredging projects, especially those associated with in-water and coastal construction or those located near preferred pupping or haul-out areas, are more likely to face additional conservation recommendations to avoid adverse modification of critical habitat. Existing regulations, described above in Section 5.3, are expected to provide similar protections to those recommended by NMFS, requiring conservation measures such as pollution monitoring and discharge control to protect the benthic community, area and time constraints, and monitoring efforts to identify impacts to monk seal use and the benthic community. This overlap suggests that the conservation measures that NMFS anticipates may be recommended to avoid adverse modification of critical habitat are in most cases already recommended to avoid jeopardy effects to the monk seal itself, even absent critical habitat designation.

173. Review of the consultation history, as well as information from NMFS biologists, provides further evidence that current monk seal conservation efforts already undertaken during dredging and disposal of dredged material are likely to avoid the destruction or adverse modification of critical habitat. Of the three consultations on dredging projects occurring in areas identified for critical habitat, one was an informal consultation, which led to a determination that the activity in question was not likely to adversely affect monk seals. The other two were instances of technical assistance (comments or a species list were provided, or other types of technical assistance) and did not lead to modifications to the dredging and disposal activities for the purposes of monk seal conservation.

174. Thus, if dredging projects are planned in critical habitat areas, consultation is likely to occur. However, on most current and future projects undertaken within the designation, the analysis concludes that most consultations will not result in a request for project modifications beyond those that are typically implemented under current standards. New dredging projects associated with in-water and coastal construction in or adjacent to preferred pupping and haul-out areas may face the same costs and conservation measures as construction projects described in Chapter 3.

EXHIBIT 5-2. MONK SEAL HABITAT CONSERVATION EFFORTS ASSOCIATED WITH DREDGING AND DISPOSAL OF DREDGED MATERIAL

CONSERVATION EFFORT/PROJECT MODIFICATION
Restrictions on the spatial extent of the project
Increased educational efforts with an emphasis on habitat protection
Monitoring efforts to identify impacts to the benthic community
Monitoring efforts to identify impacts to monk seal use
Source: National Marine Fisheries Service, *Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report*, October 2013, received from NMFS on November 13, 2013.

5.4.2 ADMINISTRATIVE COSTS

175. We do not expect designation of critical habitat for the Hawaiian monk seal to trigger additional section 7 consultations that would not have occurred absent designation. The analysis therefore uses the spatial and temporal distribution of past consultations on dredging projects to forecast future consultations requiring NMFS action relating to Hawaiian monk seal. No information is currently available on how the frequency of dredging activity may change in specific areas of the MHI or NWHI. To the extent that patterns of dredging activity change in future years, the analysis may overestimate or underestimate activity in some areas.

176. Between 2000 and 2012, three dredging projects occurred within areas identified for Hawaiian monk seal critical habitat and were subject to section 7 consultation. Exhibit 5-3 provides a summary of these consultations, as well as those located outside areas identified for critical habitat. Consultations considering effects of dredging on monk seals occurred with respect to projects outside of the areas identified for critical habitat. These projects were generally evenly distributed over time over the last 13 years.

Based on the rate of consultation on dredging projects in recent years, we estimate approximately 0.3 consultations per year requiring NMFS action relating to monk seal over the next ten years, with the majority located in Oahu and Hawaii.

177. While critical habitat designation is unlikely to change the conservation efforts implemented as part of future dredging and disposal projects in monk seal critical habitat, action agencies will still be required to consult on these activities within the study area. To account for this impact, the analysis estimates the incremental administrative costs associated with these consultations. The estimated costs represent the expected administrative costs beyond those likely to be incurred to consult on potential jeopardy to the monk seal.

EXHIBIT 5-3. HISTORICAL DREDGING CONSULTATION ACTIONS FOR MONK SEAL, 2000-2012

SPECIFIC AREA/ISLAND		INFORMAL	TECHNICAL ASSISTANCE	TOTAL (ALL)*	TOTAL (IN PCHD)
13	Kauai	1	0	1	0
14	Oahu	9	6	15	2
15	Maui Nui	4	2	6	0
16	Hawaii	4	2	6	0
	Multiple Islands**	0	1	1	1
	Total	**18**	**11**	**29**	**3**

Source: Consultation history provided by NMFS, June 2012.
Note: Includes consultation actions through May 2012.
* Includes actions in areas not proposed for Hawaiian monk seal critical habitat.
** Includes Midway, Niihau, Kauai, Oahu, Maui Nui, and Hawaii.

178. For this analysis, administrative costs per consultation are based on information provided by NMFS biologists that participate in section 7 consultations regarding the monk seal in Hawaii, and a survey of Federal agencies that have participated in section 7 consultation considering critical habitat for other marine species.[125] Different types of consultation require varying amounts of administrative effort, resulting in distinct cost estimates for various types of consultation. Exhibit 5-4 shows incremental administrative costs for individual consultations across the various consultation categories.

EXHIBIT 5-4. INCREMENTAL ADMINISTRATIVE COSTS FOR DREDGING ACTIVITY IN HAWAIIAN MONK SEAL CRITICAL HABITAT (2013$)

CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	TOTAL COST
Technical Assistance	$277	$277	$0	$554
Informal	$69	$1,090	$0	$1,160
Formal	$1,040	$1,450	$0	$2,490

Sources: Communication with NMFS, September 2012; U.S. Department of Commerce, National Marine Fisheries Service. 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.
Note: Dredging-related consultations are assumed to involve only NMFS and federal action agencies. No third party costs are expected. Federal agency costs were adapted from the NMFS pacific salmon and steelhead trout analysis. "In-stream work" was used as a proxy for level of Federal agency effort required in dredging consultations.

179. All recent consultations on dredging have been categorized as informal or technical assistance, which require less administrative effort and costs than formal consultations. No formal consultations on dredging projects occurred in areas identified for critical

[125] U.S. Department of Commerce, National Marine Fisheries Service. 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.

habitat for the monk seal in the period examined, from 2000 to 2012. Parties expected to be involved in consultation are NMFS and the action agency undertaking the project. Therefore, no costs to third parties are forecast for dredging consultations. In most cases, the USACE will be the action agency involved in consultation.

5.5 RESULTS OF DREDGING AND DISPOSAL ANALYSIS

5.5.1 ADMINISTRATIVE COSTS

180. Exhibit 5-5 summarizes the total forecast administrative costs of these consultations over the ten-year period of analysis, from 2014 to 2023. Present value costs are discounted at seven percent discount rate.

EXHIBIT 5-5. ADMINISTRATIVE COSTS RESULTING FROM IMPACTS TO DREDGING PROJECTS, 2014-2023 ($2013)

	SPECIFIC AREA/ISLAND	TOTAL PRESENT VALUE	ANNUALIZED
Northwest Hawaiian Islands			
1	Kure Atoll	$0	$0
2	Midway Islands	$16	$2
3	Pearl and Hermes Reef	$0	$0
4	Lisianski Island	$0	$0
5	Laysan Island	$0	$0
6	Maro Reef	$0	$0
7	Gardner Pinnacles	$0	$0
8	French Frigate Shoals	$0	$0
9	Necker Island	$0	$0
10	Nihoa Island	$0	$0
Main Hawaiian Islands			
11	Kaula Island	$0	$0
12	Niihau Island	$13	$2
13	Kauai	$18	$3
14	Oahu	$968	$138
15	Maui Nui	$166	$24
16	Hawaii	$47	$7
Total		**$1,230**	**$175**

181. We estimate total administrative costs related to dredging and disposal of dredged materials of $1,230 over the ten-year period of analysis. We expect annualized administrative costs of $175. These costs are expected to be distributed across Midway and the MHI except for Kaula, with Hawaii, Maui Nui, and Oahu experiencing high

proportions of the impacts due to high levels of economic activity and vessel traffic in those islands.

5.5.2 IMPACTS SPECIFIC TO NORTHWEST HAWAIIAN ISLANDS

182. Due to the relative lack of economic activity in the NWHI, impacts of areas identified for critical habitat on dredging activity are expected to be minimal. Review of NMFS consultation history indicates there have been no consultations between 2000 and 2012 relating directly to dredging activity in the NWHI. There was a single technical assistance considering dredged material disposal in 2000 that covered the entire designation including the MHI and NWHI. Therefore, administrative costs relating to consultation on dredging activity are expected to be minimal, limited solely to the proportion of the technical assistance attributable to the NWHI. In the event that dredging does occur in the NWHI, recommendations for conservation practices relating to these activities are not expected to differ from those recommended in the MHI or change as a result of critical habitat designation.

5.6 ASSUMPTIONS AND LIMITATIONS

183. Exhibit 5-6 describes the key assumptions relied upon in the dredging analysis and the influence of those assumptions on the results of the analysis.

EXHIBIT 5-6. ASSUMPTIONS AND LIMITATIONS

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED IMPACTS
The frequency of new dredging projects is constant and is comparable to dredging frequency in recent years.	**Unknown.** May overestimate or underestimate incremental impacts.	**Likely minor.** Changes to the spatial and temporal distribution of dredging activity in the MHI or NWHI are unknown.
Project modifications beyond what is currently prescribed will not be recommended in consultation.	May result in an **underestimate** of costs.	**Likely minor.** It is unlikely that additional measures will be necessary to avoid impacts to Hawaiian monk seal habitat beyond what is currently provided to the seal; however, to the extent that new projects require additional conservation measures, this estimate may be an underestimate of future costs.

CHAPTER 6 | ENERGY PROJECTS

6.1 INTRODUCTION

184. This chapter assesses the potential impacts of designating critical habitat for the Hawaiian monk seal on the development of renewable energy projects. As Hawaii focuses on gaining more energy independence, the number of energy projects, particularly renewable energy developments, is expected to increase over time. Multiple proposed or ongoing renewable energy developments overlap the areas identified for critical habitat for the Hawaiian monk seal, including wind, geothermal, and wave energy projects. In addition to the development of the structures themselves, which may involve construction within the marine or coastal environment and possible anchoring of the structure to the ocean floor, we evaluate the potential for critical habitat to affect the installation and maintenance of undersea cables to transmit energy between islands.

185. The 2014 Biological Report identified energy projects as an activity that may pose a threat to essential features of critical habitat for the Hawaiian monk seal. Additional research undertaken for this economic analysis indicates that energy projects in the foreseeable future are likely to occur on the islands of Oahu, Lanai, Molokai, Maui, and Hawaii. No particular projects that intersect areas identified for critical habitat were identified on Kauai or any other specific areas.

186. Energy projects may affect the essential features of critical habitat for the monk seal in the following ways:

- Development on or near preferred pupping, nursing, haul-out, or marine foraging areas may reduce the amount or quality of habitat.
- Construction may impact water quality by release of contaminants, tempered water discharges, or increased sedimentation, resulting in impacts to the quantity or quality of prey species.
- Development in remote or less disturbed areas may increase the potential for disturbance, making monk seals avoid or abandon preferred areas.[126]

[126] 76 FR 32039.

KEY FINDINGS OF THE ENERGY PROJECTS ANALYSIS

Quantified Impacts:

- We estimate a total present value impact of $54,400 ($7,740 annualized) over the next ten years (seven percent discount rate) for consultations regarding energy projects that may affect the proposed critical habitat area. These costs reflect additional administrative effort to consider critical habitat designation as part of formal consultation on seven proposed energy developments in marine or coastal habitat in the MHI.

Unquantified Impacts:

- Due to the extensive requirements of proposed energy projects to consider environmental impacts, including impacts on marine life, even absent critical habitat designation for the monk seal, we anticipate it is unlikely that critical habitat will change conservation measures recommended during section 7 consultation for these projects. Consequently, it is unlikely the identified projects will be affected by the designation beyond the quantified administrative impacts.

Geographic Distribution of Impacts:

- Impacts are expected to be greatest on Oahu and Maui Nui, as these islands each support three forecast energy development projects. The remaining impacts are associated with consultation on one proposed energy project on the Big Island. In addition, the current Hawaii Interisland Renewable Energy Program focuses on developing renewable projects in Maui, Lanai, and Molokai. We did not identify potential renewable energy projects in any of the other specific areas, including the NWHI.

- Key Uncertainties:
  - This analysis relies on information from the Hawaii State Energy Office regarding currently proposed projects. These include projects that are just beginning the scoping phase, as well as projects that have begun initial development and are expected online in the next few years. Because of the length of time required to develop an energy project, from initial due diligence to coming online, we anticipate this list of projects is reflective of the energy projects that may be subject to consultation regarding monk seal critical habitat over the next ten years. To the extent that more projects may be developed and subject to consultation in this timeframe, our analysis underestimates potential administrative impacts of consultation on energy projects.

  - We conclude that compliance with existing regulations and permits most likely avoids potential impacts of future energy projects on monk seal critical habitat, and therefore that it is unlikely that additional project modifications will be recommended due to critical habitat designation. To the extent that additional project modifications to avoid impacts to monk seal habitat are recommended for future projects, this analysis underestimates impacts.

187. The monk seal habitat conservation concerns with respect to development of renewable energy projects mirror those described for in-water and coastal construction in Chapter 3. In addition, the permitting requirements of energy developments, as described in Section 6.3, are more detailed than for most other in-water and coastal construction, as described in Section 3 of this analysis. The extent of the regulatory baseline for energy projects in addressing environmental impacts, including effects on listed species and their habitats, make it unlikely that critical habitat designation for the Hawaiian monk seals will generate additional project modifications. Impacts of the designation are therefore most likely limited to additional administrative effort to consider potential adverse modification as part of future section 7 consultations.

188. The remainder of this chapter is divided into five sections. The first section describes trends in renewable energy developments, and forecast projects in Hawaii. The second discusses the current regulation of these activities, highlighting the existing focus on avoiding potential impacts on listed species. The third section describes the methods employed to estimate the impacts of critical habitat designation on future energy projects activity. The fourth and fifth sections present the resulting forecast of economic impacts across the study area, and assumptions and limitations underlying the analysis, respectively.

6.2 EXTENT OF ENERGY PROJECTS

189. Hawaii has a long history of renewable energy use from the sugar cane industry as bagasse was burned to generate electricity. However, all but one of the plantations have closed, and the State is now highly dependent on imported oil for generating electricity. Hawaii has placed increased focus on renewable energy developments in recent years.[127]

190. In 2008, the Hawaii Clean Energy Initiative (HCEI) was founded based on a Memorandum of Understanding between the State of Hawaii and the U.S. Department of Energy (DOE). HCEI comprises a variety of working groups with representation from Federal, State, and local government, not-for-profit organizations, private companies, and trade associations. The primary objective of HCEI is to chart a strategy for Hawaii to reach a stated goal of 70 percent clean energy by 2030. With respect to electricity development, the HCEI plans for 40 percent of electricity demand to be met through renewable sources of energy by 2030.[128]

191. In addition to the HCEI objectives, the State of Hawaii is subject to regulated Renewable Portfolio Standards (RPS). The State's RPS goals were codified into enforceable law in 2004 via the passage of Act 95.[129] In 2009, following the inception of HCEI, Act 155,

[127] State of Hawaii Department of Business, Economic Development and Tourism, Research and Economic Analysis Division. Economic Report 2011: Renewable Energy in Hawaii. June 2011.

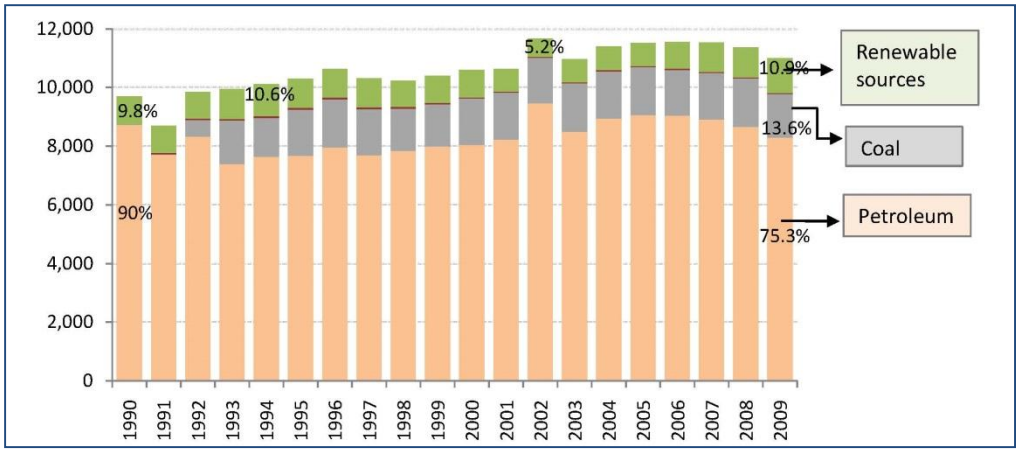
[128] Hawaii Clean Energy Initiative. 2011. HCEI Road Map.

[129] Act 95, Session Laws of Hawaii, 2004.

expanded the State's enforceable RPS, specifically codifying the HCEI goals with respect to net electricity sales by renewable sources.[130]

192. Since the establishment of the HCEI and Act 155, renewable energy projects have been proposed or developed across the MHI. Historical electricity generation by source in Hawaii is summarized in Exhibit 6-1. The recent trend (2007-2010) may be attributable to the initiatives established by the HCEI. In 2011, about 12 percent of electricity was produced by renewable sources.[131] While the contribution of renewables is growing, meeting the HCEI goals and enforceable RPSs will require development of more renewable energy sources over time.

EXHIBIT 6-1. NET ELECTRICITY GENERATION IN HAWAII BY SOURCE



Source: State of Hawaii Department of Business, Economic Development and Tourism, Research and Economic Analysis Division. Economic Report 2011: Renewable Energy in Hawaii. June 2011.

193. In the early 2000s, biomass was the main source of renewable energy generation (64 percent in 2003). Since then, there has occurred rapid growth in particular in wind energy developments, which grew from contributing 1.8 percent of renewables generation in 2003 to 27 percent in 2009.[132] Ocean thermal and wave energy opportunities are also being explored across the islands. While the ocean thermal and wave energy projects are more directly tied to the areas identified for critical habitat area for the monk seals, wind, solar, and water-to-energy projects that occur in terrestrial areas may still affect the critical habitat to the extent that undersea transmission cables through coastal or marine habitat affect the essential features. Additionally, the potential exists for offshore wind projects in the future. Runoff or effluent discharges from bioenergy or other industrial-like renewable energy facilities may also affect the essential features, should such projects be proposed within the critical habitat area.

[130] Act 155, Session Laws of Hawaii, 2009.

[131] Hawaiian Electric Company, Maui Electric Company, and Hawaii Electric Light Company. Clean Energy Update: September 2012.

[132] State of Hawaii Department of Business, Economic Development and Tourism, Research and Economic Analysis Division. Economic Report 2011: Renewable Energy in Hawaii. June 2011.

194. To keep pace, not only with the HCEI goals for renewable energy production, but also with the concurrent increased demand for energy in Hawaii, multiple types of renewable projects are currently in the early planning and scoping stages across the MHI. To inform this evaluation, the Hawaii State Energy Office provided information on planned and ongoing renewable energy projects that may affect critical habitat designation for the Hawaiian monk seal. Overall, the State Energy Office identified seven projects that are in the planning or early development stages (i.e., from conducting initial due diligence to planning to commence development) that are proposed within five meters of the shore and out to a 200 meter depth contour. Our analysis assumes these seven projects may be subject to consultation considering potential effects on Hawaiian monk seal critical habitat.[133] Exhibit 6-2 summarizes the status of these proposed projects. While other energy projects are or will be planned, we did not identify other specific projects as overlapping the areas identified for critical habitat.

195. In addition to the development of individual facilities, meeting Hawaii's renewable energy goals will most likely require interisland connectivity. Connecting the islands via undersea cables will allow greater flexibility in harnessing energy where resources, such as wind and geothermal power, are abundant, and delivering it to areas of greatest demand, such as the populated areas of Oahu.

196. To guide the development of renewable projects and transmission of the energy produced, the State of Hawaii and the DOE developed the Hawaii Interisland Renewable Energy Program (HIREP) in 2010. The focus of the HIREP was on identifying locations on Maui, Lanai, and Molokai for renewable energy generation, and the transmission of this energy to Oahu.[134] The program was subject to environmental review under the Hawaii Environmental Protection Act (Hawaii Administrative Rule, Title 11, Department of Health, Chapter 200; and HRS Chapter 343); NEPA (42 U.S.C. 4321-4370h); and the White House Council of Environmental Quality regulations (40 C.F.R. Parts 1500-1508), which implement the requirements of NEPA.[135]

[133] The Hawaii State Energy Office also provided information on five additional projects that have recently been developed in marine and coastal areas overlapping the areas identified for critical habitat. These projects included: one solar project in Kauai; three projects on the Big Island (one ocean thermal, one biofuel, and one wind); and one wave energy project on Oahu. Because these projects are already well underway or are completed and operating, we do not anticipate they will be affected by critical habitat designation for the Hawaiian monk seal.

[134] AECOM. April 2012. Hawaii Interisland Renewable Energy Program (HIREP): Background Information. Prepared for: State of Hawaii, Department of Business, Economic Development and Tourism, Strategic Industries Division.

[135] AECOM. April 2012. Hawaii Interisland Renewable Energy Program (HIREP): Reference Information. Prepared for: State of Hawaii, Department of Business, Economic Development and Tourism, Strategic Industries Division.

EXHIBIT 6-2. PROPOSED ENERGY PROJECTS OVERLAPPING CRITICAL HABITAT FOR THE HAWAIIAN MONK SEAL

PROJECT NAME (DEVELOPER)	PROJECT DESCRIPTION	EXPECTED PRODUCTION LEVEL (MW)	EXPECTED YEAR OF COMPLETION (PROJECT STATUS)
PROPOSED PROJECTS ON OAHU			
Na Pua Makani (West Wind Works)	**WIND ENERGY:** Initial plan is for a wind farm near the Kuhuku agricultural park (east of an existing wind farm).	25 MW	Unknown (Initial due diligence)
Oahu OTEC Project (Lockheed Martin/ U.S. Navy)	**OCEAN THERMAL ENERGY CONVERSION:** Planned ocean thermal energy development on the southwestern coast of Oahu (Kahe/Barbers Point/Pearl Harbor area).	10 MW	2015 (Project planning ongoing)
West Wind Works Energy Park (West Wind Works/SunPower/ BioNRGY)	**HYBRID ENERGY DEVELOPMENT:** Scoping potential for a diversified renewable energy project in Campbell Industrial Park.	15 MW	Unknown (Initial due diligence)
PROPOSED PROJECTS IN MAUI NUI			
Lanai Wind Project (Castle and Cooke)	**WIND ENERGY:** Despite the sale of Lanai in 2012, Castle and Cooke retained the rights to a proposed wind farm on the northwest side of Lanai. Power would be transmitted to Oahu via an undersea transmission cable.	200 MW	Unknown (initial environmental reporting has been undertaken)
Molokai Renewables Wind Project (Pattern Energy/Group LP/Bio-Logical Capital LLC)	**WIND ENERGY:** Proposed wind farm on Molokai. Energy would be transmitted to Oahu via an undersea transmission cable.	200 MW	Unknown (Initial due diligence)
Maui Wave Project (Oceanlinx)	**WAVE ENERGY:** Proposed wave energy development to consist of two to three floating platforms about one kilometer offshore of Pauwela Point, Maui.	0.5 MW	Unknown (Initial due diligence)
PROPOSED PROJECTS ON THE ISLAND OF HAWAII (BIG ISLAND)			
Waste Conversion Facility (BioEnergy Hawaii)	**WASTE-TO-ENERGY:** Proposed solid waste conversion facility would use solid waste diverted from the Puuanalulu landfill (Keahole Point) to generate electricity. The carbon dioxide created at the plant would feed algae beds which would then be converted into biofuel for transportation.	11 MW	Unknown (Initial due diligence)

Source: Information on proposed energy developments in marine and coastal areas provided by the Hawaii State Energy Office on August 24, 2012.
The State Energy Office notes that the list of proposed projects is continuously being update to incorporate new projects and remove others that have been put on hold. This represents the best available information on proposed projects overlapping critical habitat as of January 2013.

197. Based on comments received during the scoping phase of the HIREP NEPA process, the DOE and State of Hawaii decided to broaden the focus of the action, and develop a program focused on all renewable energy projects across Hawaii. In August 2012, the DOE published an Amended Notice of Intent to prepare the Hawaii Clean Energy Programmatic Environmental Impact Statement (PEIS) under NEPA. The DOE is the lead Agency and the State of Hawaii and Federal Bureau of Oceans and Energy Management (BOEM) are cooperating agencies in the PEIS. The PEIS will not evaluate specific projects or eliminate the need for project-specific environmental review. The PEIS does, however, propose to develop guidance, including potential mitigation measures, which DOE can use in making decisions about future funding or other actions to support Hawaii in achieving renewable energy objectives. A draft of the PEIS was made available to the public for comment in 2014.[136]

6.3 REGULATION AND MANAGEMENT OF ENERGY PROJECTS

198. Multiple Federal and State regulations and programs affect the development and operation of energy projects and provide protection to the Hawaiian monk seal. This section describes current regulation of renewable energy developments as relates to monk seal conservation.

6.3.1 NATIONAL ENVIRONMENTAL POLICY ACT: HAWAII INTERISLAND RENEWABLE ENERGY PROGRAM AND HAWAII CLEAN ENERGY PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

199. 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. Through its requirement to consider alternatives, the NEPA process may provide protection to Hawaiian monk seals through evaluation of appropriate conservation actions associated with planned energy developments.

200. In August 2012, the DOE published an Amended Notice of Intent to prepare the Hawaii Clean Energy PEIS under NEPA in order to evaluate environmental impacts of the:

- Transmission of energy between islands;
- Generation of renewable energy power; and
- Utility infrastructure upgrades on Oahu needed to integrate renewable sources into the electrical grids.[137]

[136] 79 FR 21909-21910.

[137] AECOM. April 2012. Hawaii Interisland Renewable Energy Program (HIREP): Background Information. Prepared for: State of Hawaii, Department of Business, Economic Development and Tourism, Strategic Industries Division.

201. The State of Hawaii and Federal Bureau of Oceans Energy Management (BOEM) are cooperating agencies in the PEIS. The PEIS will not evaluate specific projects or eliminate the need for project-specific environmental review. The PEIS does, however, propose to develop guidance, including potential mitigation measures, that DOE can use in making decisions about future funding or other actions to support Hawaii in achieving renewable energy objectives. A draft of the PEIS was made available to the public for comment in 2014.[138]

202. The PEIS will specifically address mitigating potential effects of the developments on biological resources. The PEIS will rely in part on analysis to identify potential effects on biological resources, and recommendations for conservation and construction measures. Relevant to monk seal conservation the AECOM Report prepared for the PEIS specifies:

> "Avoid monk seal haulout areas. Prior to construction activities, an area should be investigated for pupping activities. If pupping occurs within proximity to construction, consideration should be given to altering the time of year when disturbance would occur."[139]

203. In addition, in considering the effects on monk seals of the landing sites for the transmission cables in Pearl Harbor, Oahu, the AECOM Report specifies,

> "Impacts to the beaches west of Pearl Harbor entrance used by monk seals as haulout areas should be avoided."[140]

204. The AECOM Report makes the following additional recommendations that would likely provide protection to the essential features of monk seal critical habitat with respect to construction of the undersea cable transmission system.

Conservation measures for marine/benthic species and habitat:

- During cable-laying activities, employ observers to watch for marine mammals and turtles;
- Identify sensitive deep-water coral communities before construction so they can be avoided;
- Avoid or minimize damage to sensitive marine habitats known to be in the vicinity;

[138] 79 FR 21909-21910.

[139] AECOM. April 2012. Hawaii Interisland Renewable Energy Program (HIREP): Reference Information. Prepared for: State of Hawaii, Department of Business, Economic Development and Tourism, Strategic Industries Division.

[140] AECOM. April 2012. Hawaii Interisland Renewable Energy Program (HIREP): Reference Information. Prepared for: State of Hawaii, Department of Business, Economic Development and Tourism, Strategic Industries Division. Section 3.14.

- Develop detailed topographic and habitat maps to ensure that sensitive habitats are identified and avoided;

Conservation measures for terrestrial/coastal biological resources, species, and habitat:

- Control sediment erosion and turbidity discharges;
- Investigate alternative landing site areas for presence of wetlands or threatened and endangered species and their habitat;
- Avoid impacts to wetlands or habitats for threatened and endangered species;
- Avoid dredging, the placement of fill in open waters, or altering drainage courses;
- Give preference to landing site areas in developed areas or locations where vegetation has been disturbed;
- During cable installation, any slack cable should be secured so cables do not sweep across the bottom. Also, vessel and barge anchorages should be considered over locations where live-bottom habitat does not occur;
- Avoid activities that may affect the surface of bethic habitats less than 200 feet in depth in the warmer months of the year;
- Limit foreign materials and fluids from entering the marine habitat.[141]

205. While the AECOM Report currently provides these conservation measures as recommendations, it is likely the recommendations will be incorporated into design of future projects in order to meet NEPA requirements.

6.3.2 FEDERAL REGULATION OF ENERGY DEVELOPMENTS

206. Multiple Federal regulations pertain to the permitting and management of renewable energy developments. This means that we can assume that all future energy developments will be subject to a Federal nexus compelling consultation with NMFS regarding potential effects on Hawaiian monk seal and its critical habitat.

Clean Water Act[142]

207. The Clean Water Act (CWA) provides the U.S. Environmental Protection Agency (EPA) and States a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff in order to support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

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[141] AECOM. April 2012. Hawaii Interisland Renewable Energy Program (HIREP): Reference Information. Prepared for: State of Hawaii, Department of Business, Economic Development and Tourism, Strategic Industries Division. Section 3.14.

[142] 33 U.S.C. 1251 et seq. 1987.

208. The U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into wetlands and other waters of the U.S. under Section 404 of the CWA (Title 33 U.S.C. Section 1251 *et seq*.). A Section 404 permit from the USACE requires a CWA Section 401 Water Quality Certification from the Hawaii Department of Health Clean Water Branch. In addition, Section 402 of the CWA requires a National Pollutant Discharge Elimination System (NPDES) permit to regulate the discharge of pollutants into waters of the U.S.[143] These water quality maintenance tools may benefit the Hawaiian monk seal regardless of critical habitat designation.

Coastal Zone Management Act[144]

209. The Coastal Zone Management Act is administered by NOAA's Office of Ocean and Coastal Resource Management and requires that Federal actions that affect the natural resources of a state's coastal zone be consistent with the enforceable policies of a federally-approved state coastal zone management plan. As such, energy developments will be required to obtain a Coastal Consistency Determination. The Hawaii Coastal Zone Management Program (HICZMP), developed under the authority of HRS §205A, administered by the Hawaii Office of Planning, and approved by NOAA in 1978, provides a framework for designing and implementing permitted land and water uses that uphold a set of objectives and policies outlined by the program. The Hawaiian monk seal is listed as a marine resource protected by the program's objectives and policies.[145]

Rivers and Harbors Act[146]

210. The Rivers and Harbors Act (RHA) places Federal investigations and improvements of rivers, harbors and other waterways under the jurisdiction of the USACE and requires that all investigations and improvements include due regard for wildlife conservation. This Act may provide protection to Hawaiian monk seal from construction activities associated with renewable energy projects. Under sections 9 and 10 of the RHA, the USACE is authorized to regulate the construction of any structure or work within navigable waters.

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[143] AECOM. April 2012. Hawaii Interisland Renewable Energy Program (HIREP): Background Information. Prepared for: State of Hawaii, Department of Business, Economic Development and Tourism, Strategic Industries Division.

[144] 16 USC §§ 1451 et seq. 1972.

[145] Hawaii State Office of Planning, "Hawaii Coastal Zone Management Program: Sustainable Management of the Islands," December 2011, accessed at http://hawaii.gov/dbedt/czm/program/doc/czm_program_description_2011.pdf on August 21, 2012.

[146] 33 USC §§ 401 et seq. 1938.

Ocean Thermal Energy Conversion Act[147]

211. Under the Ocean Thermal Energy Conversion Act (OTECA), NOAA licenses OTEC facilities located within the territorial sea of the United States. Section 9117 of OTECA requires assessment of the effects of OTEC facilities on the natural environment, including any short-term or long-term effects as a result of the operation of the facilities or transmission cables. Section 9117 also requires development of an EIS for OTEC facilities. NOAA licenses are not necessary for demonstration projects; however, DOE has regulatory jurisdiction over these projects.[148]

6.3.3 OTHER RELEVANT LAWS AND REGULATIONS

212. Multiple Federal and state permits and approvals are likely to be required for the construction of converter stations and landing sites, and undersea cable line. The following is a partial list of Federal and state laws and regulations that are likely required of the renewable energy projects. In addition to those described above, these laws and regulations, in particular, are likely to require consideration of effects on monk seal and their habitat.

Federal Laws and Regulations

- Estuary Protection Act of 1986, as amended
- Fish and Wildlife Conservation Act
- Marine Mammal Protection Act
- National Marine Sanctuaries Act
- Ocean Dumping Act
- Oil Pollution Act
- Solid Waste Disposal Act
- Watershed Protection and Flood Prevention Act, as amended

Hawaii State Statutes and Administrative Rules

- Coastal Zone Management, HRS Chapter 205A
- Conservation District, HRS Chapter 183C
- Environmental Response Law, HRS Chapter 128D
- Hawaii's Endangered Species Act, HRS Chapter 195D
- Natural Area Reserve Systems, HRS Chapter 195
- Solid Waste Disposal, HRS Chapters 342G, 342H, 342I, 349
- State Land Use Law, HRS Chapter 205
- State Parks, HRS Chapter 184
- State Water Code, HRS Chapter 174C
- Water Pollution, HRS Chapters 342D and 342E

[147] 42 USC Chapter 99.

[148] NOAA Ocean & Coastal Resource Management. Ocean Thermal Energy Conversion (website). http://coastalmanagement.noaa.gov/programs/otec.html. Accessed on September 16, 2013; Personal communication with Cameron Black, Hawaii State Energy Office. November 8, 2012.

County Regulations

The four counties of Hawaii (Honolulu, Kauai, Maui, and Hawaii) regulate development within Special Management Areas and the shorelines of the islands under their jurisdiction. Each county has its own permitting requirements.

6.4 METHODOLOGY FOR EVALUATING IMPACTS ON ENERGY PROJECTS

213. As described in Section 6.2, the Hawaii State Energy Office provided a list of proposed projects and projects in the initial stages of development within the areas identified for critical habitat designation for the Hawaiian monk seal. Due to the multiple applicable laws and regulations governing the siting, planning, development, and operations of renewable energy projects, we expect that this list reflects the likely suite of projects that may be subject to consultation considering the monk seal and its habitat in the foreseeable future. Additional projects proposed within the coming years would not be likely to begin development and operation for several years, following the required due diligence and scoping phase. This section evaluates the potential project modification and administrative impacts of consultation on the seven projects identified in Exhibit 6-2.

6.4.1 IMPACTS OF ADDITIONAL CONSERVATION EFFORTS

214. The 2014 Biological Report lists possible modifications to renewable energy projects that NMFS may recommend through section 7 consultation to avoid adverse modification to monk seal critical habitat. Exhibit 6-4 lists the general types of project modifications that NMFS biologists expect to consider. As noted above, these project modifications mirror those that may be recommended for other in-water and coastal construction projects, as described in Chapter 3.

EXHIBIT 6-3. MONK SEAL HABITAT CONSERVATION EFFORTS ASSOCIATED WITH ENERGY PROJECTS

CONSERVATION EFFORT/PROJECT MODIFICATION
Restrictions on the spatial extent of the project
Monitoring efforts to identify impacts to monk seal use
Increased education efforts for the public and project personnel
Monitoring efforts to identify impacts to benthic community or prey species
Limitations on providing new or increased access to remote areas
Source: National Marine Fisheries Service, *Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report*, October 2013, received from NMFS on November 13, 2013.

215. The best management practices and conservation measures recommended for energy developments through the AECOM Report significantly overlap the recommendations NMFS expects to make to avoid adverse modification of critical habitat for monk seal. Most importantly, the AECOM Report specifies avoiding

monk seal pupping and haul out areas, implementing seasonal restrictions on activities, and employing biologists to monitor activities for effects on marine mammals. Due to the parallelism in conservation recommendations between NEPA planning document (i.e., the AECOM Report) and section 7 consultation, it is likely that these conservation measures would be implemented even absent critical habitat designation for the monk seal. This analysis therefore concludes that while consultation is expected to occur on all future energy projects undertaken within the designation, these consultations will not result in a request for project modifications beyond those that are implemented under current regulatory environment, as described in Section 6.3. We do expect, however, that critical habitat will increase the administrative burden of consultation on these projects.

6.4.2 ADMINISTRATIVE COSTS

216. Exhibit 6-4 summarizes the expected number of consultations on energy projects by specific area based on the projects described in Exhibit 6-2. Due to the potential effects of these projects on the monk seal and its critical habitat, we anticipate these consultations will most likely be formal.

EXHIBIT 6-4. PROJECTED ENERGY CONSULTATION ACTIONS FOR MONK SEAL (2014-2023)

SPECIFIC AREA/ISLAND		FORMAL CONSULTATIONS
14	Oahu	3
15	Maui Nui	3
16	Hawaii	1
	Total	**7**

Source: Information on proposed energy developments in marine and coastal areas provided by the Hawaii State Energy Office on August 24, 2012.
Note: Includes future consultation actions through 2022.

217. Exhibit 6-5 described the expected level of administrative effort to consider critical habitat for the Hawaiian monk seal as part of future section 7 consultations on the energy projects described in Exhibit 6-4. NMFS anticipates limited effort on their part to consider critical habitat above and beyond the effort required to consider effects on the monk seals themselves. The estimated level of effort for Federal agencies involved in the consultation (most likely DOE) and third parties (most likely the project investors or developers) is derived from communications with Federal agencies involved in section 7 consultations considering utility projects. Overall, we expect the level of effort to incorporate consideration of critical habitat into future section 7 consultations for energy projects to cost approximately $10,600 per effort. Of note, this estimate is not intended to be precise but provides an average level of effort based on stakeholder experience, as described in Section 2.3.2.1 of this report.

EXHIBIT 6-5. INCREMENTAL ADMINISTRATIVE COSTS FOR ENERGY PROJECTS IN HAWAIIAN MONK SEAL CRITICAL HABITAT (2013$)

CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	TOTAL COST
Technical Assistance	$277	$0	$277	$554
Informal	$69	$1,090	$1,090	$2,260
Formal	$1,040	$4,760	$4,760	$10,600

Sources: Communication with NMFS, September 2012; U.S. Department of Commerce, National Marine Fisheries Service. 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.
Note: Technical assistance efforts on energy projects are assumed to involve only NMFS third parties, with no other federal agencies involved. Federal agency costs were adapted from the NMFS pacific salmon and steelhead trout analysis. "Utility lines" was used as a proxy for level of Federal agency effort required in consultations on energy projects.

6.5 RESULTS OF ENERGY ANALYSIS

218. Exhibit 6-6 summarizes the total present value impacts of monk seal critical habitat designation on future energy projects. Absent information on when consultation will occur on six of the projects (consultation for one project is assumed to occur upon designation in 2014), we assume an even probability of the consultations occurring across the time frame of this analysis (between 2014 and 2023). Overall, this analysis finds that total present value impacts may be approximately $54,400 over the next ten years, an annualized cost of $7,740. The relatively low level of impact on energy projects reflects two things: 1) the limited number of future projects identified within or affecting the areas identified for critical habitat; and 2) the substantial environmental requirements of energy projects within the areas identified for critical habitat area even absent critical habitat designation for the Hawaiian monk seal.

EXHIBIT 6-6. PRESENT VALUE ADMINISTRATIVE IMPACTS TO ENERGY PROJECTS, 2014-2023 ($2013)

SPECIFIC AREA/ISLAND		TOTAL PRESENT VALUE (7% DISCOUNT RATE)	ANNUALIZED
14	Oahu	$24,700	$3,520
15	Maui Nui	$22,300	$3,170
16	Hawaii	$7,420	$1,060
	Total	**$54,400**	**$7,740**

Note: Forecast costs are based on information on proposed energy developments in marine and coastal areas provided by the Hawaii State Energy Office on August 24, 2012.

6.5.1 IMPACTS SPECIFIC TO NORTHWEST HAWAIIAN ISLANDS

219. Economic activity in general, and renewable energy development in particular, is focused in the MHI. Any renewable energy projects located in the NWHI would be subject to a strict permitting process due to the National Monument status of the area;

a permit would not be issued if the project was found not to provide adequate safeguards for the resources and ecological integrity of the Monument.[149] In addition, the location of the NWHI as removed from the demand for energy in the MHI may make energy developments in the NWHI impractical. We did not identify any foreseeable energy developments within the NWHI.

6.6 ASSUMPTIONS AND LIMITATIONS

220. Exhibit 6-7 describes the key assumptions relied upon in the energy projects analysis and the influence of those assumptions on the results of the analysis.

EXHIBIT 6-7. ASSUMPTIONS AND LIMITATIONS

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED IMPACTS
The currently planned projects described in Exhibit 6-2 as provided by the Hawaii State Energy Office are reflective of the level of activity for energy development in the areas identified for critical habitat in the foreseeable future.	May result in an **underestimate** of costs.	**Likely minor.** While it is possible that renewable energy project demand will increase in the future, the only costs of critical habitat on these activities are expected to be administrative in nature. To the extent that additional projects are proposed that are subject to consultation, this analysis underestimates the administrative effort of considering effects of the projects on critical habitat.
Existing regulation and management of renewable energy projects most likely avoids the potential for the projects to adversely modify critical habitat for the Hawaiian monk seal.	May result in an **underestimate** of costs.	**Likely minor.** While we recognize this as a key assumption of the analysis, the substantial regulatory baseline for renewable energy projects in Hawaii make it unlikely that critical habitat designation will generate the need for additional conservation measures for monk seals.

[149] Northwestern Hawaiian Islands Marine National Monument. 50 CFR Part 404.

CHAPTER 7 | RESIDENTIAL, RESORT AND COMMERCIAL DEVELOPMENT

7.1 INTRODUCTION

221. This chapter assesses the potential impacts of monk seal critical habitat on future land-based residential, resort, and commercial development. While in-water construction activities are the focus of Chapter 3, this chapter focuses on development activities that, while often occurring outside of the study area for this analysis, have the potential to affect the essential features of critical habitat, primarily by attracting more human activity to beach areas. The NMFS' 2014 Biological Report identifies that development on or near areas that meet the definition of Hawaiian monk seal critical habitat in remote, undisturbed areas may alter the value of those areas.

222. This chapter: 1) characterizes the potential for future residential, resort and commercial development activities to affect critical habitat areas; 2) describes the existing regulation of coastal development activities in Hawaii; and 3) evaluates where and how future development activities may be affected by critical habitat designation for the Hawaiian monk seal.

KEY FINDINGS OF THE DEVELOPMENT ANALYSIS

Potential Impacts:

- Due to strong baseline Federal, state, and county-level programs and policies, most future residential, commercial, and resort development activity in Hawaii is anticipated to occur outside of critical habitat areas. However, some development may affect essential features of critical habitat by drawing more human presence to remote, undisturbed coastal beach areas.
- Critical habitat designation is most likely to result in conservation requirements for future residential, commercial, and in particular, resort development, where large new developments are planned in areas not already heavily visited by humans.
- No consultations have historically occurred for development projects with respect to the Hawaiian monk seals. The specific conservation needs for future development that occurs adjacent to, but not within, the critical habitat is uncertain and would be evaluated on a project-by-project basis.

Geographic Distribution of Impacts:

- This analysis identifies three areas, two on Kauai (at Brennecke Beach and Keoniloa Bay), and one on Oahu (Turtle Bay Resort Expansion), in which potential resort development may occur adjacent to remote areas that are within the study area. Development is limited, in general, along the coastline of the State of Hawaii, and areas that support the bulk of existing development are not prime areas of use for the Hawaiian monk seal.

Key Uncertainties:

- The primary assumption of this analysis is that, due to the large number of existing concerns with respect to the protection of coastal resources, critical habitat designation for Hawaiian monk seal, while adding an additional administrative consideration, will have a relatively limited effect on the scope and scale of conservation measures undertaken for projects. To the extent that critical habitat designation becomes a limiting factor for a project, however, our analysis may underestimate impacts to particular projects, and to development activities overall.

7.2 EXTENT OF DEVELOPMENT ACTIVITY

223. According to the 2011 Proposed Rule and the 2014 Biological Report, the Main Hawaiian Islands and limited areas within the Northwest Hawaiian Islands (Midway and

French Frigate Shoals) may be subject to future coastal development that may affect the monk seals or their critical habitat. This analysis provides more specific information on the geographic areas on each island that are most likely to experience development pressure in the foreseeable future. Where information is available, we also identify proposed development projects that have the potential to affect the Hawaiian monk seal critical habitat.

7.2.1 DEVELOPABLE URBAN LAND WITHIN THE MHI

224. As described in Exhibit 7-1, the majority of the land area in Hawaii is classified as being used for conservation (48 percent) or agricultural land (47 percent), with only small portions currently classified as urban lands (less than five percent). A 2006 study of Hawaii's urban lands identified lands considered to be "developable." Exhibit 7-1 and the maps included in Exhibits 7-2 through 7-6 highlight the developable areas identified by this study on each island.[150, 151] The developable lands were identified as such because they do not contain existing structures, were not subject to physical limitations that would preclude development (e.g., slopes were less than 20 percent and the land was free of wetlands and waterways), and were greater than five acres. In addition, zoning restrictions were taken into consideration in the County of Honolulu. Overall, approximately 1.2 percent of the MHI area is considered developable urban land. These developable urban areas are concentrated on Oahu (five percent of the land area of the island). Less than one percent of Kauai, Maui, Lanai, Molokai, and the Big Island are considered developable urban areas, and no developable urban areas were identified on Niihau, Kahoolawe, and the NWHI. As discussed in the following sections, while development is most likely to occur in areas already classified as urban, development may also occur on lands currently classified as being used for conservation or agricultural purposes. It is these areas where conflicts with Hawaiian monk seal critical habitat appear most likely.

EXHIBIT 7-1. EXISTING LAND USE, BY ISLAND

ISLAND	TOTAL AREA (ACRES)	URBAN	CONSERVATION	AGRICULTURAL	RURAL	TOTAL DEVELOPABLE URBAN LAND[1]
Kauai	353,900	4.1%	56.2%	39.4%	0.4%	0.7%
Niihau*	46,100	0.0%	0.9%	99.1%	0.0%	
Oahu	386,188	26.1%	40.6%	33.3%	n/a	5.0%
Maui Nui	750,900	3.9%	41.5%	53.5%	1.1%	
Maui	*465,800*	*5.0%*	*41.8%*	*52.3%*	*0.9%*	1.1%
Kahoolawe	*28,800*	*n/a*	*100.0%*	*n/a*	*n/a*	

[150] Areas are identified using Hawaii State Office of Planning "Report on Urban Lands", May 2006. Maps of developable areas are available at: www.hawaii.gov/dbedt/op/projects/urban_lands_study/.

[151] Maps from the Hawaii Office of State Planning, Report on Urban Lands in the State of Hawaii, May 2006. Accessed online on September 19, 2012 at http://hawaii.gov/dbedt/op/projects/urban_lands_study/.

Lanai	*90,500*	*3.7%*	*42.2%*	*51.5%*	*2.7%*	0.1%
Molokai	*165,800*	*1.5%*	*30.0%*	*67.3%*	*1.1%*	0.5%
Hawaii	2,573,400	2.1%	50.7%	47.1%	0.1%	0.8%
NWHI**	1,900	n/a	100.0%	n/a	n/a	
Total	**4,112,388**	**4.8%**	**48.0%**	**46.9%**	**0.3%**	**1.2%**

Sources: HI Department of Business, Economic Development & Tourism, "2011 State of Hawaii Data Book: Section 6, Land Use and Ownership", accessed on September 24, 2012 at http://hawaii.gov/dbedt/info/economic/databook/db2011/index_html.
[1] Hawaii Office of State Planning, Report on Urban Lands in the State of Hawaii, May 2006.
Notes: For definitions of land use types, see Hawaii Revised Statutes, Section 205-2.
*Includes Kaula and Lehua; **Excludes Midway

EXHIBIT 7-2. DEVELOPABLE URBAN LAND ON THE ISLAND OF HAWAII (BIG ISLAND)

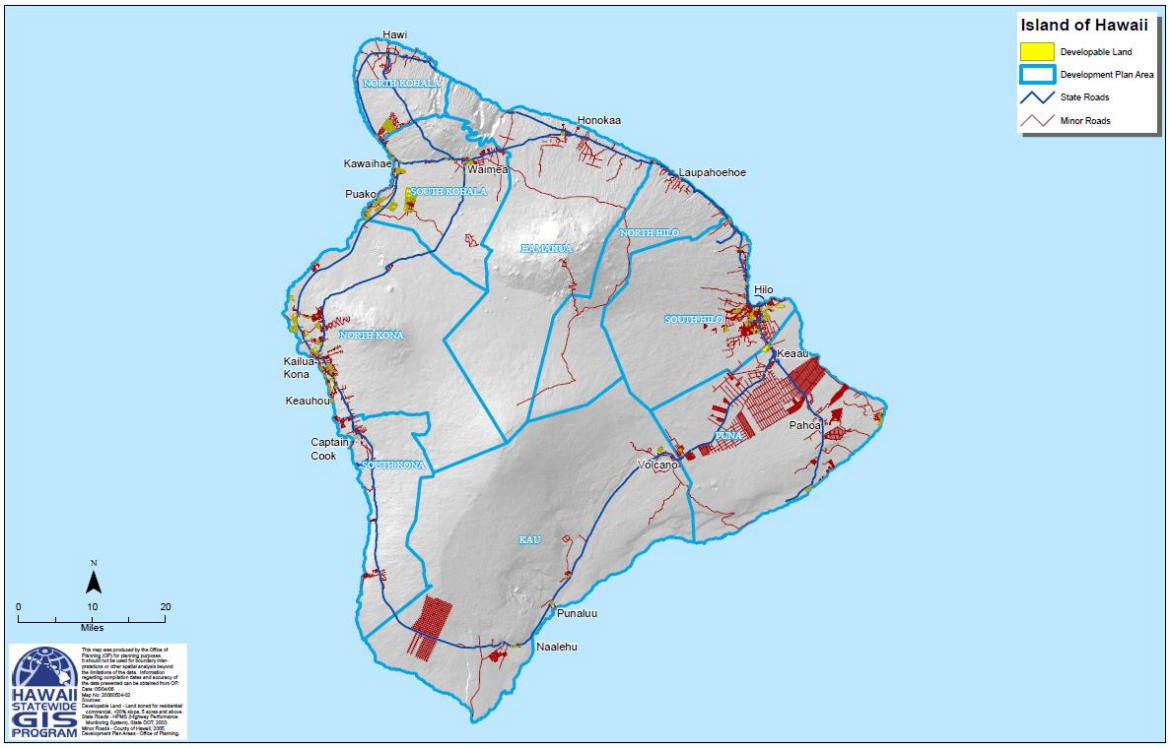


EXHIBIT 7-3. DEVELOPABLE URBAN LAND ON KAUAI

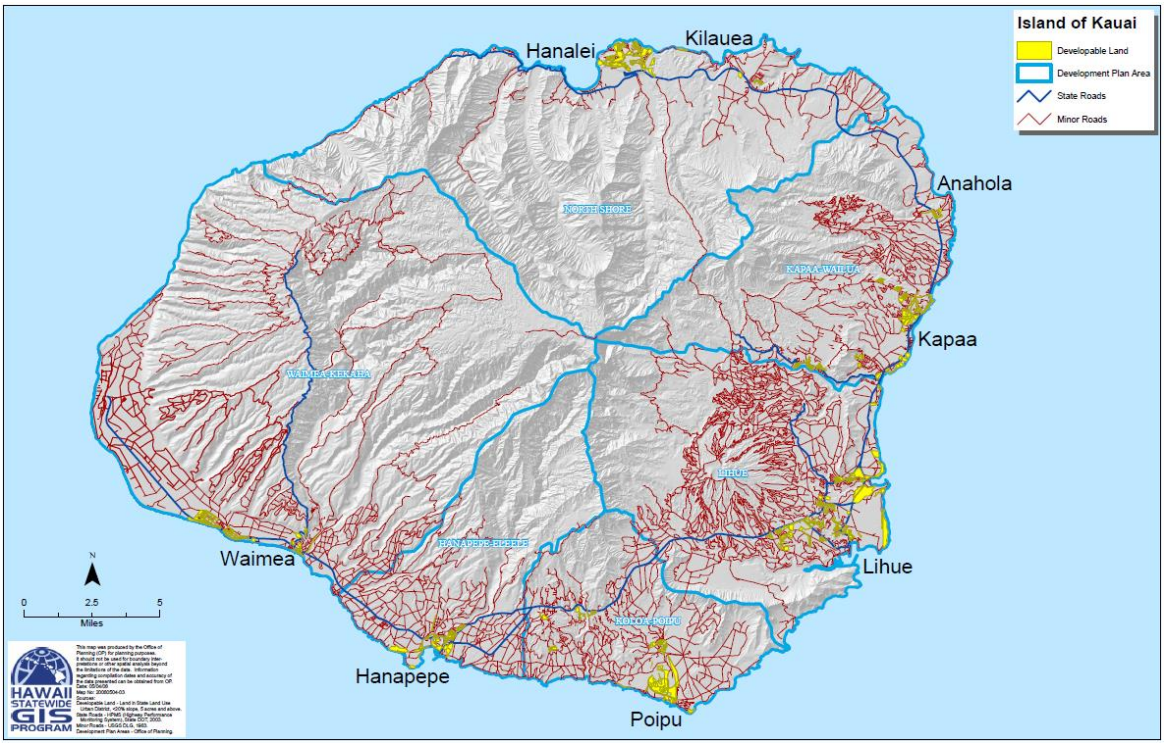


EXHIBIT 7-4. DEVELOPABLE URBAN LAND ON MAUI

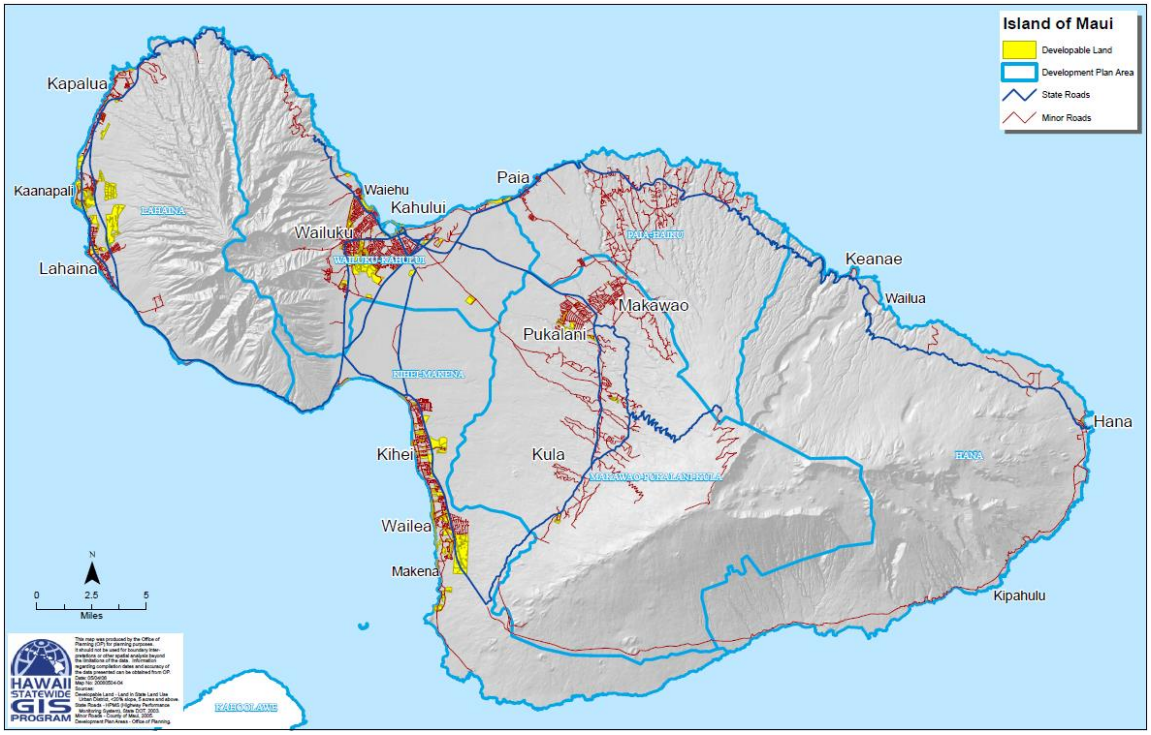


EXHIBIT 7-5. DEVELOPABLE URBAN LAND ON MOLOKAI AND LANAI

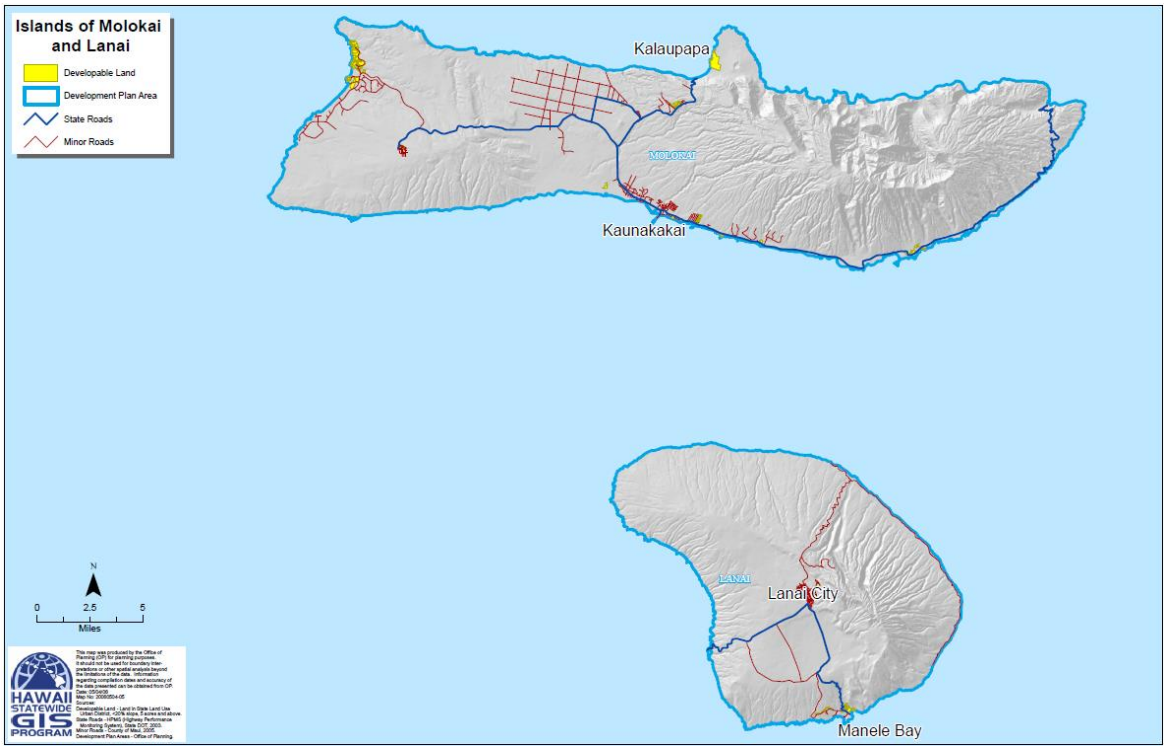
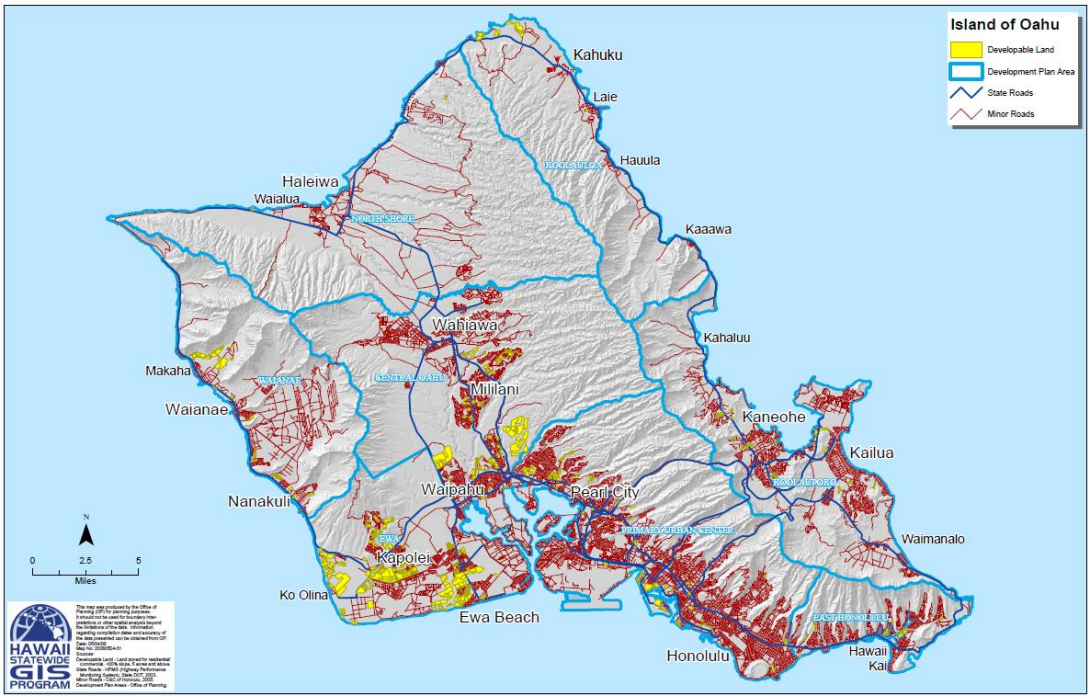


EXHIBIT 7-6. DEVELOPABLE URBAN LAND ON OAHU



7.2.2 POTENTIAL DEVELOPMENT PROJECTS WITHIN CRITICAL HABITAT

225. As described above, development activities in Hawaii are not necessarily limited to the urban district. This section describes potential development pressure within or adjacent to the study area, highlighting particular planned projects where possible.

Island of Hawaii (Big Island)

226. Coastal development is unlikely to affect monk seal critical habitat on the Big Island. Shorelines on the Big Island are dominated by rocky cliffs, lava flows, and otherwise undevelopable conditions. Much of the sandy beach areas are either state or county owned or maintained, and/or are in conservation designations. Low-lying areas that may support monk seal populations and where there is potential for coastal development include the shoreline between Kailua Kona and Kawaihae, on the northwestern side of the island. This area already supports a number of beach parks and resorts.[152] As highlighted in Exhibit 7-2, developable urban areas exist near the shoreline in this area. However, no known developments are planned in this area that may affect critical habitat.

[152] Personal communication with April Suprenant, Manager of Long Range Planning, Hawaii County Planning Department, on September 14, 2012.

Kauai

227. Kauai prides itself on maintaining a rural quality, referring to itself as the "Garden Island." County planners attempt to concentrate residential and commercial development around the existing urban centers of Lihue Hanamaulu-Puhi and Koloa-Poipu (south-southeastern portions of the island). The existing major resort areas are in Princeville (just west of Hanalei Bay), Wailua-Kapaya (central east coast), Lihue/Nukoliyi, and Poyipu (inland of Lihue). Additionally, Kauai's General Plan from 2000 identified the potential for a newer residential/resort community to develop at Kukuiula, near Poipu, an area which could be subject to continued development pressure in the future.[153] The coastline in this area support Hawaiian monk seal essential features, meeting the definition of critical habitat.

Maui Nui

228. On the island of Maui, development along the shoreline has already occurred in many areas. We identified two proposed, large-scale coastal development on Maui that may affectcritical habitat for the Hawaiian monk seal: the Makena hotel and resort development, and one residential housing project. A map of these proposed projects is provided in Exhibit 7-7.

229. The Wailea-Makena region occurs on the southwestern point of the island of Maui. A developer holds the appropriate state- and county-level approvals for development of a 1,800 acre property on the shoreline of Makena Bay, just north of Makena State Park. The developers, however, have not determined the design of future development, though they indicate their "intent is to keep it very rural and rustic in nature, and very low density."[154] Recently, Maui County Planning approved a 390 acre area to be added to the potential growth area, citing that "Looking at the process that this developer needs to go through…I feel comfortable in the sense that this area can be protected", also indicating that the developer will need to acquire zoning changes where development conditions will be negotiated.[155]

230. In addition to the potential Makena Resort expansion, one additional parcel is in the planning stages of development, E Paepae Ka Pukoa Spreckelsville, in the Wailuku-Kahului region of the island. The project includes a single-family unit residential housing project for 16 homes.

231. Molokai, Kahoolawe and Lanai are less developed islands and are subject to significantly less coastal resort development pressure than the Island of Maui. On Molokai in

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[153] Kauai General Plan, Ch. 2 and 3, accessed at http://www.kauai.gov/Government/Departments/PlanningDepartment/TheKauaiGeneralPlan/tabid/130/Default.aspx on September 19, 2012.

[154] Kalani, Nanea. "Panel Oks Makena acreage for growth," mauinews.com on 6 June 2012, accessed on 24 September 2012 at http://www.mauinews.com/page/content.detail/id/561776.html.

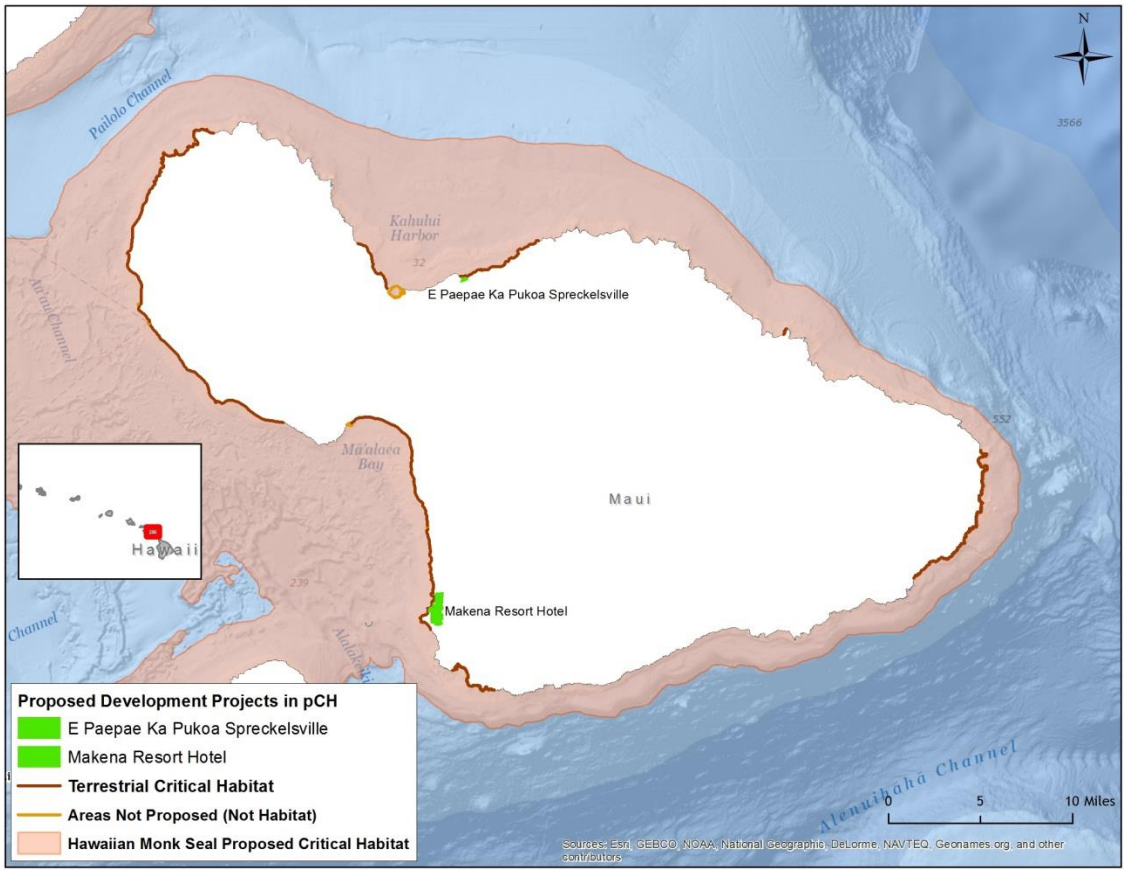
[155] Kalani, Nanea. "Panel Oks Makena acreage for growth," mauinews.com on 6 June 2012, accessed on 24 September 2012 at http://www.mauinews.com/page/content.detail/id/561776.html.

particular, recent development proposals have even been thwarted by residents in an effort to preserve the island from further development.[156]

Oahu

232. Oahu is the most developed of the Hawaiian Islands, with over a quarter of the land area classified for urban land use, as opposed to around four percent or less in on all other islands (see Exhibit 7-1). Of the total land area, about 5 percent is available for development, shown in Exhibits 7-1 and 7-6. Along the coast, developable areas occur on the northern tip of the island surrounding the existing location of Turtle Bay Resort. The coastline in this area supports the essential features meeting the defintion of monk seal critical habitat. This analysis identifies one large-scale coastal development that may affect critical habitat for the Hawaiian monk seals on Oahu.

EXHIBIT 7-7. PROPOSED DEVELOPMENT PROJECTS ON MAUI



233. The Turtle Bay Resort expansion project is a proposed extension of the existing resort on the northern tip of Oahu, between Kawela Bay and Kahuku Point. Expansion of the

[156] In the case of the La'au Point development proposed in 2007, the project was never pursued due to stark opposition from local residents (Personal communication with Mary Jorgensen, Maui County Planning, on 29 September 2012).

existing resort was previously approved in 1985 by the City and County of Honolulu Department of Land Utilization (now, the Department of Planning). After that approval, the resort and surrounding lands changed ownership multiple times. In 2006, the land was acquired by a new group of investors, who renewed the effort to pursue the proposed expansion. The threat of expansion prompted disapproval and legal challenge from some nearby communities who wanted to maintain rural, open space, citing concerns over traffic, beach access, effects on Native Hawaiian burials, and other environmental issues.[157] As a result of the legal challenge, the developers were required by the Hawaii Supreme Court to conduct a Supplemental Environmental Impact Statement (SEIS) to the 1985 EIS.

234. The SEIS Preparation Notice, published in August of 2011, outlines a modified development proposal for 625 hotel units, 590 resort homes, and 160 affordable housing units. This plan decreases the original build-out plan by about 60 percent, decreases building density, increases number of affordable housing units, and adds a 470-arcre conservation easement. Also in an effort to gain community support, the developers have been working in collaboration with the Trust for Public Land and the North Shore Community Land Trust, and have held meetings with the public and community advisory groups.[158] The Draft SEIS, originally proposed for summer 2012, was published in November 2012. The Final SEIS (FSEIS) was published in July 2013. The FSEIS considers potential impacts on monk seals, including increased interaction between humans and seals. The FSEIS suggests that the resort expansion may result in increased protection to hauled-out seals due to security monitoring, public education, and more efficient volunteer access. Measures suggested to mitigate increased human and monk seal interaction focus on public and community education programs to increase awareness of the presence of monk seals in the area.[159] The project is in the process of obtaining zoning adjustments, subdivision approvals, building permits, grading permits, NPDES permits, shoreline certification, and construction noise permits before breaking ground.[160] Maps of the proposed expansion are presented in Exhibits 7-8 and 7-9, below.

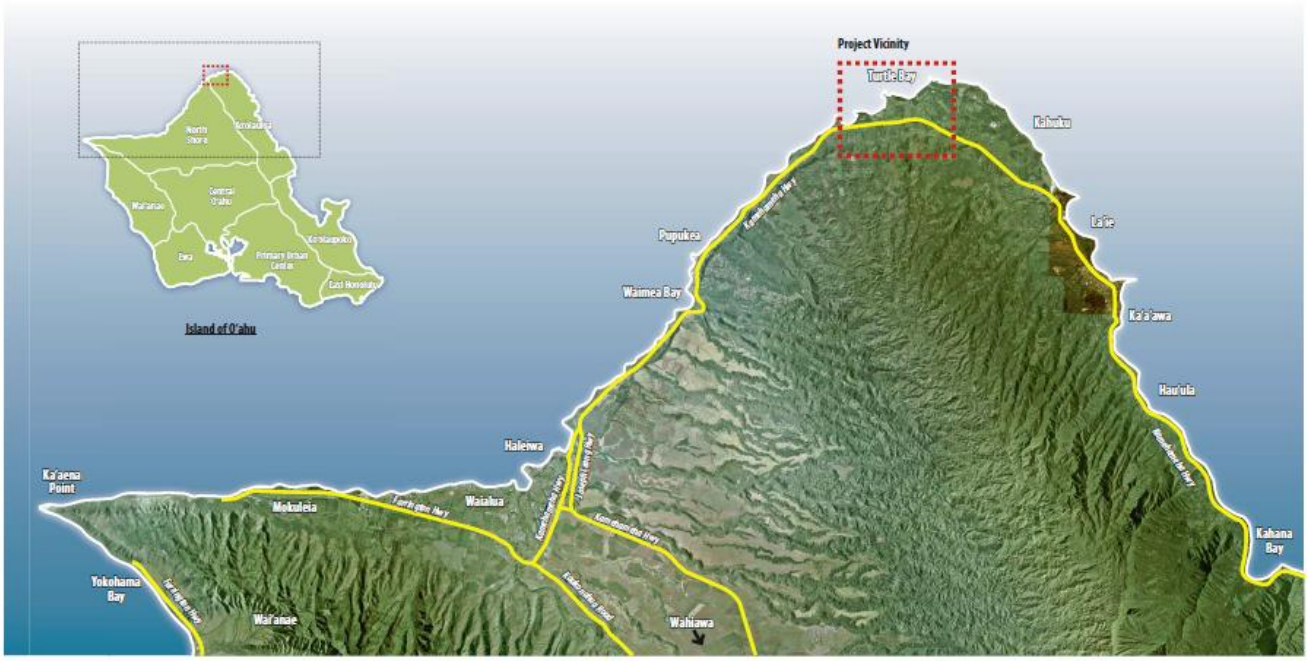
[157] "Turtle Bay project pared down," Star Advertiser, 31 March 2011, accessed at http://www.staradvertiser.com/news/20110331__Turtle_Bay_project_pared_down.html?id=118974619 on 24 September 2012.

[158] Lee Sichter LLC, "Turtle Bay Resort Environmental Assessment & Supplemental Environmental Impact Statement Preparation Notice", 8 August 2011, available at http://turtlebayseis.com/tbr/wp-content/uploads/2011/07/FINAL-EA-SEISPN-8-8-11-pdf.pdf.

[159] Lee Sichter LLC. Final Supplemental Environmental Impact Statement for Turtle Bay Resort Expansion. Volume 1 of 4. Prepared for Turtle Bay Resort, LLC. July 2013.

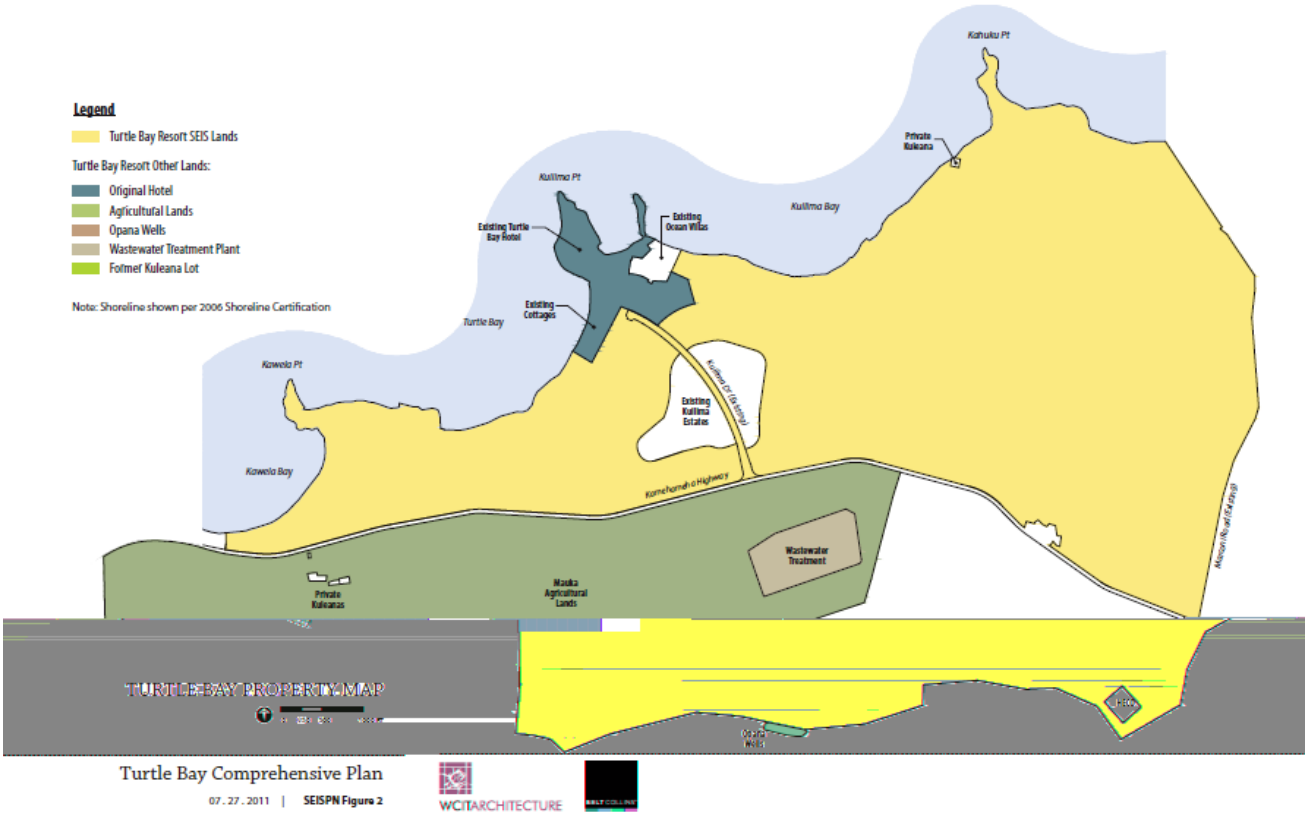
[160] Lee Sichter LLC, "Turtle Bay Resort Environmental Assessment & Supplemental Environmental Impact Statement Preparation Notice", 8 August 2011, available at http://turtlebayseis.com/tbr/wp-content/uploads/2011/07/FINAL-EA-SEISPN-8-8-11-pdf.pdf.

EXHIBIT 7-8. PROPOSED TURTLE BAY RESORT EXPANSION[161]



[161] Lee Sichter LLC, "Turtle Bay Resort Environmental Assessment & Supplemental Environmental Impact Statement Preparation Notice", 8 August 2011, available at http://turtlebayseis.com/tbr/wp-content/uploads/2011/07/FINAL-EA-SEISPN-8-8-11-pdf.pdf.

EXHIBIT 7-9. PROPOSED TURTLE BAY RESORT EXPANSION[162]



7.3 REGULATION OF COASTAL DEVELOPMENT IN HAWAII

235. Federal, state, and county governments each have jurisdiction over portions of the coastal zone. Traditional land management divisions (Ahupua'a) in Hawaii include *makai* lands, or those seaward of the shoreline out to the reef, and *mauka* lands, or those areas landward of the shoreline. In Hawaii, the shoreline is generally defined as the upper reach of the high water waves, other than during a storm.[163] The DLNR manages conservation lands in Hawaii, which include all *makai* lands, as well as mountains and wetlands. Activities proposed within a conservation district require a Use Permit (CDUP). County planning departments manage urban, rural, and agricultural lands. Agricultural lands include farmlands, grazing lands, and land unsuited for other categories, and are subject to use restrictions by the State. Urban development requires urban redistricting. Redistricting of agricultural to urban land requires a super majority approval by the LUC. Redistricting of conservation lands occurs only very rarely. Hawaii case law has

[162] Lee Sichter LLC, "Turtle Bay Resort Environmental Assessment & Supplemental Environmental Impact Statement Preparation Notice", 8 August 2011, available at http://turtlebayseis.com/tbr/wp-content/uploads/2011/07/FINAL-EA-SEISPN-8-8-11-pdf.pdf.

[163] §205A-1, HRS.

established that the public has the right to lateral shoreline access along any property in the state, regardless of development or upland land ownership.[164]

236. The following regulations and policies govern shoreline development in Hawaii, contributing to a high level of baseline protection for monk seal habitat from development threats:

- Hawaii Coastal Zone Management Act (HI CZMA);
- County Special Management Area rules (SMAs);
- State-level "Conservation District" land use designations;
- Shoreline Setbacks;
- Hawaii's Coastal Erosion Management Plan (COEMAP)[165]; and
- Existing coastal preservation areas, including: Natural Area Reserves (such as Kipahoehoe NAR, Hawaii, and Ahihi Kinau NAR, Maui), State Parks (such as Haena SP, Kauai), State Recreation Areas (such as Malaekahana, Oahu), scenic shorelines (such as Ka Iwi, Oahu), National Wildlife Refuges (such as, Kilauea Point NWR, Kauai), and Wildlife Sanctuaries (such as, Pauwalu Point, Maui).

7.3.1 FEDERAL OVERSIGHT OF COASTAL DEVELOPMENT

237. The CZMA (16 USC §§ 1451 et seq. 1972), administered by NOAA's Office of Ocean and Coastal Resource Management, establishes an extensive Federal grant program to encourage coastal states to develop and implement coastal zone management programs that provide for protection of natural resources, including wetlands, flood plains, estuaries, beaches, dunes, barrier islands, coral reefs, and fish and wildlife and their habitat. The CZMA also requires that Federal activities be consistent with approved state coastal programs.

238. As part of this cooperative effort to protect the nation's coastal resources, Hawaii developed a Coastal Zone Management Program (HICZMP), under the authority of HRS §205A, which was approved by NOAA in 1978. The HICZMP provides a framework for designing and implementing permitted land and water uses that uphold a set of objectives and policies outlined by the program. According to HRS §205A-2:

> "…special controls on developments within an area along the shoreline are necessary to avoid permanent losses of valuable resources and the foreclosure of management options, and to ensure that adequate access, by dedication or other means, to public owned or used beaches, recreation areas, and natural reserves is provided."

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[164] HI DLNR, "Report to the 23rd Legislature Regular Session of 2006: Requesting a Review and Analysis of the Issues Surrounding the Shoreline Certification for the Purpose of Establishing Shoreline Setbacks," December 2005, accessed on September 21, 2012 at http://hawaii.gov/dlnr/occl/documents-forms/policies-plans/.

[165] HI DLNR, Land Division Coastal Lands Program, "Hawaii Coastal Erosion Management Plan (COEMAP)", 2000, accessed on September 21, 2012 at http://hawaii.gov/dlnr/occl/documents-forms/policies-plans/.

The HICZMP specifically addresses the Hawaiian monk seal as a marine resource addressed by the program's objectives and policies.[166]

239. The HICZMP is implemented by each county through the administration of SMAs and shoreline setback provisions, and at the state level under DLNR Conservation District Regulations. All state and county agencies are required to enforce the CZM objectives and policies.

240. In addition to regulations specific to the coast, it is likely that many development projects will also require a section 404 permit from the USACE for fill of wetlands or discharge of dredge or fill materials into navigable waters of the U.S. (as discussed in chapter 3). These projects would therefore be subject to the Best Management Practices (BMPs) prescribed for USACE permitted projects.

7.3.2 STATE AND COUNTY OVERSIGHT OF COASTAL DEVELOPMENT

241. The State Office of Planning's Department of Business, Economic Development and Tourism (DBEDT) is the lead agency for the HICZMP. The state provides the support necessary for each county to administer the HICZMP. Counties do so by regulating development in geographically designated SMA via a permit system. Each county has a SMA permit system, the goal of which is to regulate development proposals for compliance with the HICZMP objectives and policies. The state, however, also has authority to regulate development within limited SMAs under the jurisdiction of the Hawaii Community Development Authority. A map of Hawaii's Special Management Areas is provided in Exhibit 7-10.

242. Permits for activities within SMAs are classified as either major or minor, depending on potential for environmental impact and the value of the proposed development. The review process for an SMA permit generally requires a description of the proposed activity, known alternatives, environmental setting and potential impacts, and, proposed mitigating actions. In some cases, a formal Environmental Assessment, subject to public review, is required.

243. The SMA permit system does not establish the types of land uses allowed in an SMA, but establishes a level of review for proposed development that is otherwise permissible by zoning designations for consistency with SMA guidelines. Therefore, SMA guidelines rarely provide justification for denying a project. SMA guidelines, however, can provide mitigation measures that will bring a project into compliance with SMA guidelines.[167]

244. Additionally, the HICZMP requires each county to establish shoreline setbacks of no less than 20 ft. and no more than 40 ft. inland from the shoreline, wherein no development is allowed. Variances for prohibited activities, however, may be issued following review at

[166] Hawaii State Office of Planning, "Hawaii Coastal Zone Management Program: Sustainable Management of the Islands," December 2011, accessed at http://hawaii.gov/dbedt/czm/program/doc/czm_program_description_2011.pdf on August 21, 2012.

[167] DBEDT, Participants Guide to SMA Permit Process, accessed September 2012 at http://hawaii.gov/dbedt/czm/program/sma/participant_guide_to_the_sma.pdf.

the county level. Additional levels of shoreline protection have been sought out in Hawaii due to the threat of shoreline erosion. Policies related to the avoidance of coastal erosion have included increased setbacks, and prevention of development and hardening of the shoreline.[168]

The County of Hawaii

245. Statewide, all beaches are owned by the state, and are zoned as Conservation Districts, or a designation of similar capacity. Projects intending to develop in or adjacent to Conservation Districts would be required to obtain a land use designation amendment. Planners have indicated that the permitting process would include conservation recommendations, including setbacks (1,000 ft. has been recently negotiated), and activity restrictions that prevent beach and shoreline alterations of any kind, with the exception of creation or maintenance of access trails.[169]

246. While small projects would be more likely to avoid section 7 consultation, large development projects are more likely to result in section 7 consultation with NMFS due to their higher visibility and need for Army Corps permits. However, as noted above, there is no history of consultation on development activities for monk seals to date. In addition, existing environmental regulations and programs already limit development of sandy beaches and shorelines. County Planners also state that it appears unlikely that critical habitat designation for Hawaiian monk seal would alter permitting decisions.[170] Consequently, the critical habitat designation, in general, is not expected to affect development on the Island of Hawaii above and beyond the level of conservation that would be implemented absent critical habitat designation.

The County of Kauai

247. State regulations do not allow residential development or resort development on undeveloped shoreline lands that are in the State Conservation District. Kauai's General Plan policy indicates that the first priority in urban or rural land adjacent to the Conservation District along the coast is to preserve and protect sandy beaches. Additionally, the county intends to actively acquire shoreline lands as part of a land-banking program.[171]

248. In December 2007, the Kauai County Council increased its setback minimum by passing a shoreline setback ordinance mandating a 40 ft. minimum setback, plus 70 times the annual coastal erosion rate as recommended in the Hawaii Coastal Hazard Mitigation

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[168] HI DLNR, Land Division Coastal Lands Program, "Hawaii Coastal Erosion Management Plan (COEMAP)", 2000, accessed on September 21, 2012 at http://hawaii.gov/dlnr/occl/documents-forms/policies-plans/.

[169] Personal communication with April Suprenant, Manager of Long Range Planning, Hawaii County Planning Department, on September 14, 2012.

[170] Personal communication with April Suprenant, Manager of Long Range Planning, Hawaii County Planning Department, on September 14, 2012.

[171] County of Kauai, "Kauai General Plan", November 2000. Accessed on September 21, 2012, at http://www.kauai.gov/Government/Departments/PlanningDepartment/TheKauaiGeneralPlan/tabid/130/Default.aspx.

Guidebook.[172] Due to these baseline protections, critical habitat designation is unlikely to further affect development projects on Kauai.

The County of Maui Nui

249. Maui Nui is currently in the process of developing new growth boundaries, and through this process is attempting to direct new development away from the shoreline. It is the County's intention to consider environmentally sensitive areas, in order to avoid adverse impacts from development. Any new development proposals are screened through the SMA process.[173] However, some lands have already been entitled that will likely undergo development in the next 10 years. Entitled lands have already received all the major discretionary approvals, including appropriate State Districting, County Development plan designation, and County zoning approvals. Entitled lands may lack administrative permits, such as grading and building permits. There also is also the possibility for in-fill development that would increase density in areas that are already entitled.[174] Because it is not certain whether potential impacts to monk seal critical habitat would already be adequately considered in the SMA process, critical habitat for the monk seal has the potential to affect some proposed development projects in Maui Nui.

The City and County of Honolulu

250. Similar to the other counties, shoreline and coastal protection is a top priority in strategic development planning, for purposes of natural and cultural resource protection, tourism, and erosion prevention.[175] In 2007, the City and County of Honolulu declined continued participation in the HICZMP, in part due to concerns with obligations to implement an Ocean Resources Management Plan.[176] The City and County of Honolulu, however, continues to implement an SMA permit system.

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[172] http://www.beachapedia.org/State_of_the_Beach/State_Reports/HI

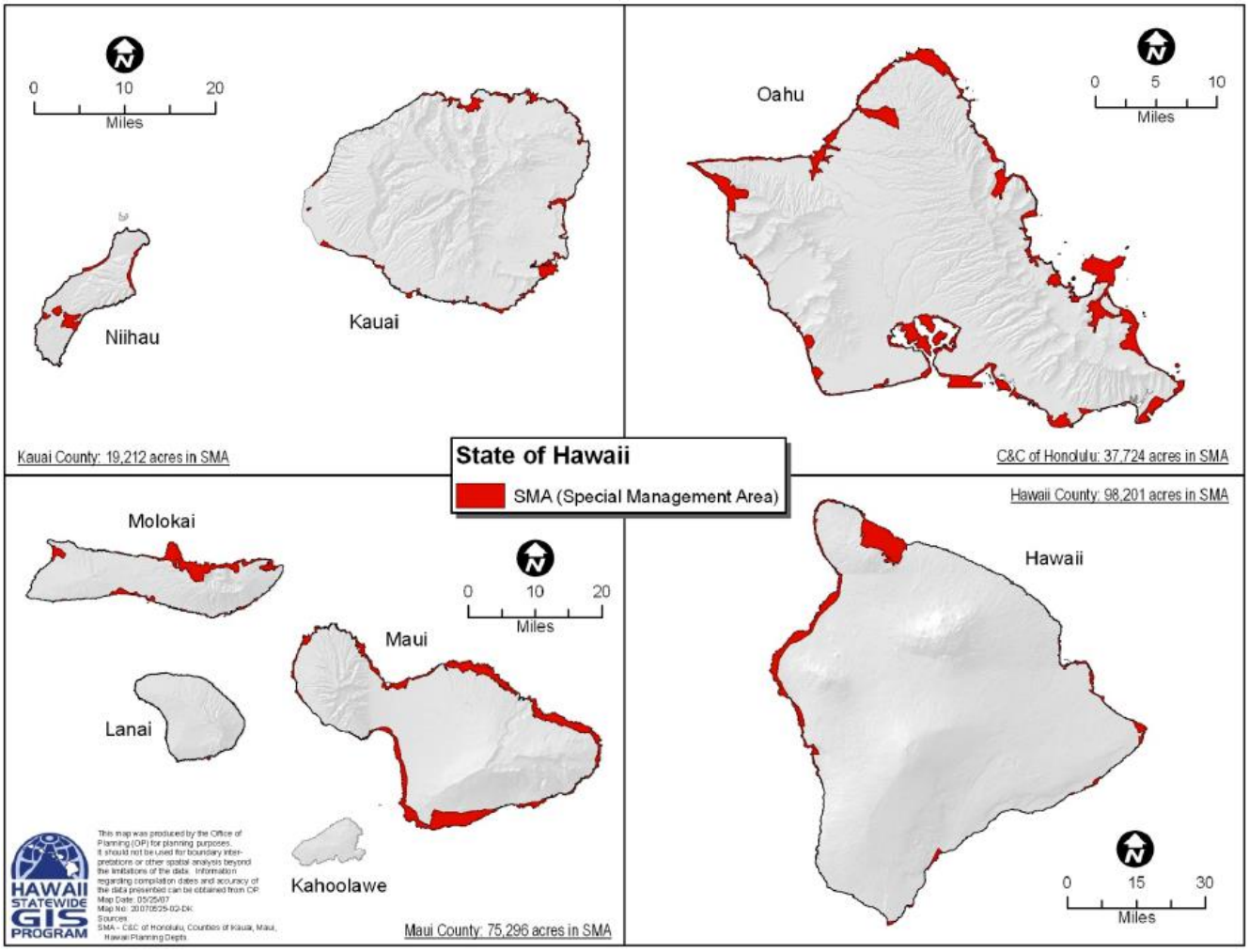
[173] Personal communication with Simone Bosco, Maui County Planning, on 21 August 2012.

[174] Personal communication with Simone Bosco, Maui County Planning, on 21 August 2012.

[175] Department of General Planning, City and County of Honolulu, General Plan Objectives and Policies, amended October 2002. Accessed on September 21, 2012 at http://honoluludpp.org/Planning/GeneralPlan/GPReport.pdf. As a note, at the time of this report, Oahu was in the process of updating the General Plan for 2035.

[176] NOAA OCRM, "Hawaii Coastal Zone Management Program Final Evaluation and Findings – 2010", January 2010. Accessed online at http://coastalmanagement.noaa.gov/mystate/docs/hawaiicmp2010.pdf on August 20, 2012.

EXHIBIT 7-10. SPECIAL MANAGEMENT AREAS IN HAWAII



7.3.3 EXISTING CONSERVATION MEASURES REQUIRED

251. Through existing permitting processes via USACE (e.g., section 404 permits) and other permitting agencies granting permits in coastal areas, a standard set of Best Management Practices is already recommended for all activities that would occur within or adjacent to proposed critical habitat for the Hawaiian monk seal. Relevant to Hawaiian monk seal critical habitat, project proponents must:

- Conduct regular surveys and monitoring efforts for presence of the species during work to avoid disturbance or interaction; and
- Undertake measures to avoid leaking contamination into habitat areas.[177]

[177] NMFS Protected Resources Division, "Best Management Practices (BMPs) for General In- and Near-Water Work Including Boat and Diver Operations," June 2011.

252. The additional county-level protections described above are recommended or required for projects seeking shoreline development permits on a case by case basis. These protections often avoid effects of the development on Hawaiian monk seal habitat; for example, in Hawaii, setbacks as large as 1,000 ft. have been negotiated in order to avoid development impacts on the shore.

7.4 EVALUATION OF POTENTIAL IMPACTS ON COASTAL DEVELOPMENT ACTIVITIES

253. Impacts of critical habitat designation for the monk seal on development are significantly uncertain. Development of coastal areas is governed by Federal, state, and county-level programs and policies, as described above, that provide significant baseline protection to the proposed critical habitat area. No consultations have historically occurred for development projects with respect to the Hawaiian monk seals. This is likely because the development does not typically occur directly within, but adjacent to the seal's coastal habitat. The effects of development that occurs adjacent to, but not within, the critical habitat is uncertain and would be evaluated on a project-by-project basis. This evaluation accordingly focuses on identifying where development projects may threaten monk seal critical habitat, and therefore potentially be subject to additional regulation following the designation.

254. As described in the 2014 Biological Report, the following project modifications may be recommended to avoid potential adverse effects on the Hawaiian monk seals and their habitat.

- Restrictions on spatial extent of the project;
- Monitoring efforts to identify impacts to monk seal use
- Increased education efforts with an emphasis on habitat protection;
- Limitations on providing new or increased access to remote areas[178]

255. As described above, development projects already conduct regular surveys and monitoring efforts to avoid effects of the activities on listed species, including monk seals. These monitoring efforts are conducted as part of best management practices through permitting agencies, and do not constitute consultation with NMFS. Existing regulations governing development of the coastline also already limit the extent of development that may occur regardless of the critical habitat designation. It is therefore uncertain whether critical habitat designation may further affect the scope and scale of development projects, above and beyond the conservation measures that would already be implemented due to the significant protection of the coast in general and the presence of the monk seal in particular.

[178] National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report, October 2013 and November 2014 drafts, received from NMFS on November 13, 2013 and November 12, 2014, respectively.

256. Development is a particular concern in areas that are both frequented by monk seals and are relatively remote and undisturbed.[179] The issue with development in these areas is that the projects may increase visitation to currently isolated beach areas preferred by the monk seals. NMFS has identified areas within the study area that are currently relatively remote and undisturbed. Resort development that would increase beach visitation is of particular concern for these sites, which are mapped in Exhibit 7-11. Exhibit 7-12 identifies those remote, undisturbed sites that may experience development pressure, or where particular proposed development projects occur.

257. This analysis highlights these areas for NMFS as those areas most likely to experience incremental impacts of critical habitat designation on development activities. As described above, however, information is not available on whether or how, specifically, critical habitat designation may change the scope and/or scale of these projects, without project specific details. Monetization of potential economic impacts to these projects would therefore be speculative. Only two of the relatively remote areas within the study area have been identified as overlapping proposed development projects: 1) potential resort/residential development at Kukuiula, near Poipu, on Kauai (including resort/residential development at Brennecke Beach and Keoniloa Bay); and 2) expansion of the Turtle Bay resort area on Oahu.

258. While the Makena hotel and resort on Maui is proposed to occur adjacent to the study area, NMFS has not identified any remote, undisturbed areas of particular concern with respect to development on the Island of Maui due to the existing level of shoreline development. In addition, neither of the proposed housing developments on Maui occur in or near remote monk seal beaches of concern.[180] Although developable parcels have been identified on Molokai near the remote preferred pupping sites on Kalaupapa, we expect the designation of this area as a National Historic Park, and a history of opposition to future development on the island (see section 7.2.2, above), may deter future development. We therefore do not highlight Molokai as an area in which development activities are particularly vulnerable to additional regulation following critical habitat designation.

[179] Personal communication with NMFS, July 18, 2012.

[180] GIS shapefile of development projects, Maui County Planning, GIS Section, Long Range Division. Accessed at http://www.co.maui.hi.us/index.aspx?NID=1487 on 8 August 2012.

EXHIBIT 7-11. REMOTE, UNDISTURBED AREAS OF CONCERN WITHIN THE STUDY AREA

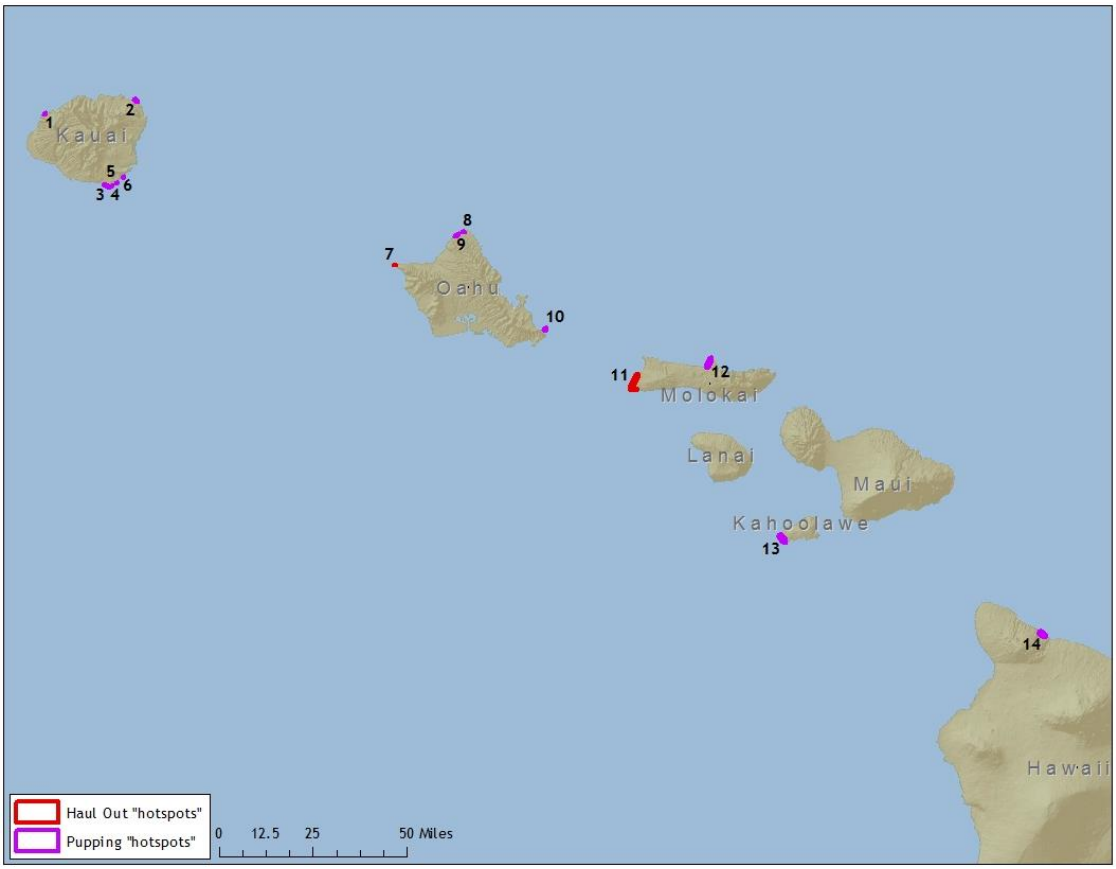


EXHIBIT 7-12. DEVELOPMENT PRESSURE AND PROJECTS NEAR REMOTE, UNDISTURBED AREAS

	LOCATION/DESCRIPTION OF REMOTE AREA	POTENTIAL FOR FUTURE DEVELOPMENT
Kauai		
1	Milolii Beach/State Park (west of Na Pali coast)	None
2	Between Pilaa Beach and Moloaa Bay (northeastern coast)	None
3	Brennecke Beach (southern extent)	Resort/residential development pressure in Poipu area; Overlaps developable urban area (see Exhibit 7-3)
4	Keoniloa Bay (southern extent)	Resort/residential development pressure in Poipu area
5	Gilins Beach (southern extent)	None
6	Kipu Kai Beach (southern extent)	None
Oahu		
7	Kaena Point State Park (westernmost point)*	None

LOCATION/DESCRIPTION OF REMOTE AREA		POTENTIAL FOR FUTURE DEVELOPMENT
8	Kaihalulu Beach (Turtle Bay area)	Turtle Bay Resort Expansion
9	Between Kauanala Beach and Kawela Bay (Turtle Bay area)	None
10	Manana Island (off the coast of Waimanalo Bay)	None
Maui Nui		
11	Westernmost tip of Maunaloa (Molokai)*	None
12	Kalaupapa (Molokai)	Overlaps developable urban area (see Exhibit 7-5)
13	Westernmost tip of Kahoolawe	None
Hawaii		
14	Waimanu Bay (northeastern extent of northern point)	None
Source: Email communication with NMFS, 4 September 2012. **Note**: All locations are pupping locations, with the exception of hotspots labeled with a "*" which indicate haul out locations.		

7.5 RESULTS OF THE ANALYSIS

259. In general, we expect limited development activities to occur adjacent to critical habitat for the Hawaiian monk seal in the foreseeable future. Specifically, proposed development projects on Kauai and Oahu overlap remote areas meeting the definition of Hawaiian monk seal critical habitat, and are therefore most likely to experience impacts of designation due to concern regarding the potential for increased access to monk seal beaches. The extent to which critical habitat designation may incrementally limit these projects (above and beyond constraints associated with the presence of the monk seal and the significant baseline regulation of coastal development), however, is significantly uncertain.

260. Outside of Kauai and Oahu, critical habitat designation is expected to have a limited effect on development activities. On the Big Island, county planners have indicated that the permitting process would include conservation recommendations, including setbacks (1,000 ft. has been recently negotiated), and activity restrictions that prevent beach and shoreline alterations of any kind, with the exception of creation or maintenance of access trails and have stated that critical habitat designation for the Hawaiian monk seal is not expected to alter permitting decisions.[181] Consequently, the critical habitat designation is not expected to affect development on the Big Island above and beyond the level of conservation that would be implemented absent critical habitat designation. While Maui Nui supports some proposed development projects, these projects are generally limited to the Island of Maui, which is already largely developed and does not include any

[181] Personal communication with April Suprenant, Manager of Long Range Planning, Hawaii County Planning Department, on September 14, 2012.

identified remote, undisturbed areas of concern. The outlying islands of Maui Nui are subject to very limited development pressure. Finally, development is limited in the NWHI due to its designation as a National Monument.

261. Information is insufficient to quantify potential impacts to development activities for the following key reasons.

- First, project modifications that may be recommended to ensure that development activities avoid adverse modification of monk seal critical habitat will be project-specific and will depend on the nature and location of the development activities.
- Second, coastal resources in Hawaii are already afforded a high level of baseline protection through the national Coastal Zone Management Act (CZMA) and its implementation at the State and county levels through Special Management Area permitting, among other county-specific land use designations and related protections.
- In addition, NMFS may recommend conservation measures for development projects to avoid jeopardy to the monk seal, regardless of the critical habitat designation.

Even absent the designation of critical habitat, development in coastal areas requires extensive review and permitting to avoid adverse effects on water quality and sensitive coastal resources, including listed species in general and the monk seal in particular. Due to the significant level of baseline protection, the extent to which the critical habitat designation will generate additional conservation requirements for development activities is significantly uncertain.

262. Absent a quantitative assessment of impacts, to provide the best available information to NMFS regarding where the benefits of excluding particular areas from critical habitat may outweigh the benefits of including those areas as critical habitat, this analysis highlights geographic areas and projects, that may affect critical habitat for the monk seal and therefore be subject to additional regulation following the designation.

7.6 ASSUMPTIONS AND LIMITATIONS

263. Exhibit 7-13 describes the key assumptions relied upon in the development analysis and the influence of those assumptions on the results of the analysis.

EXHIBIT 7-13. KEY ASSUMPTIONS ASSOCIATED WITH THE ESTIMATED INCREMENTAL IMPACTS OF CRITICAL HABITAT ON DEVELOPMENT

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED IMPACTS
Existing shoreline protections limit the extent of development within or adjacent to the study area.	May result in an **underestimate** of potential impacts.	**Likely minor.** All counties have indicated that they are attempting to limit development of coastal areas due to sensitive coastal resources even beyond listed species concerns, such as coastal erosion. Development of coastal areas is therefore unlikely to extend beyond those already developed shoreline areas and those areas with identified proposed projects.
Development projects adjacent to monk seal hotspots, as identified by NMFS, are most likely to experience impacts of critical habitat designation.	May result in an **underestimate** of potential impacts.	**Likely minor.** As described above, development of coastal areas is likely to be limited, in general, regardless of critical habitat designation. As such, even in the case that all future coastal development considers potential effects on monk seal critical habitat, impacts are likely to be limited.
Due to a strong regulatory baseline, critical habitat designation is likely to have a limited effect on coastal development projects.	May result in an **underestimate** of potential impacts.	**Potentially major.** We assume that due to the large number of regulations with respect to the protection of coastal resources, critical habitat designation for Hawaiian monk seal, while adding an additional administrative consideration, will have a relatively limited effect on the scope and scale of conservation measures applied. To the extent that critical habitat designation becomes the limiting factor for a project, however, our analysis may significantly underestimate impacts to particular projects, and to development activities overall.

CHAPTER 8 | AQUACULTURE

8.1 INTRODUCTION

264. This chapter describes the potential economic impacts of critical habitat designation for the Hawaiian monk seal on aquaculture projects within the study area. Aquaculture activities considered in this chapter include any farming of plants or animals in nearshore or pelagic areas meeting the definition of Hawaiian monk seal critical habitat areas. Activity related to maintenance and improvement of fishponds is also discussed in this chapter. The Hawaii Department of Agriculture actively promotes aquaculture as an emerging industry in Hawaii's coastal waters, providing guidance for new and ongoing aquaculture projects through the Aquaculture Development Program (ADP). Research-focused and commercial projects are ongoing in the MHI, and the industry is expected to continue growing in the future. Aquaculture projects may affect the essential features of Hawaiian monk seal habitat in the following ways:

1. Aquaculture activities that include the placement of cages or structures that are anchored in the marine environment have the potential to alter the quantity and quality of foraging areas or marine areas adjacent to pupping areas;
2. Construction and operation of in-water structures may impact water quality in foraging areas, subsequently impacting the quality and quantity of prey resources;

265. The 2014 Biological Report identifies aquaculture as an activity that may pose a threat to essential features of critical habitat for Hawaiian monk seal in specific areas 13, 14, 15, and 16 (Kauai, Oahu, Maui Nui, and Hawaii in the MHI). The Biological Report does not identify any specific areas in the NWHI that are threatened by aquaculture activity. Research undertaken for this economic analysis indicates that aquaculture has recently been focused on the islands of Oahu and Hawaii, but that future projects may expand to Kauai and Maui Nui as well.

KEY FINDINGS

Quantified Impacts:

- We estimate a total of $7,840 ($1,120 annualized) in costs to parties involved in operating or regulating aquaculture-related activities occurring within Hawaiian monk seal habitat in the next 10 years (assuming a seven percent discount rate). These costs reflect an average of 0.5 projects annually.
- Critical habitat designation is not expected to change conservation measures recommended during section 7 consultation on aquaculture projects. Therefore, quantified impacts solely represent costs of additional administrative effort associated with critical habitat designation for the monk seal.

Unquantified Impacts:

- Marine aquaculture activity has historically been limited to, and is only projected for, Oahu and the island of Hawaii. However, state officials and project proponents have indicated interest in expanding the industry to other islands, such as Maui, Lanai, and Kauai. To the extent that aquaculture activities are undertaken on these islands in the future, we expect critical habitat designation would generate additional administrative impacts of section 7 consultation.

Geographic Distribution of Impacts:

- Costs are expected to be greatest on Hawaii, followed by Oahu. These are the islands that are most likely to support aquaculture projects in the foreseeable future.

Key Uncertainties:

- This analysis relies on patterns of historical consultation to forecast future aquaculture activity, assuming that rates of past consultations provide a good indication of future consultation activity. The future trajectory of the aquaculture industry is unknown, and significant growth or decline in the prevalence of offshore aquaculture could lead to underestimation or overestimation of impacts in specific areas.
- We conclude that the use of Best Management Practices (BMPs) and compliance with existing regulations and permits are likely to avoid potential impacts of future aquaculture activities on monk seal critical habitat, and therefore that no additional project modifications will be recommended due to critical habitat designation. To the extent that additional project modifications to avoid impacts to monk seal habitat may be necessary for future projects, this analysis may underestimate costs.

266. The remainder of this chapter is divided into five sections. The first section describes the extent of historical and ongoing aquaculture activity in the MHI and NWHI. The second discusses State and Federal regulation of these activities, as well as BMPs already in place that address potential environmental impacts of aquaculture projects. The third section describes the methods employed to estimate the impacts of critical habitat designation on future aquaculture activity. The fourth section presents the resulting forecast of economic impacts across the study area, and the chapter ends with a discussion of assumptions and limitations underlying the analysis of impacts.

8.2 EXTENT OF REGIONAL AQUACULTURE INDUSTRY

267. In 2010, 75 distinct aquaculture projects were in operation throughout the MHI, including projects in inland, coastal, nearshore, and pelagic areas. These projects were valued at a total of $30 million by the U.S. Department of Agriculture (USDA) National Agricultural Statistics Service. Exhibit 8-1 summarizes the value of the industry by species type. Algae production contributed the most toward the overall total, making up over half of the total value of aquaculture activity in the state. Exhibit 8-2 indicates the pattern of growth in the aquaculture industry from 1990 through 2010. The number of aquaculture operations has decreased from a peak in 1996, but the total value of the industry increased steadily through 2005 and oscillated between 2005 and 2010.

EXHIBIT 8-1. VALUE OF 2010 AQUACULTURE OPERATIONS BY PRODUCTION CATEGORY, INCLUDING ON-SHORE FACILITIES

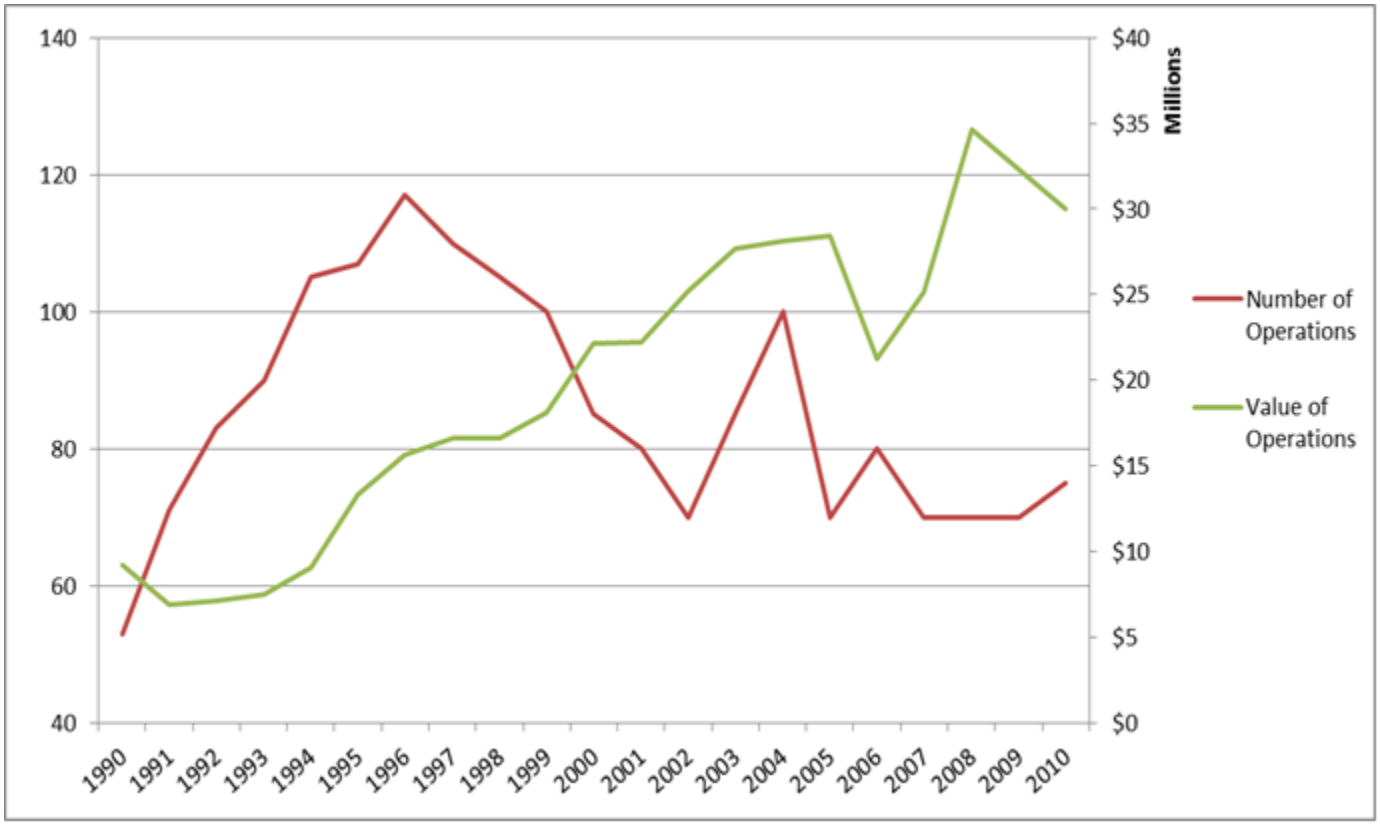
PRODUCTION CATEGORY	VALUE OF OPERATIONS (THOUSANDS)
Algae	$16,725
Other	$9,821
Ornamental	$1,837
Finfish	$1,012
Shellfish	$575
Total	$29,970

Source: USDA National Agricultural Statistics Service, 2010 Hawaii Annual Statistics Bulletin.
Note: Statistics reported above include aquaculture activities that occur in established facilities on shore. USDA statistics do not isolate aquaculture activity occurring on the coast or off shore.

268. Regardless of location, aquaculture projects with the potential to affect monk seal critical habitat include those with anchored cages or facilities, or those that otherwise disturb the seafloor. Aquaculture operations located in a marine environment, however, constitute only a small fraction of the value of the broader aquaculture industry in Hawaii. Ongoing marine commercial aquaculture projects are currently few and small in scale, with current projects located in waters near the island of Hawaii that meet the definition of Hawaiian

monk seal critical habitat.[182] Nearshore and pelagic operations are generally focused on finfish production, which made up only 3.4 percent of the total value of the aquaculture industry in 2010. Several research efforts are also underway throughout the MHI in areas that overlap with the study area. In recent years, marine aquaculture projects have moved to deeper waters, and several projects have incorporated cages that are not anchored to the seafloor. To the extent that future marine operations incorporate design changes that minimize disturbance to benthic habitat, such as anchorless systems, they will be less likely to affect monk seal foraging habitat and are therefore less likely to be affected by monk seal critical habitat designation.[183] A 2005 study that tracked monk seals with radio transmitters indicated that seals foraging in the MHI usually remained in nearshore waters at depths less than 200 meters.[184]

EXHIBIT 8-2. AQUACULTURE OPERATIONS IN HAWAII, 1990-2010



Source: 2011 State of Hawaii Data Book. Hawaii Department of Business, Economic Development, and Tourism.

[182] Communication with Pacific Islands Regional Coordinator, NMFS Office of Aquaculture, July 26, 2012.

[183] Communication with Aquaculture Development Program Manager, Hawaii Department of Agriculture, July 24, 2012.

[184] Littnan CL, Stewart BS, Yochem PK, Braun R (2006) Survey for selected pathogens and evaluation of disease risk factors for endangered Hawaiian monk seals in the main Hawaiian Islands. EcoHealth 3: 232-244.

8.3 REGULATION OF AQUACULTURE IN THE STUDY AREA

269. Marine aquaculture projects require a permit from the U.S. Army Corps of Engineers (USACE), under Section 10 of the Rivers and Harbors Act of 1899, for the creation of any obstruction to navigation.[185] 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. This permitting system constitutes a Federal nexus for marine aquaculture projects.[186] Thus, all aquaculture projects within or affecting the monk seal critical habitat are likely to be subject to section 7 consultation to consider the potential for adverse modification.

270. The State of Hawaii may require additional permits depending on the project characteristics, such as size and location. Aquaculture Facility Licenses are required for operators taking regulated marine life from the ocean with the intention of raising the marine life for commercial purposes. Conservation District Use permits are required for projects located within state-designated Conservation Districts. These permits require operators to meet certain qualifications or agree to specific conditions that minimize the impacts of the project on the environment.[187]

271. Under Section 402 of the Clean Water Act, the U.S. Environmental Protection Agency (USEPA) maintains permit authority to protect marine waters from pollution, which USEPA has delegated to the Hawaii Department of Health's Clean Water Branch (CWB). This delegated authority requires that any applicant proposing to undergo construction or other activities that may result in any discharge into navigable waters must obtain a National Pollutant Discharge Elimination System (NPDES) permit. To obtain a permit, applicants must show that the discharge will comply with the state's water quality standards and other water-resource protection requirements. Aquaculture facilities producing less than 45,454 harvest weight kilograms per year can be exempted from the permit requirements.[188] The USEPA may also require an Ocean Discharge Permit, under authority provided by the Ocean Dumping Act 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.[189]

272. Large projects or those expected to have significant environmental impacts may be required to satisfy the requirements of the National Environmental Policy Act. The burden lies 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

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[185] Rivers and Harbors Appropriation Act of 1899. 33 U.S.C. 403.

[186] ECONorthwest. (2010). Draft Economic Analysis of Critical Habitat Designation for the Hawaiian Monk Seal.

[187] Communication with Aquaculture Development Program Manager, Hawaii Department of Agriculture, July 24, 2012.

[188] Clean Water Act. 33 U.S.C. 1251 et seq.

[189] Ocean Dumping Act. 33 U.S.C. 1412.

will prepare an environmental assessment or, if the project is significant and controversial, an Environmental Impact Statement.[190]

273. In 2001, the USDA provided funding to the University of Hawaii Sea Grant Extension Services to develop a set of BMPs for aquaculture operators in Hawaii. Recommended methods for minimizing the environmental impact of aquaculture operations include:

1. Careful site selection taking into account ecologically-sensitive areas.
2. Water quality monitoring and accurate record-keeping of feed rates.
3. Active effluent management to limit, treat or remove dissolved nutrients or suspended solids discharged from aquaculture facilities.
4. These BMPs were designed to "help mitigate the potential for impact on an already delicate aquatic environment," and are already widely implemented to reduce effluent discharge and improve productivity across the aquaculture industry in Hawaii. [191]

8.4 METHODOLOGY FOR EVALUATING IMPACTS ON AQUACULTURE ACTIVITIES

274. Absent information on the specific location of future projects, the demand for new facilities and the locations of those facilities are expected to be similar to patterns seen in recent years. The analysis relies on historical consultations and expected aquaculture projects to forecast consultations on aquaculture projects throughout the MHI.

8.4.1 IMPACTS OF ADDITIONAL CONSERVATION EFFORTS

275. The 2014 Biological Report lists possible modifications to aquaculture projects that NMFS would recommend in section 7 consultation to avoid adverse modification to monk seal critical habitat. Exhibit 8-3 lists the general types of project modifications that NMFS biologists expect to consider. Existing BMPs for management of aquaculture projects address many of the issues that are likely to concern NMFS, including water quality monitoring, consideration of ecologically sensitive areas during operation and site selection, and efforts to control effluent discharge. These BMPs, combined with existing permitting requirements and water quality regulations, significantly overlap the set of project modifications recommended by NMFS, indicating that these conservation measures are likely to already be in place even absent critical habitat designation. This analysis therefore concludes that while consultation is expected to occur on all future aquaculture projects undertaken within the designation, these consultations will not result in a request for project modifications beyond those that are implemented under current regulatory environment, as described in Section 8.3.

276. Of the twelve informal consultations conducted between 2000 and 2012 on aquaculture and fishpond activity, seven led to a determination that the activity in question was not

[190] National Environmental Policy Act. 42 U.S.C. 4321.

[191] Howerton, R. 2001. "Best Management Practices for Hawaiian Aquaculture." University of Hawaii Sea Grant Extension Services. Center for Tropical and Subtropical Aquaculture Publication No. 148.

likely to adversely affect monk seals. The remaining five did not result in a determination of impacts and appear to have never moved to completion. One technical assistance effort consisted of providing the project operator with a list of species of concern, which included the monk seal, and one programmatic consultation resulted in a determination that the activity in question was not likely to adversely affect monk seals. In past consultations, NMFS recommendations have focused primarily minimizing effects on the ocean bottom or the benthic community through monitoring and effluent control.[192]

EXHIBIT 8-3. MONK SEAL HABITAT CONSERVATION EFFORTS ASSOCIATED WITH AQUACULTURE

CONSERVATION EFFORT/PROJECT MODIFICATION
Restrictions on the spatial extent of the project
Increased educational efforts with an emphasis on habitat protection
Monitoring efforts to identify impacts to the benthic community
Source: National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report, October 2013 and November 2014 drafts, received from NMFS on November 13, 2013 and November 12, 2014, respectively.

8.4.2 ADMINISTRATIVE COSTS

277. Designation of critical habitat for the Hawaiian monk seal is not expected to trigger additional section 7 consultations that would not have occurred absent designation. The analysis therefore assumes that the history of past consultations on aquaculture projects provides an accurate basis for projections of future consultations on aquaculture projects that require NMFS action relating to Hawaiian monk seal. While historical marine aquaculture activity has been limited to Oahu and the island of Hawaii, state officials and project proponents have shown interest in expanding the industry to other islands, such as Maui, Lanai, and Kauai.[193] To the extent that new facilities are located in areas that have not historically supported aquaculture, the analysis may underestimate future activity in those areas.

278. NMFS consulted on 11 aquaculture projects between 2000 and 2012, with seven located in the study areas. Of these seven, six were considered informal consultations, and one consisted of technical assistance efforts provided by NMFS. In addition, NMFS consulted on three fishpond-related projects during this period, though none of these projects occurred in the study area. Exhibit 8-4 provides a summary and spatial distribution of past consultations related to aquaculture and fishpond activity. Of the projects overlapping with the study area, four projects were located in Oahu, and three projects were located on the island of Hawaii. These projects were generally evenly distributed over time over the last 13 years.

[192] Communication with NMFS biologists, July 18, 2012.

[193] Communication with Pacific Islands Regional Coordinator, NMFS Office of Aquaculture, July 26, 2012.

279. Overall, this analysis estimates approximately 0.5 consultations per year related to aquaculture activity over the next ten years. These consultations are expected to be distributed across Oahu and Hawaii, with a greater percentage located in Hawaii.

EXHIBIT 8-4. AQUACULTURE CONSULTATION ACTIONS FOR MONK SEAL, 2000 THROUGH 2012

SPECIFIC AREA/ISLAND		INFORMAL	TECHNICAL ASSISTANCE	TOTAL (ALL)*	TOTAL (IN PCHD)
14	Oahu	5	2	7	4
16	Hawaii	7	0	7	3
	Total	**12**	**2**	**14**	**7**

Source: Consultation history provided by NMFS, June 2012.
Note: Includes consultation actions through May 2012.
* Includes actions in areas not proposed for Hawaiian monk seal critical habitat.

280. Although no project modifications are expected, we anticipate aquaculture projects will continue to be subject to section 7 consultation considering the monk seal, and require some additional effort following critical habitat designation to determine the potential of the project to affect essential features of critical habitat. This analysis quantifies these incremental administrative costs associated with future consultations. The estimated costs represent costs beyond those likely to be incurred to consult on the jeopardy standard for the monk seal.

281. For this analysis, administrative costs per consultation are based on information provided by NMFS biologists that participate in section 7 consultations regarding the monk seal in Hawaii, and a survey of Federal agencies that have participated in section 7 consultation considering critical habitat for other marine species.[194] Different types of consultation require varying amounts of administrative effort, resulting in distinct cost estimates for various types of consultation. Exhibit 8-5 shows incremental administrative costs for individual consultations across the various consultation categories.

282. In recent history, only informal and technical assistance consultations have been initiated on aquaculture projects, both of which require relatively little administrative effort when compared with the formal consultation process. Parties expected to be involved in consultation are NMFS, USACE, and the project proponents.

[194] U.S. Department of Commerce, National Marine Fisheries Service. 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.

EXHIBIT 8-5. INCREMENTAL ADMINISTRATIVE COSTS FOR AQUACULTURE ACTIVITY IN HAWAIIAN MONK SEAL CRITICAL HABITAT PER EFFORT (2013$)

CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	TOTAL COST
Technical Assistance	$277	$0	$277	**$554**
Informal	$139	$1,090	$1,090	**$2,320**
Formal	$1,040	$1,450	$1,450	**$3,930**

Sources: Communication with NMFS, September 2012; U.S. Department of Commerce, National Marine Fisheries Service. 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.
Note: Technical assistance efforts are assumed to involve only NMFS and third parties, with no Federal action agency involvement. Federal agency costs were adapted from the NMFS pacific salmon and steelhead trout analysis. "In-stream work" was used as a proxy for level of Federal agency effort required in aquaculture consultations.

8.5 RESULTS OF AQUACULTURE ANALYSIS

8.5.1 ADMINISTRATIVE COSTS

283. Exhibit 8-6 summarizes the total forecast administrative costs of these consultations over the ten-year period of analysis, from 2013 to 2022. Present value costs are discounted at seven percent discount rate.

EXHIBIT 8-6. ADMINISTRATIVE COSTS RESULTING FROM IMPACTS TO AQUACULTURE PROJECTS, 2014-2023 ($2013)

SPECIFIC AREA/ISLAND		TOTAL PRESENT VALUE IMPACTS (7% DISCOUNT RATE)	ANNUALIZED IMPACTS
14	Oahu	$4,070	$579
16	Hawaii	$3,770	$536
	TOTAL	$7,840	$1,120

Note: Forecast costs are based on the NMFS consultation history. Communication with the Pacific Islands Regional Coordinator at the NMFS Office of Aquaculture (July 26, 2012) indicates that aquaculture may move to islands other than Oahu and Hawaii in the future, but no evidence exists indicating when or where this may occur.

284. We expect total administrative costs related to aquaculture activity of $7,840 over the ten-year period of analysis. We estimate annualized administrative costs to be $1,120. Because NMFS has only consulted on aquaculture projects in Oahu and Hawaii, future consultations are expected to be limited to these islands throughout the study period. Information from the NMFS Office of Aquaculture indicates that aquaculture may expand to other islands in the MHI at some point in the future, but no information is currently available on if, when or on what islands these projects might be initiated.

Exhibit 8-6 describes the assumptions and limitations underlying these results, as well as the potential bias that these assumptions may have on the results reported above.

8.5.2 IMPACTS SPECIFIC TO NORTHWEST HAWAIIAN ISLANDS

285. Aquaculture activity in Hawaii has historically been focused in the MHI. Future expansion in the industry is expected to remain in the MHI for the foreseeable future.[195] Aquaculture projects are prohibited due to strict regulation of marine activity within the Monument.[196] As a result, no impacts to aquaculture activity are expected in the NHWI as a result of critical habitat designation.

8.6 ASSUMPTIONS AND LIMITATIONS

286. Exhibit 8-7 describes the key assumptions relied upon in the aquaculture analysis and the influence of those assumptions on the results of the analysis.

EXHIBIT 8-7. ASSUMPTIONS AND LIMITATIONS

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED IMPACTS
The frequency of new aquaculture projects is constant and is comparable to the average rate of new projects in recent years.	**Unknown.** May overestimate or underestimate incremental impacts.	**Likely minor.** The future growth or decline pattern of the aquaculture industry is not known.
Project modifications beyond what is currently prescribed will not be recommended in consultation.	May result in an **underestimate** of costs.	**Likely minor.** It is unlikely that additional measures will be necessary to avoid impacts to Hawaiian monk seal habitat beyond what is currently provided to the seal; however, to the extent that new projects require additional conservation measures, this estimate may be an underestimate of future costs.

[195] Communication with Pacific Islands Regional Coordinator, NMFS Office of Aquaculture, July 26, 2012.

[196] Northwestern Hawaiian Islands Marine National Monument. 50 CFR Part 404.

CHAPTER 9 | ACTIVITIES THAT GENERATE WATER POLLUTION

9.1 INTRODUCTION

287. NMFS has identified water pollution as a potential threat to Hawaiian monk seal critical habitat in areas that have experienced relatively high levels of development. This chapter describes the potential economic impacts of critical habitat designation for the Hawaiian monk seal on activities that generate water pollution within the study area. Efforts to manage water quality typically distinguish between point and non-point sources of pollution. Point source pollution originates from single, identifiable sources such as wastewater discharge pipes or underground storage tanks. Nonpoint source pollution is not attributable to a single point but instead originates from diffuse sources, such as agricultural or urban runoff. Activities considered in this chapter include any activities that generate point or nonpoint pollution that may contaminate critical habitat for the Hawaiian monk seal, including but not limited to: polluted storm water runoff, agricultural pesticide applications, and industrial discharge.

288. Strong ocean currents can dilute and remove pollutants from most coastal areas in Hawaii, but coastal embayments are poorly flushed and have the greatest potential for buildup of contaminants. According to the 2011 proposed critical habitat rule, water pollution may pose a threat to the essential features of critical habitat for the Hawaiian monk seal in Kauai, Oahu, Maui Nui, and Hawaii in the MHI as these areas are subject to relatively great levels of economic activity and development.[197] While activities that generate water pollution are expected to be more actively occurring in the MHI than the NWHI, lingering exposure to harmful compounds has the potential to adversely modify essential features of monk seal critical habitat in both the MHI and the NWHI.[198]

289. Water pollution is primarily a concern due to the potential for contaminants, pollutants, or increased sedimentation to degrade water quality, causing declines in prey quantity and quality. Discharge of pollutants into a marine environment can lead to bioaccumulation of harmful compounds in high-level predators like the Hawaiian monk seal.[199]

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[197] Proposed Rulemaking to Revise Critical Habitat for Hawaiian Monk Seals. 50 CFR Part 226.

[198] Jessica Lopez, Daryle Boyd, Gina M. Ylitalo, Charles Littnan, Ronald Pearce. Persistent organic pollutants in the endangered Hawaiian monk seal (*Monachus schauinslandi*) from the main Hawaiian Islands, Marine Pollution Bulletin, Volume 64, Issue 11, November 2012, Pages 2588–2598. http://dx.doi.org/10.1016/j.marpolbul.2012.07.012

[199] National Marine Fisheries Service, Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report, October 2013 and November 2014 drafts, received from NMFS on November 13, 2013 and November 12, 2014, respectively.

KEY FINDINGS OF THE WATER POLLUTION ANALYSIS

Unquantified Impacts:

- NMFS has not historically participated in section 7 consultation regarding Hawaiian monk seals with respect to the issuance of individual Clean Water Act permits or on the development of water quality standards in Hawaii. Furthermore, NMFS has not identified levels of pollutants that may constitute adverse modification of critical habitat for the Hawaiian monk seal. In the event that NMFS identifies the potential for a particular pollutant source to adversely modify critical habitat for Hawaiian monk seal, it may recommend changes to the design of water quality standards within the critical habitat area. As NMFS has not determined whether and what specific water quality improvements may be beneficial to the essential features of critical habitat, the likelihood of critical habitat affecting activities that generate water pollution is considered speculative and this analysis does not quantify such impacts.

Geographic Distribution of Impacts:

- This analysis does not quantify impacts of critical habitat on activities that generate water pollution. The activities that generate water pollution are generally concentrated in developed areas of the MHI. Few activities generate water pollution in the NWHI due to a lack of economic activity and strict water quality standards. However, lingering exposure to dispersed contaminants does have the potential to adversely modify monk seal critical habitat in both the MHI and NWHI.

Key Uncertainties:

- Impacts of individual pollutants on essential features of critical habitat for HMS are unknown.
- Given the current understanding of the relationship between individual pollutants and essential features, we assume NMFS is not likely to consult on individual Clean Water Act permits or water quality standards in Hawaii in the foreseeable future. In the event that consultations on individual permits or water quality standards occur in the future, the costs of additional administrative effort or recommended conservation efforts are not captured in this analysis.

290. The remainder of this chapter is divided into four sections. The first section describes the extent of activities that generate water pollution in the MHI and NWHI. The second discusses state and Federal regulation of these activities. The final section presents a qualitative assessment of the impacts of critical habitat designation on future activities that may generate water pollution.

9.2 EXTENT OF ACTIVITIES THAT GENERATE WATER POLLUTION IN THE STUDY AREA

291. Facilities with point source discharges are distributed throughout the Main Hawaiian Islands, occurring most frequently in areas that are highly developed. Any activity that discharges pollutants into waters of the United States is required to apply for National Pollutant Discharge Elimination System (NPDES) permits. These activities include discharges of pollutants to receiving waters from factories, mines, municipal wastewater treatment plants, construction sites, sewer overflow points, concentrated animal feeding

operations, or other localized sources. The Hawaii Department of Health Clean Water Branch (CWB) issues about 30 individual NPDES permits annually.[200]

292. Many types of activities and emissions are covered by a general NPDES permit. The general permit authorizes common and necessary activities where the discharge is determined to be insignificant or benign, or there is little or no viable alternative to the discharging activity. Activities covered by the general permit must secure authorization from CWB, but they are not required to obtain an individual permit. CWB authorizes about 400 activities annually under the general permit, which covers the following categories of discharged material:

1. Storm water associated with industrial activities;
2. Storm water associated with certain construction activities;
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 from small municipal storm sewer systems; and
11. Circulation water from decorative ponds or tanks.[201]

9.3 EXISTING REGULATION OF WATER QUALITY IN HAWAII

293. The primary statutory authority for controlling water pollution is the Clean Water Act, which aims to restore and maintain the chemical, physical, and biological integrity of the nation's waters.[202] Toward these ends, the Clean Water Act provides regulatory and non-regulatory tools to significantly reduce the direct and indirect discharge of pollutants. For waters under state jurisdiction, the U.S. Environmental Protection Agency (USEPA) has delegated the authority to implement and enforce the Clean Water Act to the CWB. CWB is required to maintain its programs consistent with minimum statutory and regulatory requirements.

294. 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 NPDES permit. Clearing, grading, and other construction activities that increase the

[200] Communication with Clean Water Branch, Hawaii Department of Health, September 10, 2012.

[201] Hawaii State Department of Health, Clean Water Branch. 2008. Clean Water Branch Standard Comments. <http://hawaii.gov/wastewater/pdf/environmental/env-planning/landuse/CWB-standardcomment.pdf>. Accessed September 2012.

[202] Clean Water Act. 33 U.S.C 1251 et. seq.

likelihood of erosion may be required to implement best management practices to reduce the amount of sediment reaching water bodies. All NPDES permits must reflect consideration of available treatment technologies, as well as any more stringent limitations needed to ensure compliance with water quality standards.

295. 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. The issuance of a permit by CWB therefore does not constitute a Federal nexus, and 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 critical habitat for the Hawaiian monk seal would occur in accord with a memorandum of agreement (MOA) between USEPA and NMFS. The MOA calls for NMFS to provide CWB with information about designated critical habitat for the Hawaiian monk seal and for CWB to provide NMFS with copies of draft permits, with USEPA taking appropriate actions to ensure 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, 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. Where CWB and NMFS and are unable to resolve the issues, USEPA may object to and federalize the permit, 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 before being renewed. [203]

296. 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. 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

[203] 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.

federal approval and implementation funding. These programs focus on minimizing the creation of polluted runoff rather than cleaning up already-contaminated water.[204]

297. Hawaii's Water Pollution Law establishes a general policy of preventing degradation of state surface waters.[205] Under this policy, the quality of waters meeting the set of standards 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 with three primary components:

1. A general policy of avoiding degradation of existing water quality;
2. Specification, for individual areas of water, of one or more designated beneficial uses that should not be impaired by poor water quality; and
3. 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 is considered to protect the designated use.[206]

9.4 QUALITATIVE ASSESSMENT OF IMPACTS TO ACTIVITIES THAT GENERATE WATER POLLUTION

298. NMFS has not determined specific impacts that individual hazardous materials being released in Hawaii may have on the essential features of critical habitat for the Hawaiian monk seal. Discharge of pollutants is currently subject to a suite of regulations described in Section 9.3 above. These regulations include required conservation measures such as effluent treatment, discharge monitoring, and compliance with state and EPA-specified water quality standards.

299. In the event that NMFS concludes this regulatory framework does not adequately protect the essential features of critical habitat from harmful pollutants, the Service may recommend specific project modifications for the issuance of permits in order to minimize impacts of water pollution. Recommended project modifications would be focused on further efforts to reduce the concentrations, levels, or types of harmful materials released into the marine environment, area constraints concerning the discharging activity, and monitoring efforts to identify impacts to benthic community or prey species, as well as possible changes to statewide water quality standards.[207] Until information on specific impacts of hazardous materials becomes available, NMFS, CWB, and USEPA will be unable to identify whether water-quality standards require revision, whether proposed NPDES permits require efforts to eliminate or reduce harm to critical habitat, or whether facilities operating with a NPDES permit would require modification

[204] Coastal Zone Act Reauthorization Amendments, Section 6217.

[205] Hawaii Water Pollution Law. HRS Ch. 342D.

[206] Water Quality Control. Hawaii Administrative Rules, Chapter 11-55.

[207] Proposed Rulemaking to Revise Critical Habitat for Hawaiian Monk Seals. 50 CFR Part 226.

to reduce emissions of pollutants.[208] However, due to significant overlap between the regulations already in place and the project modifications NMFS would consider in relation to activities that generate water pollution, it is unlikely that Hawaiian monk seal critical habitat designation will generate additional conservation efforts or consultations on these activities.

300. Water pollution has the potential to impact the health of individual monk seals, in addition to the benthic community and prey species located in critical habitat. Further, the availability of prey species is a concern outside of critical habitat designation due to its importance to the survival of the species. It is therefore unlikely that critical habitat designation would lead to additional water quality regulations or conservation efforts beyond those already recommended for the Hawaiian monk seal as a species listed under the Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA).

9.4.1 IMPACTS SPECIFIC TO NORTHWEST HAWAIIAN ISLANDS

301. Due to the relative lack of economic activity in the NWHI, few sources of water pollution exist on these islands. Only a small number of NPDES permits are currently issued by the CWB for activity in the NWHI. Furthermore, the National Monument status of the NWHI has led to even stricter water quality standards than in the MHI.[209] Therefore, we do not expect critical habitat to affect activities generating water pollution in the NWHI. However, prolonged exposure to contaminants generated from activity in the MHI could pose a threat to essential features of monk seal critical habitat in the NWHI.

9.5 ASSUMPTIONS AND LIMITATIONS

302. Although we do not quantify impacts to water quality management activities, Exhibit 9-1 describes the key assumptions and limitations of the evaluation, and describes how the relative significance of these assumptions on the findings of this analysis.

[208] Communication with NMFS biologists, July 18, 2012.

[209] Northwestern Hawaiian Islands Marine National Monument. 50 CFR Part 404.

EXHIBIT 9-1. ASSUMPTIONS AND LIMITATIONS

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED IMPACTS
Impacts of individual pollutants on essential features of critical habitat for Hawaiian monk seal are unknown. Given this, NMFS is not likely to consult on individual NPDES permits or water quality standards in Hawaii in the future, or recommend additional conservation for monk seal critical habitat relating to water quality issues.	May result in an **underestimate** of impacts.	**Likely minor.** Current water quality regulations and BMPs are designed to limit harmful environmental impacts of water pollution. Absent new information indicating that certain pollutants adversely modify essential features, it is unlikely that NMFS will change its current consultation practices regarding water quality issues. Even in the case that NMFS identifies particular changes to pollutant discharge for the benefit of monk seals, it it likely that the conservation recommendations would be made regardless of the critical habitat designation due to the status of Hawaiian monk seal as a listed species under the ESA and MMPA. As such, impacts of critical habitat designation would be limited to relatively minor additional administrative costs of consultation.

CHAPTER 10 | OIL SPILLS, SPILLS OF OTHER SUBSTANCES, VESSEL GROUNDING, AND MARINE DEBRIS RESPONSE ACTIVITIES

10.1 INTRODUCTION

303. This chapter describes the potential economic impacts of critical habitat designation for the Hawaiian monk seal on actions taken in response to oil spills, spills of other substances, vessel groundings, and marine debris in the study area. Activities considered in this chapter include actions taken to mitigate or contain the harmful effects of oil spills or spills of other substances on the environment, cleanup efforts undertaken post-spill, or the removal of grounded vessels and marine debris.

304. Because vessel traffic exists throughout the MHI and NWHI, NMFS has identified environmental response activities as potentially posing a threat to essential features of Hawaiian monk seal critical habitat in all specific areas. Niihau, Kauai, Oahu, Maui Nui, and Hawaii in the MHI are more developed and experience more vessel traffic, putting these areas at a higher risk for impacts to critical habitat.

305. Environmental response activities on or near preferred pupping areas or nursing areas, significant haul out areas, or marine foraging areas may reduce the amount or quality of available monk seal habitat. The extent of response efforts required depends on the severity of environmental disturbance from oil spills, spills of other substances, vessel groundings, and marine debris. Response activities are typically planned in advance, and methods used to remove environmental disturbance are designed to minimize destruction to the site of disturbance or nearby habitats.

306. The remainder of this chapter is divided into five sections. The first section details the recent history and spatial distribution of oil spills, spills of other substances, and vessel groundings in the Hawaiian Islands. The second discusses State and Federal regulation of oil spills, spills of other substances, and vessel grounding response, and describes actions taken under current response plans to minimize harm to Hawaiian monk seal and its critical habitat. The third section describes the methods employed to estimate the impacts of critical habitat on future environmental response activity. The fourth section presents the resulting forecast of economic impacts across the study area, and the chapter concludes with a discussion of assumptions and limitations underlying the analysis of impacts.

10.2 EXTENT OF OIL SPILLS, SPILLS OF OTHER SUBSTANCES, VESSEL GROUNDINGS, AND MARINE DEBRIS IN THE STUDY AREA

307. On average, approximately 100 oil releases are reported in Hawaii per year. Most of these are small in scale, and the sources of these releases are often go unidentified. Significant

recent spills include a 2006 spill at Pearl Harbor, which released over 700 barrels of oil into the harbor, and the *Ehime Maru* spill in 2002, which released over 2,300 barrels off the south coast of Oahu.[210] Between 1982 and 1997, there were 13 reported spills of over 238 barrels (10,000 gallons). Historically, the most significant oil spills in Hawaii occurred as a result of the Pearl Harbor bombings in 1941. Several sunken World War II (WWII) vessels remain pollution hazards in both the MHI and the NWHI as their hulls continue to corrode. In addition to vessels sunk in WWII, two major oil spills have occurred in Hawaii, both in the NWHI. In 1977, the *Irene's Challenge* sank 80 km north of Lisianksi Island, holding 238,000 barrels of crude oil. At its peak, the spill covered an area of 32 by eight kilometers. Also in 1977, the *Hawaiian Patriot* sank south of Necker Island holding 715,000 barrels of crude oil.[211]

308. Following the *Exxon-Valdez* spill in Alaska in 1989, the Oil Pollution Act was passed in 1990. The Act placed liability on vessel owners for resources damaged by spills, and introduced requirements for contingency planning.[212] In addition, since 1993 using the relatively safe Oahu-Kauai channel has been voluntary practice adopted by the shipping industry.[213] These provisions reduced the likelihood of major spills, such as those that occurred in 1977, and improved the readiness of response teams in the event of a major spill.

309. In September 2013, a pipeline spilled over 200,000 gallons of molasses into Honolulu Harbor resulting in the death of thousands of fish and response activities costing over a million dollars.[214] There were no reports of dead or injured endangered species from this spill.[215] Spills of substances such as molasses may threaten monk seal habitat by reducing water oxygen levels and by harming prey species.

310. Communication with the U.S. Coast Guard (USCG) indicates that recent vessel groundings have not led to oil release.[216] According to the 2002 U.S. Flag Pacific Islands Vessel Grounding Workshops Proceedings, approximately three to five vessel groundings occur throughout Hawaii each year. Vessel groundings could potentially occur in any of the specific areas throughout the Hawaiian Islands, due to traffic associated with transport, fishing, recreation, military activities, or other activities. The two most likely causes of vessel groundings are weather or human error. Oil release is a primary concern

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[210] Morgan, L. 2006. Hawai`i's New Wildlife Center and the Challenge of Oiled Wildlife Rescue. *'Elepaio* 66(7).

[211] Duffy, D.C. and Elliot, L. 2010. Oil and Hawaiian Seabirds. *'Elepaio* 70(6).

[212] Ibid.

[213] Duffy, D.C. and Elliot, L. 2010. "Oil and Hawaiian Seabirds." *Journal of the Hawaiian Audubon Society 70(6).*

[214] Grube, N. 2013. "New Molasses Spill Response Plan Concedes Environmental Danger." *Honolulu Civil Beat* on November 13. Accessed on April 28, 2014 at http://www.civilbeat.com/articles/2013/11/13/20382-new-molasses-spill-response-plan-concedes-environmental-danger/.

[215] Garcia, O. 2013. "Endangered species unhurt in Hawaii molasses spill." *The Guardian* on September 18. Accessed on April 28, 2014 at http://www.theguardian.com/world/feedarticle/10980855.

[216] Written communication from Chief of Contingency Preparedness & Force Readiness, Sector Honolulu, U.S. Coast Guard, received October 9, 2012.

in the event of vessel grounding, as a spill may dramatically increase the scope and severity of environmental impacts associated with the grounding.[217]

311. Marine debris may accumulate on near-shore reefs, or coastal haul-out areas presenting a hazard to monk seals as well as other listed species. Additionally, fishing gear may be snagged in coral reefs and continue to trap fish in monk seal foraging areas. Marine debris removal efforts are regularly initiated to alleviate these threats to local wildlife.

10.3 EXISTING REGULATION AND RESPONSE PROTOCOLS RELATING TO OIL SPILLS, SPILLS OF OTHER SUBSTANCES, VESSEL GROUNDINGS, AND MARINE DEBRIS REMOVAL

312. The USCG has the authority to respond to all spills of oil and hazardous substances in the offshore or coastal zone, while the U.S. Environmental Protection Agency (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 Clean Water Act. These regulations address spill prevention, control and countermeasure plans, and facility response plans for offshore and onshore oil producers and carriers. Vessel groundings may fall into these categories, due to the possibility for release of hazardous substances in the event of vessel grounding. [218] Prior to the September 2013 molasses spill, no response plans were in place for spills of non-oil substances such as molasses. As a result of this lack of preparedness, the Hawaii State Senate and State House passed a bill allocating funds to update University of Hawaii's Readiness to Prevent and Respond to Oil Spills document to include risk assessments and mitigation plans for various toxic substances other than oil.[219]

313. Environmental emergency response efforts address multiple concerns, including the conservation of threatened and endangered species and their critical habitat. In the event of these emergency situations, a measured assessment of the potential for response actions to adversely modify critical habitat is often not possible. To address the need to make emergency decisions efficiently and appropriately, several Federal agencies have jointly developed guidance to establish a general framework for cooperation and participation among the agencies responsible for spill planning and response activities. The guidelines apply to the two agencies with regulatory authority over spill response, the USCG and the USEPA, as well as the two agencies with resource-management responsibilities, the U.S. Fish and Wildlife Service (USFWS) and NOAA. The procedures recommended in the guidelines are intended to streamline the consultation

[217] NOAA National Ocean Service. 2002. U.S. Flag Pacific Islands Vessel Grounding Workshops Proceedings.

[218] Clean Water Act. 33 U.S.C 1251 et. seq.

[219] Cocke, S. 2014. "Honolulu Harbor Molasses Spill Sparks Legislation." Honolulu Civil Beat on January 27. Accessed on April 28, 2014 at http://www.civilbeat.com/articles/2014/01/27/21013-honolulu-harbor-molasses-spill-sparks-legislation/.

process outlined in Section 7(a)(2) of the ESA and to better provide for the conservation of listed species. [220]

314. The guidelines anticipate that the cooperative efforts among agencies prior to a spill will identify the potential impacts of response activities on critical habitat, and jointly develop 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 there is potential for response activities to result in adverse modification of critical habitat, the guidance recommends steps for informal, emergency consultation undertaken during response efforts as well as formal consultation undertaken after termination of response efforts. The guidance aims to promote useful informal consultation wherever possible during spill planning and response.[221]

315. The Oil Pollution Act of 1990 mandates the development of an Area Contingency Plan for every marine planning area. The Hawaii Area Committee released the Hawaii Area Contingency Plan (HACP) in March, 2012. Appendix 2 of the HACP outlines measures to be taken in the event of a major oil spill in order to minimize impacts to Hawaiian monk seal by direct oiling. These measures are initiated as soon as possible after a report of a spill with the potential to damage Hawaiian monk seal habitat, and include reconnaissance and evaluation efforts, control of the spread of spilled oil, protection of haul-out sites and nearby reefs, quarantine of contaminated individuals, and as a last resort, cleaning or treatment of oiled moribund Hawaiian monk seal individuals. Final decisions on how to treat affected Hawaiian monk seal are made by NMFS. The HACP describes in detail the steps taken to assess and minimize risk to Hawaiian monk seal individuals and habitat.[222]

316. A Federal nexus for vessel grounding may materialize based on response efforts coordinated under the Oil Pollution Act. Vessel groundings may trigger activities by Federal agencies that provide permits, funding, or other support for the recovery effort.

317. In Hawaii, NOAA's Pacific Islands Fisheries Science Center Coral Reef Ecosystem Division leads efforts to collect and remove marine debris both in the NWHI and the MHI. These activities are subject to section 7 consultation, because debris is often removed from sensitive habitat areas where listed species may be present.

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[220] USCG, USEPA, USFWS, and NOAA. 2002. "Inter-agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act."

[221] USCG, USEPA, USFWS, and NOAA. 2002. "Inter-agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act."

[222] USCG. 2012. "Hawaii Area Contingency Plan."

10.4 METHODOLOGY FOR EVALUATING IMPACTS ON OIL SPILLS, SPILLS OF OTHER SUBSTANCES, VESSEL GROUNDING, AND MARINE DEBRIS RESPONSE ACTIVITIES

10.4.1 IMPACTS OF ADDITIONAL CONSERVATION EFFORTS

318. The 2014 Biological Report identifies project modifications that NMFS recommends to avoid adverse modification to essential features of monk seal critical habitat during oil spill and vessel grounding response. Section 7 consultations have not occurred on spill response efforts in recent years. However, emergency consultation may occur in the event of future spills, including spills of other hazardous substances. In addition, the USCG has requested NOAA technical assistance for revision of the HACP described in Section 10 above. NMFS expects these technical assistance efforts to occur once every five years.[223] The HACP outlines specific actions to be taken in the event of an oil spill to minimize risk to Hawaiian monk seal habitat. These actions include controlling the release and spread of oil, protection of monk seal haul-out sites, and active monitoring efforts of both seals and their habitat. The actions prioritized in the HACP are designed to minimize harm to the Hawaiian monk seal and its habitat in the event of a spill. These actions are triggered as soon as a spill occurs with the potential to affect any monk seal habitat, including that which is proposed for designation as critical habitat. The actions and best practices outlined in the HACP significantly overlap with project modifications that NMFS would recommend in consultation to avoid adverse modification to essential features of critical habitat. NMFS expects to provide information and response strategies for incorporation into the HACP in future revisions through periodic technical assistance efforts. It is therefore unlikely that NMFS would recommend additional conservation efforts to protect critical habitat in addition to those actions recommended in the HACP. Communication with the USCG further indicates that designation of critical habitat will not affect the methods used by local responders to respond to a spill, but may affect which areas are prioritized during the response. It is possible that these additional considerations may require additional effort and resources on the part of responders.[224]

319. Emergency consultation will occur between the USCG, the State of Hawaii, and NMFS in the event of a spill. Following response efforts, these parties would engage in formal consultation. However, no information is currently available on the likely geographic and temporal distribution of oil spills and vessel groundings in the MHI or NWHI. Furthermore, no information is available on the frequency of emergency consultation or post-spill consultation, as section 7 consultations have not occurred in these contexts in the recent past on issues related to monk seal. Costs and frequency of additional considerations on the part of responders introduced by critical habitat designation are also uncertain.

[223] Communication with NMFS biologists, July 18, 2012.

[224] Written communication from Chief of Contingency Preparedness & Force Readiness, Sector Honolulu, U.S. Coast Guard, received October 9, 2012.

320. Modifications to marine debris removal efforts to prevent impacts to monk seal critical habitat are not likely to differ from best management practices already recommended and practiced to prevent impacts to the monk seal, other listed species, or to sensitive coral reef habitats.

10.4.2 ADMINISTRATIVE COSTS

321. Designation of critical habitat for the Hawaiian monk seal is not expected to trigger additional section 7 consultations response activity that would not have occurred absent designation. The analysis therefore assumes that the history of past consultations on planning and implementation of response to environmental disturbance provides an accurate basis for projections of future consultations that require NMFS action relating to Hawaiian monk seal.

322. NMFS did not consult on any activities related to oil spill, spills of other hazardous substances, or vessel grounding response between 2000 and 2012, but it did consult on 25 projects related to marine debris removal. Out of these 25 consultations, 19 were located in the study areas. Of these 19, 14 were considered informal consultations, and five consisted of technical assistance efforts provided by NMFS. Exhibit 10-1 provides a summary and spatial distribution of past consultations related to marine debris removal. These projects were generally evenly distributed over time over the last 13 years.

323. In addition to forecasting future consultations on marine debris removal, we estimate that NMFS will engage in one technical assistance effort on oil spill planning every five years in conjunction with revision to the HACP. Overall, this analysis estimates approximately 1.7 consultations per year related to environmental response activity over the next ten years. These consultations are expected to be distributed across the MHI and NWHI, with the greatest percentage located in Hawaii, Maui Nui, and Oahu.

EXHIBIT 10-1. MARINE DEBRIS REMOVAL CONSULTATION ACTIONS FOR MONK SEAL, 2000 THROUGH 2012

SPECIFIC AREA/ISLAND		INFORMAL	TECHNICAL ASSISTANCE	TOTAL (ALL)*	TOTAL (IN PCHD)
1	Kure Atoll	2	0	2	1
2	Midway Islands	2	0	2	2
6	Maro Reef	0	1	1	1
14	Oahu	2	5	7	3
15	Maui Nui	1	2	3	1
16	Hawaii	3	0	3	1
	Multiple Islands	6	1	7	6
	Total	**16**	**9**	**25**	**15**

Source: Consultation history provided by NMFS, June 2012.
Note: Includes consultation actions through May 2012.
* Includes actions in areas not proposed for Hawaiian monk seal critical habitat.

324. Although we do not expect NMFS to recommend additional conservation efforts as part of response planning and implementation, we anticipate that environmental response activity will continue to be subject to section 7 consultation considering the monk seal, and require some additional effort following critical habitat designation to determine the potential of response activity to affect essential features of critical habitat. This analysis quantifies these incremental administrative costs associated with future consultations. The estimated costs represent costs beyond those likely to be incurred to consult on the jeopardy standard for the monk seal.

325. For this analysis, administrative costs per consultation are based on information provided by NMFS biologists that participate in section 7 consultations regarding the monk seal in Hawaii, and a survey of Federal agencies that have participated in section 7 consultation considering critical habitat for other marine species.[225] Different types of consultation require varying amounts of administrative effort, resulting in distinct cost estimates for various types of consultation. Exhibit 10-2 shows incremental administrative costs for individual consultations across the various consultation categories.

EXHIBIT 10-2. INCREMENTAL ADMINISTRATIVE COSTS FOR ENVIRONMENTAL RESPONSE ACTIVITY IN HAWAIIAN MONK SEAL CRITICAL HABITAT PER EFFORT (2013$)

CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	TOTAL COST
Technical Assistance	$277	$277	$0	**$554**
Informal	$70	$1,090	$0	**$1,160**
Formal	$1,040	$1,450	$0	**$2,490**

Sources: Communication with NMFS, September 2012; U.S. Department of Commerce, National Marine Fisheries Service. 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.
Note: Consultations are assumed to involve only NMFS and Federal action agencies, with no third party involvement. Federal agency costs were adapted from the NMFS pacific salmon and steelhead analysis. "In-stream work" was used as a proxy for level of Federal agency effort required in environmental response consultations.

326. In recent history, only informal and technical assistance consultations have occurred on environmental response activity, both of which require relatively little administrative effort when compared with the formal consultation process. Parties expected to be involved in consultation are NMFS, the USCG, the USACE, and any other Federal agencies involved in response to environmental disturbance.

[225] U.S. Department of Commerce, National Marine Fisheries Service. 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.

10.5 RESULTS OF OIL SPILLS, SPILLS OF OTHER SUBSTANCES, VESSEL GROUNDING, AND MARINE DEBRIS RESPONSE ANALYSIS

10.5.1 ADMINISTRATIVE COSTS

327. Exhibit 10-3 summarizes the total forecast administrative costs of these consultations over the ten-year period of analysis, from 2014 to 2023. Present value costs are discounted at seven percent discount rate.

EXHIBIT 10-3. ADMINISTRATIVE COSTS RESULTING FROM IMPACTS TO ENVIRONMENTAL RESPONSE ACTIVITY, 2014-2023 ($2013)

	SPECIFIC AREA/ISLAND	TOTAL PRESENT VALUE	ANNUALIZED
Northwest Hawaiian Islands			
1	Kure Atoll	$1,380	$196
2	Midway Islands	$1,390	$198
3	Pearl and Hermes Reef	$285	$41
4	Lisianski Island	$461	$66
5	Laysan Island	$217	$31
6	Maro Reef	$1,060	$151
7	Gardner Pinnacles	$941	$134
8	French Frigate Shoals	$361	$51
9	Necker Island	$582	$83
10	Nihoa Island	$211	$30
Main Hawaiian Islands			
11	Kaula Island	$21	$3
12	Niihau Island	$95	$14
13	Kauai	$349	$50
14	Oahu	$1,410	$201
15	Maui Nui	$3,020	$429
16	Hawaii	$2,780	$396
Total		**$14,600**	**$2,070**

328. We expect total administrative costs related environmental response activity of $14,600 over the ten-year period of analysis. We estimate annualized administrative costs to be $2,070. The actual extent and distribution of these costs is highly dependent on the location, extent, and frequency of environmental disturbance in the Hawaiian Islands, each of which carry significant uncertainty.

10.5.2 IMPACTS SPECIFIC TO NORTHWEST HAWAIIAN ISLANDS

329. The two biggest oil spills in Hawaii since WWII occurred in the NWHI, both in 1977. However, since that time, the National Monument status has limited routes within the NWHI through which vessels can pass. The three routes are:

1. Between Pearl and Hermes Atoll and Lisianski Island;
2. Between Maro Reef and Gardner Pinnacles; and
3. Between Necker and Nihoa islands.[226]

330. No information is currently available on the geographic and temporal distribution of future spills and vessel groundings in the NWHI. Response efforts are not expected to differ from those in the MHI. To the extent that emergency consultations are initiated for oil spills or vessel groundings in the NWHI, parties involved in those consultations may bear additional administrative costs as a result of critical habitat designation. We expect no additional conservation efforts required in the NWHI during spill response beyond those already in place, for the reasons outlined in Section 10.4.1.

10.6 ASSUMPTIONS AND LIMITATIONS

331. Although we do not quantify impacts to oil spill, spills of other substances, vessel grounding, and marine debris response, Exhibit 10-4 describes the key assumptions and limitations of the evaluation, and describes how the relative significance of these assumptions on the findings of this analysis.

EXHIBIT 10-4. ASSUMPTIONS AND LIMITATIONS

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED IMPACTS
The frequency of future consultations on environmental response activity is constant and is comparable to the average rate of consultation in recent years.	**Unknown.** May overestimate or underestimate incremental impacts.	**Likely minor.** The future rate of environmental disturbance is unknown but is not expected to differ significantly from recent trends.
Project modifications beyond what is currently prescribed will not be recommended in consultation.	May result in an **underestimate** of costs.	**Likely minor.** It is unlikely that additional measures will be necessary to avoid impacts to Hawaiian monk seal habitat beyond protections currently provided to the seal; however, to the extent that future response efforts require additional conservation measures, this estimate may be an underestimate of future costs.

[226] Northwestern Hawaiian Islands Marine National Monument. 50 CFR Part 404.

CHAPTER 11 | MILITARY ACTIVITIES

11.1 INTRODUCTION

332. This chapter evaluates the potential impacts of designating critical habitat for the Hawaiian monk seal on military activities. A wide variety of military training, research, and operations support occurs throughout the MHI and NWHI. The 2014 Biological Report specifies that military activities may pose a threat to essential features of critical habitat for the Hawaiian monk seal in specific areas 10, 12, 13, 14, 15, and 16 (Nihoa Island in the NWHI and all specific areas in the MHI with the exception of Kaula Island). This chapter does not assess potential impacts of the designation on national security but focuses on the economic implications of the designation.

333. Military activities may affect the essential features of critical habitat for the monk seal in the following ways:

- Activities in or near preferred pupping, nursing, haul-out, or marine foraging areas may reduce the amount or quality of habitat.
- Certain activities may impact the quantity or quality of prey species.[227]

334. The monk seal habitat conservation concerns with respect to military activities mirror those described for in-water and coastal construction in Chapter 3. The majority of the ongoing military activities across the critical habitat area are managed according to an existing Environmental Impact Statement (EIS) or an Integrated Natural Resources Management Plan (INRMP), as described in Section 11.3. In addition, NMFS is excluding some areas from critical habitat designation due to national security concerns.

335. Section 11.2 describes ongoing military activities within the study area. Section 11.3 discusses the current management of these activities, highlighting the existing focus on avoiding potential impacts on Hawaiian monk seals. Section 11.4 then describes the methods employed to estimate the impacts of critical habitat designation on military activities. Sections 11.5 and 11.6 present the resulting forecast of economic impacts, both quantified and unquantified, and the assumptions and limitations underlying the analysis, respectively.

[227] 76 FR 32040.

KEY FINDINGS OF THE ANALYSIS OF IMPACTS TO MILITARY ACTIVITIES

Quantified Impacts:

- As the majority of ongoing military activities are managed according to existing INRMPs or EISs that were subject to consultation with NMFS regarding potential effects on monk seals, we anticipate relatively few consultations for activities managed according to these plans in the future. In addition, we anticipate the administrative effort to consider critical habitat as part of future consultations is minor. This is because of the significant level of review required of these activities under NEPA, the MMPA, and the ESA, even absent critical habitat designation. As a result, quantified impacts of critical habitat designation on military activities are minor and this chapter highlights the potential indirect, unquantified impacts.
- We estimate a total present value impact of $14,900 ($2,120 annualized) over the next ten years (seven percent discount rate) for consultations regarding military activities occurring within the study area. These costs reflect additional administrative effort to consider critical habitat designation as part of future consultation.

Unquantified Impacts:

- While the majority of military activities are managed for monk seal conservation according to the existing INRMPs and EISs, critical habitat designation may have indirect economic effects in specific areas. Military activities on this island contribute 90 percent of Niihau Ranch's income (the sole landowner and employer on the island). Thus the designation may generate economic hardship on the landowner and island residents, as well as the government agencies relying on the island for training and operations support, if activities are curtailed.
- This analysis does not evaluate potential impacts of the designation on national security.

Geographic Distribution of Impacts:

- Quantified impacts are expected across the specific areas in the MHI. Limited impacts are forecast on military activities in the NWHI.

Key Uncertainties:

- Based on the substantial baseline conservation afforded the monk seals through existing regulation and management of military activities, critical habitat is unlikely to generate additional conservation measures in most areas. To the extent that future management differs from past management, this analysis could underestimate impacts to military activities.

11.2 EXTENT OF MILITARY ACTIVITIES

336. Military activities taking place within the study area include a wide variety of training and research activities both on the coast and in marine habitat throughout the MHI and in portions of the NWHI. Specifically, NMFS has consulted regarding effects on monk seals of training, construction, and management activities with the Navy, U.S. Marine Corps (USMC), Army, Air Force, and Coast Guard.

337. The Navy's Hawaii Range Complex (HRC) encompasses land, water, and air on and around the MHI and the NWHI. The Navy distinguishes between two areas within the HRC: the Hawaii Operating Area, which is nearer the MHI and comprises 235,000 square nautical miles; and the Temporary Operating Area, comprising 2.1 million square

nautical miles of surface and subsurface ocean areas and airspace. Both areas 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.[228]

338. 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 (RIMPAC) that involve military personnel of other nations.

339. In its May 2008 Environmental Impact Statement evaluating the effects of HRC activities on environmental resources, the Navy states that the HRC plays a vital part in the execution of the naval readiness mandate as Hawaii hosts a large concentration of U.S. naval forces. "Naval forces based in Hawaii and those transiting across the Pacific Ocean use and rely on the HRC because of its capabilities and strategic location in the mid-Pacific region." [229]

340. Ongoing activities occurring in the HRC include:

- **Training Events**: Including "Major Exercises," such as RIMPAC Exercise and undersea warfare exercises, as well as Anti-Air Warfare, Amphibious Warfare, Anti-Surface Warfare, Anti-submarine Warfare, Electronic Combat, Mine Warfare, Naval Special Warfare, and Strike Warfare Exercises.
- **Research, Development, Test, and Evaluation (RDT&E) Operations:** Occurring primarily at PMRF and Naval Undersea Warfare Center Detachment Pacific ranges.
- **Support Activities:** Including Command and Control, in-port ship and aircraft support, and personnel support.[230]

11.3 EXISTING MANAGEMENT OF MILITARY ACTIVITIES WITHIN THE STUDY AREA WITH RESPECT TO MONK SEAL CONSERVATION

341. This section discusses the management of military activities that fall generally within the study area. That is, it discusses the management of activities in the areas that are

[228] Portions of the HRC description from: EcoNorthwest. January 2011. "Draft Economic Analysis of Critical Habitat Designation for the Hawaiian Monk Seal." Prepared for: National Marine Fisheries Service.

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

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

ineligible for critical habitat designation due to existing INRMPs and those which have been excluded due to national security concerns.[231]

342. Section 101 of the Sikes Act of 1997 requires military lands with "land and water suitable for the conservation and management of natural resources," to develop an Integrated Natural Resources Management Plan (INRMP) that specifies, among other things, a detailed description of management actions to be implemented to provide for the conservation of listed species.[232]

343. The National Defense Authorization Act (NDAA) of 2004 amended Section 4(a)(3) of the Endangered Species Act, allowing that critical habitat will not be designated on Department of Defense lands that are subject to an INRMP, "if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation."

344. NMFS has determined that three existing INRMPs provide a conservation benefit to the monk seal and, consequently, the areas covered by the plans are ineligible for critical habitat designation. Specifically, these include Marine Corps Base Hawaii (MCBH), Joint Base Pearl Harbor-Hickam INRMP, and the PMRF INRMP.

11.3.1 MARINE CORPS BASE HAWAII INRMP

The USMC manages the **Marine Corps Base Hawaii (MCBH)** according to an INRMP. The INRMP covers the following areas that overlap with areas under consideration for monk seal critical habitat: the 500 yard buffer zone in marine waters surrounding the Mokapu Peninsula, Oahu; and Puuloa Training Facility on the Ewa coastal plane, Oahu. Conservation measures prescribed in the plan include:

- Debris removal
- Prohibitions against lay nets and gill nets;
- Enforcement of established rules via a Conservation Law Enforcement Officer;
- Interagency cooperation for rehabilitation events;
- Use of established procedures for seal haul out and pupping events;
- Educational outreach;
- Ecological assessment and inventories; and
- Water quality projects.

NMFS reviewed the MCBH INRMP and subsequently determined that its implementation provided a benefit to the Hawaiian monk seal, which makes the areas subject to the INRMP not eligible for critical habitat designation.[233]

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[231] Information on military areas ineligible for designation from: 76 FR 32041-32042.

[232] 16 U.S.C. 670a.

[233] Personal communication with NMFS, October 28, 2013.

11.3.2 JOINT BASE PEARL HARBOR-HICKAM INRMP

The Navy has recently finalized the **Joint Base Pearl Harbor-Hickam INRMP**. NMFS has determined that this INRMP provides a benefit to Hawaiian monk seals. These areas subject to the INRMP overlap with the following areas under consideration for monk seal critical habitat designation: the Navy Defense Sea Area (NDSA); the Barbers Point Underwater Range and Ewa Training Minefield, and Navy retained lands at Kalaeloa, Oahu (White Plains and Nimitz Beach). NMFS has reviewed the INRMP and determined that it provides a conservation benefit to the Hawaiian monk seal. Section 11.3.2 describes the conservation measures outlined in this plan. Conservation measures prescribed in the plan include:

- Marine debris removal, monitoring, and prevention;
- Pet restrictions;
- Restriction of access;
- Protocol to prevent disturbance during naval activities;
- Public education;
- Training to prevent ship groundings; and
- Compliance and restoration programs for contaminants.

11.3.3 PMRF INRMP

345. The majority of the PMRF area is managed according to an existing INRMP. Based on the recent refinements to the proposed monk seal critical habitat and changes to the PMRF INRMP, Kaula Island and coastal and marine areas out to 10 m around Niihau are areas that overlap with the areas under consideration for monk seal critical habitat. Since 2011, the Navy has worked to address NMFS' concerns expressed in the 2011 proposed designation and to update and improve the INRMPs in order to provide sufficient protection to monk seals and their habitat.[234]

346. Currently the PMRF INRMP describes the following conservation measures for monk seals at the main base Barking Sands, Kauai and Kaula, as appropriate.

- Implement beach access restrictions, including posting signage, cordoning of haulout areas, and security patrols to provide undisturbed terrestrial habitat at Barking Sands.
- Use security to enforce beach restrictions and ensure that beach users stay at least 150 feet (46 meters) distance from any Hawaiian monk seals hauled out on the beach. This includes the placement of cones, rope and signage to exclude disturbance in public access areas. The beach is patrolled and Hawaiian monk seal sightings are reported/recorded daily.

[234] Letter from U.S. Department of the Navy to the National Marine Fisheries Service dated August 31, 2011, "Monk Seal Proposed Critical Habitat (0648-BA81)."

- Reduce potential for vessel groundings and implement protocols for grounded vessels to avoid harm to monk seals and their habitat.
- PMRF environmental personnel will continue to maintain their training and contacts with NOAA's Marine Mammal Stranding Network and execute a quick response to any beaching or entanglement events on PMRF beaches or nearshore waters. Coordination with NOAA Fisheries for any associated necropsies, if required, will also be ensured.
- PMRF personnel will continue to record all sightings of monk seals and report tag numbers to DAR. To ensure protection from disturbance, any animals hauled up on the beach within the public use area will be cordoned off by security forces and reported to PMRF Environmental Coordinator.
- PMRF will continue to restrict recreational shore fishing to designated areas between Kinikini Ditch and the Navy housing area in order to reduce the probability of entanglement with stray fishing line while still providing some recreational opportunities, and to promote healthy nearshore reef-fish stocks.
- PMRF will continue to restrict dogs off leashes along the beach to limit the potential for interactions between seals and dogs.
- PMRF will continue to control feral animals (dogs, cats) on base that can transfer diseases to monk seals.
- The Navy will continue to ensure training activities do not affect hauled-out seals at PMRF beaches. Prior to conducting a beach landing exercise, Navy observers will survey beaches for Hawaiian Monk Seals. Should a monk seal be found on the beach, the landing will be delayed until the animal has voluntarily left the area.
- Minimize marine debris and sponsor debris clean-up events.[235]

347. In addition, NMFS issued a Biological Opinion received in 2007 regarding activities on Kaula. The Navy subsequently agreed to the following mitigation actions to reduce or eliminate any potential impacts to Hawaiian monk seals from training activities (inert ordnance air to surface target practice at the southern tip of the island): 1) use of non-explosive rounds, limiting the impact to the southern tip of the island; 2) seasonal use; and 3) surveying the waters off Kaula to ensure Hawaiian monk seals are not present.

348. These conservation measures provide baseline protection in the areas that support Hawaiian monk seal essential features that overlap PMRF activities on Niihau and Kaula Island.

[235] U.S. Department of the Navy. November 2010. "Final Integrated Natural Resources Management Plan: Pacific Missile Range Facility."

11.3.4 OTHER MILITARY AREAS REQUESTED FOR EXCLUSION BASED ON IMPACTS ON NATIONAL SECURITY

349. NMFS contacted representatives of the Department of Defense and Department of Homeland Security to request information regarding potential national security impacts of critical habitat designation for Hawaiian monk seal. The U.S. Navy and USMC requested for exclusion a total of 13 areas, including the three areas subject to INRMPs mentioned above, based on potential impacts to national security. The potential impacts to national security summarized from both groups included: restraints and constraints on military operations, training, research and development, and preparedness vital for combat operations for around the world.[236]

350. Table 2 of the 2011 Proposed Rule provides an assessment of the areas requested for exclusion by the Department of Defense (DOD) based on national security. Table 2 includes NMFS's determinations on whether to propose these areas for exclusion or not. NMFS reevaluated all requests for national security exclusions due to changes in the size of the designation resultant from the revisions to the 2011 proposed designation. Additionally, some areas were no longer included in the national security exclusion process, because the areas were precluded from designation under 4(a)(3) (i.e., these areas are subject to management under an INRMP determined by NMFS to provide a benefit to Hawaiian monk seals). Notably, the PMRF Main Base at Barking Sands, Kauai no longer overlaps with areas meeting the definition of Hawaiian monk seal critical habitat and no longer required consideration under 4(b)(2).

351. NMFS identified four of the previously identified areas that will be excluded due to national security concerns including: the Kingfisher Underwater Area off of Niihau (Area 12); the PMRF offshore areas, Kauai (Area 13); Puuloa Underwater Training Range (Area 14); and the Shallow Water Minefield Sonar Training Range off Kahoolawe (Area 15).

352. NFMS will include six of the 10 areas considered for exclusion based on natural security and not covered by existing INRMPs in the study area . These will be further described in the final rule and summarized in Exhibit 11-1.

EXHIBIT 11-1. ADDITIONAL MILITARY AREAS REQUESTED FOR EXCLUSION

MILITARY AREA REQUESTED FOR EXCLUSION	NMFS' CONSIDERATION IN 2014 REVISED CRITICAL HABITAT PROPOSAL
KAULA (AREA 11)	
The three mile danger zone around Kaula Island	Benefits of exclusion do not outweigh benefits of designation.
NIIHAU (AREA 12)	
Niihau, including all waters 10 m in depth to 12 miles offshore	Benefits of exclusion do not outweigh benefits of designation.

[236] National Marine Fisheries Service. September 2010. "Revision of Critical Habitat for Hawaiian Monk Seals: Draft ESA Section 4(b)(2) Report (To accompany the Proposed Rule)."

MILITARY AREA REQUESTED FOR EXCLUSION	NMFS' CONSIDERATION IN 2014 REVISED CRITICAL HABITAT PROPOSAL
OAHU (AREA 14)	
Commercial Anchorages B, C, D	Benefits of exclusion do not outweigh benefits of designation.
Fleet Operational Readiness Accuracy Check Site	
Marine Corps Training Area Bellows Offshore	
MAUI NUI (AREA 15)	
Kahoolawe Danger Zone	Benefits of exclusion do not outweigh benefits of designation.
Source: Information on critical habitat designation provided by NMFS on November 5, 2013; Communication with NMFS, April 16, 2014.	

353. A detailed assessment of the requested exclusions of military lands due to national security is provided in Appendix A of NMFS' Final ESA Section 4(b)(2) Report.[237] In general, of the six military areas requested for exclusion due to national security but not excluded based on NMFS determination, NMFS determined that military activities within four of the areas would not affect the essential features of critical habitat for the monk seal; therefore the designation will not likely affect these areas, and these areas are included as part of the study area for this analysis. NMFS did not exclude marine areas surrounding Niihau from 10 m in depth to 12-miles offshore around the Island requested for exclusion because of the relatively high use of the areas by monk seals. One area was not excluded (Kahoolawe Danger Zone) in part because NMFS determined that the military activities occurring were not related to national security and the area is used by monk seals.

354. This analysis does not evaluate the potential impacts of the designation on military readiness; NMFS discusses the assessment of natural security impacts separately in the final 4(b)(2) report. This analysis does, however, evaluate the potential economic impacts associated with the designation of these areas as critical habitat for Hawaiian monk seals.

11.3.5 MILITARY ACTIVITIES ON NIIHAU (SPECIFIC AREA 12)

355. Niihau is a privately-owned island. It was purchased from King Kamehameha V in 1864 and has remained in the purchaser's family since that time. The owners operate Niihau Ranch and maintain the island to support traditional Hawaiian ways of life. Niihau supports approximately 240 individual residents. The primary occupation is subsistence farming and fishing. Niihau Ranch also leases portions of the island to the Department of Defense for military training and testing, and to private enterprises for agricultural development.

[237] See Appendix A of: National Marine Fisheries Service. "Revision of Critical Habitat for Hawaiian Monk Seals: ESA Section 4(b)(2) Report (To accompany the Proposed Rule)."

356. In 1984, Niihau Ranch leased the Navy access to the island through September 30, 2020 for a one-time payment of one dollar. The lease agreement does not specify use of specific portions of the island. Use of the island is requested of Niihau Ranch on a case by case basis; the Niihau Ranch Manager must agree to the sites chosen for particular activities. The ongoing lease agreement between the Navy and Niihau Ranch can be terminated be either party with 30 days' notice.[238]

357. The Navy, as well as other government agencies that use the PRMF, rely on Niihau for a variety of training and testing activities, including:

- Downed Pilot Training;
- Helicopter Terrain Flight (TERF) Operations;
- Electronic Warfare (EW) Exercises;
- Instrumentation Testing;
- Target and Interceptor Launches;
- Special Warfare Operations
- Cruise Missile Defense; and
- Unmanned Aerial Vehicle (UAV) Contingency Landing Support.

358. Additional activities that may occur on Niihau Island in the future include launching projectiles via electromagnetics and directed energy (i.e., laser) work. The Navy has consulted on amphibious landings and received approval for this activity. While amphibious landings are not currently occurring for training purposes, they may take place on Niihau in the future. In addition, supplies are brought ashore in Niihau by a landing craft vessel in a process similar to an amphibious landing. Amphibious landings are a particular concern with respect to monk seal conservation as they may affect beaches relied upon by monk seals for hauling out or pupping. All PMRF activities would require National Environmental Policy Act (NEPA) compliance, as well as Marine Mammal Protection Act (MMPA) review and ESA consultation.[239]

359. The Navy maintains a contract with Niihau Ranch for services in kind, such as equipment rental and hiring labor. The Navy's terms and conditions for the use of Niihau Island include the following:

- All occasions for entry to Niihau Island by PMRF personnel, contractors, or other government agencies shall be coordinated with Niihau Ranch Government Point of Contact.
- All government or contractor personnel shall be escorted by a Niihau Ranch representative for the duration of each visit or exercise (the exception being conducting maintenance or exercises from the APS-134 Radar Site at Paniau Ridge).

[238] Communication with the U.S. Department of the Navy on July 23, 2012.

[239] Communication with the U.S. Department of the Navy on July 23, 2012.

- The government shall utilize Niihau Ranch and Niihau Helicopters surface and air transportation services for all personnel/equipment transportation requirements involving Niihau Island facilities or operations of the PMRF conducted on Niihau Island (the exception being transportation by PMRF helicopter to the APS 134 Radar Site for the purpose of performing maintenance).
- The government and its assigned representatives including support contract personnel shall be allowed to enter or utilize certain areas of Niihau Island, as agreed to on a case basis by the Niihau Ranch Manager for purposes of planning for, or conducting operations in support of the PMRF or other government agencies which utilize PMRF for training or as a project support site.
- Where non-technical labor is required to support any site, operation or project, available Niihau Ranch labor shall be utilized.[240]

360. Other PMRF "range users" include the Department of Energy (DOE), National Aeronautics and Space Administration (NASA), the USMC, and the Missile Defense Agency (MDA), which also rely on Niihau Ranch and Helicopters services for activities on Niihau. These agencies' use of the island occurs less frequently than the Navy's; however, the MDA is a major user of the Niihau Island. In addition, recently the USMC has been scoping the potential for conducting cross-beach activities, aircraft landings, and overflight activities on portions of Niihau.[241] Niihau Ranch further indicated that the U.S. Navy Seals and the Army have expressed interested in training on Niihau.[242]

11.3.6 MONK SEAL CONSERVATION ON NIIHAU (SPECIFIC AREA 12)

361. With respect to monk seal conservation measures, the Navy currently defers to Niihau Ranch. The goal is to avoid locating activities near monk seals; Niihau Ranch directs the Navy with respect to areas to avoid. Thus far, this has resulted in relocating some activities but not precluding any activities. The programmatic Environmental Impact Statement (PEIS) developed for the PMRF operations under NEPA determined that there was no impact from current activities on monk seals.

362. In addition, Niihau Ranch has supported monk seal conservation on the island historically by restricting access to areas regularly used by monk seals, and providing some monitoring data on seals (e.g., population numbers and health).[243] These activities benefit the monk seal on Niihau and the island currently supports the greatest population of Hawaiian monk seals.

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[240] U.S. Department of the Navy. December 1998. "Pacific Missile Range Facility Enhanced Capability: Final Environmental Impact Statement, Appendix G."

[241] Communication with the U.S. Department of the Navy on July 23, 2012.

[242] Email communication from Niihau Ranch to National Marine Fisheries Service on June 28, 2012.

[243] Communication with National Marine Fisheries Service, June 28, 2012.

363. Since the addition of coastal and marine areas out to 10 m depth around Niihau to the PMRF INRMP, the Navy has been working in cooperation with NMFS and Niihau Ranch to ensure that the INRMP provides conservation measures for near-shore areas that support Navy activities. This includes adding descriptions to the conservation activities occurring on Niihau that support near-shore resources and habitat. These measures include: removal of feral pigs, bans on ATVs (to preserve the sand dunes and coastal areas), bans on dogs (to prevent disturbance to native wildlife) and continued limited access for guests. Additionally, the Navy, NMFS and Niihau Ranch are working together to implement a monitoring plan for monk seals and sea turtles, which includes multiple surveys throughout the year to supplement existing data on Hawaiian monk seal population assessment and habitat use for the Island of Niihau.[244]

364. After reviewing the conservation measures that are applied across all areas subject to the PMRF INRMP NMFS determined that the PMRF INRMP provides a benefit to the Hawaiian monk seal, which makes the areas subject to the INRMP not eligible for critical habitat designation. However, marine areas at depths greater than 10 m remain eligible for designation.

11.3.7 HRC ENVIRONMENTAL IMPACT STATEMENT

365. An EIS was developed considering and outlining mitigation for effects of military activities in the HRC. The EIS specifically contemplates effects on Hawaiian monk seals and their habitat.

366. The EIS concludes that the HRC activities that are most likely to negatively affect monk seals are the use of tactical active sonars, and activities involving live fire or explosives. In addition, vessel landings and beach use have the potential to affect monk seals. The EIS specifies the following mitigation measures to avoid affecting monk seals:

- Implement lookouts for monk seals;
- Conduct aircraft surveillance for monk seals when available;
- Implement the use of passive listening devices;
- Establish safety zones;
- Sonar power limit requirements in monk seal areas;
- Consideration of bathymetry and oceanographic conditions and habitat preferences before conducting activities;
- If monk seals are observed during prelaunch safety clearance activities, the launch should be delayed until monk seals are clear of the safety zones;
- Surveys should be conducted on beach areas on PMRF/Main Base and Niihau to reduce potential for effects on Hawaiian monk seals;

[244] Communication with the U.S. Department of the Navy on July 23, 2012.

- PMRF should work with landowners on Niihau to develop Hawaiian monk seal monitoring programs;
- Ocean vessel landings should be checked to ensure the sites are clear of monk seals; and
- Personnel are trained to be aware they are not to harm or harass monk seals.[245]

367. The Navy has undertaken section 7 consultation with NMFS regarding impacts of HRC activities on monk seals. NMFS determined that the activities, as managed according to the EIS, are not likely to jeopardize monk seals.[246] Future consultations will further consider the potential for these activities to adversely modify critical habitat.

11.4 METHODOLOGY FOR EVALUATING IMPACTS ON MILITARY ACTIVITIES

368. This section describes the potential for critical habitat designation for monk seals to affect the types and levels of Hawaiian monk seal conservation efforts implemented for military activities. It also quantifies the potential administrative costs of considering critical habitat as part of future consultation on military activities, and describes the potential indirect economic effects of critical habitat on military activities.

11.4.1 IMPACTS OF ADDITIONAL CONSERVATION EFFORTS

369. The 2014 Biological Report lists possible modifications to military activities that NMFS may recommend through section 7 consultations to avoid adverse modification to monk seal critical habitat. Exhibit 11-2 lists the general types of project modifications that NMFS biologists expect to consider.

EXHIBIT 11-2. MONK SEAL HABITAT CONSERVATION EFFORTS ASSOCIATED WITH MILITARY ACTIVITIES

CONSERVATION EFFORT/PROJECT MODIFICATION
Restrictions on the spatial extent of the project
Increased educational efforts with an emphasis on habitat protection
Monitoring efforts to identify impacts to benthic community or prey species
Monitoring efforts to identify impacts to monk seal use
Source: National Marine Fisheries Service, *Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report*, October 2014, received from NMFS on November 13, 2013.

370. The mitigation and conservation measures being implemented through the existing management of HRC activities and through the existing INRMPs significantly overlap

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

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

the recommendations NMFS expects to make to avoid adverse modification of critical habitat for monk seal. In particular, the EIS and INRMPs restricting access to monk seal beaches, limiting activities when surveys indicate monk seals are present, minimizing impacts on prey species, and monitoring seal population numbers and activities, and employing biologists to monitor activities for effects on marine mammals. It is unclear whether these baseline protections include monitoring effects on benthic communities and seal foraging behavior.

371. Based on the plans directing monk seal conservation in most areas that support military activities, we expect that it is likely that these conservation measures would be implemented even absent critical habitat designation for the monk seals. This analysis therefore concludes that while consultation is expected to occur on future military activities, these consultations will not result in a request for project modifications beyond those that are implemented under current regulatory environment in most places. We do expect, however, that critical habitat will increase the administrative burden of consultation on these activities.

372. Critical habitat does, however, have the potential to indirectly affect military use of particular areas within the study area as described in Section 11.4.3.

11.4.2 ADMINISTRATIVE COSTS

373. NMFS works in consultation with DOD to determine impacts to the environment and to listed species. The Navy consults with NMFS regarding activities in the HRC as part of a programmatic consultation every five years, and an annual review of monitoring reports and activities is conducted to minimize impacts to listed and protected species as well as the environment.

374. We do not expect critical habitat designation will increase the frequency of section 7 consultations on military activities moving forward. The military has regularly consulted with NMFS and will continue to do so following critical habitat designation. For areas that are ultimately designated as critical habitat, these consultations will be subject to the additional consideration of the potential for adverse modification of critical habitat. For the reasons described in Section 11.4.1, we do not anticipate the consideration of adverse modification will change the specific monk seal conservation efforts implemented in most areas. Accordingly, incremental economic impacts associated with the consultations are most likely to be limited to additional administrative burden for all parties.

375. Exhibit 11-3 summarizes the expected number of consultations on military activities by specific area. As critical habitat designation is not expected to increase the number of future consultations, we rely on the frequency and location of historical consultations on military activities to predict the likely level of consultation activity over the next ten years by specific area.

EXHIBIT 11-3. MILITARY ACTIVITY ACTIONS FOR MONK SEAL, 2000 THROUGH 2012[247]

SPECIFIC AREA/ISLAND		INFORMAL	TECHNICAL ASSISTANCE	TOTAL (ALL)*	TOTAL (IN PCHD)
2	Midway Islands	4	0	4	4
12	Niihau Island	1	0	1	1
13	Kauai	4	0	4	1
14	Oahu	18	6	24	3
15	Maui Nui	1	0	1	1
16	Hawaii	0	1	1	0
	Multiple Islands	4	2	6	3
	Total	**32**	**9**	**41**	**13**

Source: Consultation history provided by NMFS, June 2012.

376. A total of 41 consultations that included monk seal on military activities occurred between 2000 and May of 2012. These included 32 informal consultations and no formal consultations. Of the relevant consultations, 13 activities fall in areas within the study area. Some of the areas are being excluded from critical habitat due to military readiness concerns, however. To the extent that they are excluded from designation, this estimate may overstate the number of consultations that will need to consider critical habitat in the future. Consultation actions are summarized in Exhibit 11-3. In addition to these consultations, NMFS participates in formal consultations on HRC activities approximately every five years. These consultations are undertaken by NMFS' Headquarters and may not be captured in the consultation history that was provided to support this economic analysis.

377. Our analysis expects the same rate of consultation to continue over the next 10 years. In addition to consultations estimated based upon the historical consultation record, we anticipate that the Navy will carry out formal consultations every five years to consider HRC activities. Overall, our analysis estimates approximately 2 consultations per year related to military activities over the next ten years.

378. Exhibit 11-4 describes the expected level of administrative effort to consider critical habitat for the Hawaiian monk seal as part of future section 7 consultations on the military activities. NMFS anticipates limited effort on their part to consider critical habitat above and beyond the effort required to consider effects on the monk seals themselves. The estimated level of effort for Federal agencies involved in the consultation (most likely the Navy or other military agencies) derives from

[247] Includes consultation actions through May 2012.

communications with Federal agencies involved in section 7 consultations considering activities on Federal lands.

379. Overall, we expect the level of effort to incorporate consideration of critical habitat into future section 7 consultations for military projects to cost approximately $1,000 per informal consultation effort. Of note, this estimate is not intended to be precise but provides an average level of effort. This relatively minor per effort cost reflects the ongoing and continuing collaboration on the part of the Navy and other military agencies with NMFS regarding the monk seal's conservation needs. That is, the recommended conservation measures to avoid adverse modification are assumed to be well-established and understood by NMFS and the Navy.

EXHIBIT 11-4. INCREMENTAL ADMINISTRATIVE COSTS FOR MILITARY ACTIVITIES IN HAWAIIAN MONK SEAL CRITICAL HABITAT PER EFFORT (2013$)

CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	TOTAL COST
Technical Assistance	$277	$277	$0	$554
Informal	$69	$888	$0	$957
Formal	$4,060	$1,460	$0	$5,530

Sources: Communication with NMFS, September 2012; U.S. Department of Commerce, National Marine Fisheries Service. 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.
Note: Consultations on military activities are assumed to involve only NMFS and the relevant military branch. No third party costs are expected. Federal agency costs were adapted from the NMFS pacific salmon and steelhead trout analysis. "Federal lands management" and "In-stream work" were used as proxies for level of Federal agency effort required in consultations on military activity.

11.4.3 UNQUANTIFIED POTENTIAL IMPACTS ASSOCIATED WITH THE DESIGNATION OF NIIHAU (SPECIFIC AREA 12)

380. The proposed critical habitat designation may have spurred the Navy to include Niihau in the existing PMRF INRMP. The costs of adding Niihau to the document would be associated with the critical habitat designation. In addition, the INRMP specifies monitoring efforts for monk seals. The costs of these monitoring efforts would also be costs of the critical habitat designation, although they would be implemented under the INRMP, because the critical habitat proposal provided the information to the Navy that the monitoring efforts should be occurring in this area. The Navy anticipates that costs of inclusion of Niihau in the IRMP will not be great relative to the potential for critical habitat to limit PMRF activities on Niihau Island.[248]

11.5 RESULTS OF ANALYSIS OF IMPACTS TO MILITARY ACTIVITIES

381. Exhibit 11-5 summarizes the total present value impacts of monk seal critical habitat designation on future military activities. Overall, this analysis finds that total present

[248] Communication with the U.S. Department of the Navy on July 23, 2012.

value impacts may be approximately $14,900 over the next ten years, an annualized cost of $2,120. The relatively low level of quantified impacts on military activities reflects the limited frequency of consultation, and low likelihood of additional conservation required due to the existing plans and practices in place in the HRC and PMRF.

EXHIBIT 11-5. PRESENT VALUE ADMINISTRATIVE IMPACTS TO MILITARY ACTIVITIES, 2014-2023 ($2013)

SPECIFIC AREA/ISLAND		TOTAL PRESENT VALUE	ANNUALIZED
Northwest Hawaiian Islands			
1	Kure Atoll	$165	$24
2	Midway Islands	$2,250	$321
3	Pearl and Hermes Reef	$386	$55
4	Lisianski Island	$625	$89
5	Laysan Island	$293	$42
6	Maro Reef	$1,030	$147
7	Gardner Pinnacles	$1,280	$182
8	French Frigate Shoals	$489	$70
9	Necker Island	$789	$112
10	Nihoa Island	$285	$41
Main Hawaiian Islands			
11	Kaula Island	$46	$7
12	Niihau Island	$719	$102
13	Kauai	$798	$114
14	Oahu	$1,960	$279
15	Maui Nui	$3,080	$439
16	Hawaii	$720	$103
Total		**$14,900**	**$2,120**

11.5.1 IMPACTS SPECIFIC TO NORTHWEST HAWAIIAN ISLANDS

382. Military activities are limited in the NWHI. The only activities identified as ongoing are the environmental cleanup activities at the Naval Air Facility at Midway Island (Specific Area 2). This facility was closed in accordance with the Base Closure and Realignment Act of 1990 (BRAC). The Navy has consulted with NMFS with respect to the effects of the subsequent cleanup activities on Hawaiian monk seals.

11.6 ASSUMPTIONS AND LIMITATIONS

383. Exhibit 11-6 describes the key assumptions relied upon in this analysis and the influence of those assumptions on the results of the analysis.

EXHIBIT 11-6. ASSUMPTIONS AND LIMITATIONS

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED IMPACTS
Existing regulation and management of military activities most likely avoids the potential for the activities to adversely modify critical habitat for the Hawaiian monk seal.	May result in an **underestimate** of costs.	**Likely minor.** While we recognize this as a key assumption of the analysis, the level of conservation afforded the monk seals due to the implementation of the existing HRC EIS and PMRF INRMP make it unlikely that critical habitat designation will generate the need for additional conservation measures for monk seals in areas covered by these plans.

CHAPTER 12 | OTHER IMPACTS OF CRITICAL HABITAT DESIGNATION, INCLUDING: IMPACTS ON NATIVE HAWAIIAN ACTIVITIES; ACTIVITIES IN THE NWHI; BEACH RECREATION AND TOURISM; SCIENTIFIC RESEARCH; AND MISCELLANEOUS ACTIVITIES

12.1 INTRODUCTION

384. This chapter assesses the potential impacts of designating critical habitat for the Hawaiian monk seal on activities not otherwise addressed in previous chapters of this report. Since no Federal nexus exists for Native Hawaiian activities or beach recreation, this chapter addresses potential indirect impacts to these categories of activities. Direct, administrative impacts are forecast for permitting of scientific research, for miscellaneous other actions captured under a category that we call "Other", and for permitted activities on the Northwest Hawaiian Islands (NWHI).

385. A number of public commenters on the 2011 monk seal critical habitat proposed rule and draft economic analysis expressed concern that the rule could adversely affect Native Hawaiian cultural practices, including access to cultural resources, food supplies, and nurseries, as well as traditional rights to fishing and gathering in shoreline areas.[249] Sections 12.2 addresses potential impacts on Native Hawaiians. Section 12.3 summarizes the status of existing critical habitat in the NWHI and the potential effects of the refined proposed critical habitat designation. Section 12.4 considers potential effects of critical habitat on beach recreation and tourism; Section 12.5 addresses potential impacts on future permitting of scientific research; and Section 12.6 addresses potential impacts on miscellaneous other actions that may undergo section 7 consultation considering Hawaiian monk seal critical habitat. Finally, section 12.7 summarizes key uncertainties associated with the analysis of impacts to miscellaneous other activities in this chapter.

[249] See for example: Public comments of Kainoa Kaauamo, Na Moku Aupuni o Ko 'olau Hui, August 7, 2011; Public comments of Hope Kallai, August 30, 2011; Public comments of Jennifer Pomroy, August 19, 2011; Public comments of Rhoda Makanani Libre, August 31, 2011.

KEY FINDINGS

Quantified Impacts:

- Research activities. We forecast that $17,800 (present value assuming a seven percent discount rate) in incremental administrative impacts (or $2,530 annually) is likely to be incurred by agencies and third parties as a result of administrative efforts to include monk seal in future consultations related to scientific research permits.
- Other miscellaneous actions. We forecast $260,000 (present value assuming a seven percent discount rate) in future administrative costs ($37,100 annually) associated with section 7 efforts associated with miscellaneous actions not already captured elsewhere in this analysis.

Unquantified Impacts:

- The following activities do not have a Federal nexus, and are therefore not directly regulated by the designation. This analysis discusses potential indirect impacts resulting to these activities due to potential restrictions on related actions from the rule.
- Native Hawaiian activities. As discussed in Chapter 4, restrictions on the spatial or temporal extent of bottomfish or coral reef fisheries are possible. To the extent that future fisheries restrictions occur, Native Hawaiian fishermen would be affected, and impacts could have community-level and cultural impacts beyond the loss of revenue to fishermen. To the extent that beach recreation is limited, indirect impacts on Native Hawaiian gathering activities could be affected.
- Beach recreation and tourism. While beach recreation is not listed as a threat in the proposed rule, indirect impacts associated with future shoreline development are possible in the event that developments are modified to reduce future beach access. Existing access will not be restricted on currently used beach areas as a result of critical habitat. Indirect impacts to beach recreation may only result if limitations are placed on projects that either directly or indirectly allow for the expansion of recreational activity into areas that are not already used. Similarly, shoreline fishing and fisheries that do not have a Federal nexus are not impacted by the designation.

Geographic Distribution of Impacts:

- The majority of quantified administrative costs to research permits are expected in the NWHI. Miscellaneous other projects are distributed throughout the study area.

Key Uncertainties:

- Specific future management measures that may be necessary to reduce impacts to the monk seal critical habitat from fisheries activities are uncertain. If such restrictions occur, then impacts reported in this analysis, including cultural impacts to Native Hawaiians, would be understated.
- The extent to which any future recommendations to modify development projects could affect future beach access is uncertain. In the case that modifications to development projects due to critical habitat designation affect beach access, impacts are not captured in this analysis. As described in Chapter 7, however, we anticipate that it is unlikely that critical habitat designation will restrict coastal development above and beyond the modifications requested due to the presence of the monk seals.

12.2 IMPACTS TO NATIVE HAWAIIANS

386. Given the unique characteristics of the Native Hawaiian population, the approach used to analyze potentially affected activities by Native Hawaiians is different than that for other types of activities. This section provides a qualitative discussion of economic conditions in Native Hawaiian communities, and discusses concerns about monk seal critical habitat designation expressed by Native Hawaiians in public comments on the draft economic analysis, and the mechanisms by which critical habitat designation may affect Native Hawaiians. We then discuss the likely incremental impacts of critical habitat designation on Native Hawaiian activities.

387. There is no Federal nexus for gathering or other activities conducted by Native Hawaiians. As the rule does not directly regulate Native Hawaiian activities, impacts discussed in this section are considered indirect impacts of the rule.

12.2.1 BACKGROUND AND DEMOGRAPHICS

388. Native Hawaiians are indigenous people to the Islands of Hawaii. As stated in Levy (1975), "in less than 200 years of contact with western civilization, Native Hawaiians, descendants of Polynesians who inhabited the islands prior to 1778, have lost control of the great bulk of their homeland."[250]

389. Because of its broad coverage of coastal areas in the MHI, critical habitat designation for monk seal overlaps with many areas that are traditionally used by Native Hawaiians for cultural practices, as well as lands that are under the jurisdiction of the Department of Hawaiian Home Lands (DHHL), an agency established in 1920 with the aim of returning Native Hawaiians to their native lands. While Native Hawaiians lack a formal treaty and "federally recognized" status with the United States government in a manner similar to mainland Native American Tribes, Native Hawaiians have traditional rights to fishing and gathering on coastal areas in Hawaii. In addition, some lands are under the jurisdiction of the DHHL.

390. Available data indicate that, on average, Native Hawaiians are economically disadvantaged compared to other residents. In comparison to Hawaii residents as a whole, Native Hawaiians experience higher rates of unemployment (though similar to the U.S. as a whole), earn lower incomes, and are more likely to live in poverty, as highlighted in Exhibit 12-1.

391. In addition to their status as economically disadvantaged, the unique circumstances of Native Hawaiians who live in predominantly Native Hawaiian communities may also affect re-employment opportunities. For example, Native Hawaiians who lose jobs may be less likely to move away from the community to find work elsewhere, particularly in rural areas. Thus, in the event that the designation of critical habitat results in the indirect reduction in local employment opportunities, such as fishing, elevated unemployment

[250] Levy, Neil M. "Native Hawaiian Land Rights," California Law Review. Vol 63, 848. 1975.

may become a chronic problem. However, NMFS expects that this result is highly unlikely.

EXHIBIT 12-1. SOCIOECONOMIC INFORMATION (2011)

DEMOGRAPHIC LEVEL	POPULATION	UNEMPLOYMENT RATE	PER CAPITA INCOME	POVERTY RATE
United States	311,591,917	10.3%	$27,334	13.8%
Hawaii	1,374,810	7.7%	$28,882	8.1%
Native Hawaiians in Hawaii	355,816[1]	10.5%	$18,700	17.2%

[1] Includes people identifying themselves as Native Hawaiian and other Pacific Islander, either alone or in combination with another race.
Source: U.S. Census Bureau, *American Factfinder*. Accessed at: http://factfinder.census.gov/; the Native Hawaiian and Other Pacific Islander Population : 2010, U.S. Census Bureau; American Community Survey 2011 Hawaii, Accessed at : http://hawaii.gov/dbedt/info/census/acs/ACS2011/ACS2011_1_Year/acs_hi_2011_pop_profiles

12.2.2 POTENTIAL IMPACTS ON NATIVE HAWAIIAN ECONOMIC ACTIVITIES

392. Native Hawaiian public commenters expressed concern in particular about potential impacts from monk seal critical habitat designation associated with changes to beach and other coastal area access, as well as changes to allowable fishing activities (including their ability to maintain/improve fishponds). Each of these activities are discussed below.

Impacts on Fishing and Cultural Practices

393. Because of the central role that fishing has to traditional Native Hawaiian culture, commenters state that changes in fisheries management could affect Native Hawaiian cultural practices, food supplies, and nurseries, as well as traditional rights to fishing and gathering in shoreline areas.[251] While Native Hawaiians are exempt from some fishing-related fees and requirements, those who participate in the commercial bottomfish or coral reef fishery would be expected to be affected if those fisheries were restricted due to critical habitat designation. Chapter 4 of this report concludes that restrictions on the spatial or temporal extent of bottomfish or coral reef fisheries are possible. However, near-term changes to management of these fisheries to accommodate monk seal critical habitat designation appear unlikely because available information suggests that fisheries do not cause adverse modification of critical habitat. Other gathering practices should not be affected by critical habitat designation as no Federal nexus exists for them.

Impacts on Fishpond Maintenance/Improvement

394. Some public commenters questioned whether designation of critical habitat for monk seal could affect future repairs, restoration efforts, or extensions of existing fishponds.[252] One informal consultation has occurred in the study area on fishponds; this informal consultation was related to an emergency repair of the beach fronting the Kuualii

[251] See for example: Public comments of Kainoa Kaauamo, Na Moku Aupuni o Ko ‘olau Hui, August 7, 2011; Public comments of Hope Kallai, August 30, 2011; Public comments of Jennifer Pomroy, August 19, 2011; Public comments of Rhoda Makanani Libre, August 31, 2011.

[252] See, for example, public comments of Bianca Isaki, September 7, 2011.

fishpond in 2011. As commenters point out, actions that require USACE permits result in section 7 consultations to evaluate impacts on the monk seal.

395. Although the maintenance and improvement of fishponds may require Federal permitting and a section 7 consultation to evaluate impacts on the monk seal, the proposed monk seal critical habitat rule states that, in addition to hardened shorelines or developed areas that have been explicitly excluded from critical habitat maps:

1. "other stretches of hardened shoreline do exist in the MHI…such areas have been included in the designation with the understanding that terrestrial areas with manmade structures (e.g., docks, fishponds, seawalls, piers, roads, pipelines) and the land on which they are located, in existence prior to the effective date of the rule are not essential to the conservation of the species and do not meet the definition of critical habitat."[253]
2. As such, existing fishponds are not considered to be critical habitat for monk seal. To be conservative, and assuming that critical habitat is discussed in future consultations related to fishponds, this analysis forecasts future administrative costs associated with fishpond consultations at a rate similar to past actions. These costs are included in Chapter 8 of this analysis.

Changes to Beach/Coastal Access

396. A number of public commenters expressed concern that Native Hawaiians would experience reduced access to beaches following critical habitat designation for monk seal. These commenters expressed concern that limiting access to Native Hawaiians in particular has the potential to affect Native Hawaiian cultural practices, including traditional gathering and farming.[254] With respect to beach access, Native Hawaiians are part of the public from the perspective of section 7 actions. Potential effects of critical habitat designation on general public beach access are discussed in the next section.

12.3 ACTIVITIES IN THE NORTHWEST HAWAIIAN ISLANDS

397. As described in Chapter 1, portions of the NWHI were designated as critical habitat for the Hawaiian monk seal in 1986 and 1988. Existing critical habitat includes 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 20 fathoms (36.6 m) around Kure Atoll, Midway Islands (except Sand Island), Pearl and Hermes Reef, Lisianski Island, Laysan Island, Gardner Pinnacles, French Frigate Shoals, Necker Island, and Nihoa Island, as well as Maro Reef. [255,256]

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[253] 76 FR 32039.

[254] See for example: Public comments of Kainoa Kaauamo, Na Moku Aupuni o Ko 'olau Hui, August 7, 2011.

[255] 51 FR 16047.

[256] 53 FR 18988.

398. This analysis quantifies future impacts of critical habitat in the existing critical habitat areas. Although they are already designated as critical habitat, the proposed designation contemplates whether to re-designate these areas as critical habitat as part of the revised critical habitat designation. Thus, in weighing the benefits of including these areas as critical habitat against the benefits of excluding them, NMFS requires information on the economic impact of critical habitat designation.

399. As part of the revision for Hawaiian monk seal critical habitat, NMFS is considering expanding marine habitat in the NWHI to a depth of 200 m for the ten areas previously identified as critical habitat, including Sand Island at Midway Atoll, but not including Midway Harbor at Sand Island. The ten specific areas meeting the definition of Hawaiian monk seal critical habitat in the NWHI are:[257]

- Area 1. Kure Atoll
- Area 2. Midway Islands (not including Midway harbor)
- Area 3. Pearl and Hermes Reef
- Area 4. Lisianski Island
- Area 5. Laysan Island
- Area 6. Maro Reef
- Area 7. Gardner Pinnacles
- Area 8. French Frigate Shoals
- Area 9. Necker Island
- Area 10. Nihoa Island.

400. On June 15, 2006, the Papahanaumokuokea Marine National Monument was established in the NWHI by Presidential proclamation in accordance with the Antiquities Act of 1906. The monument includes emergent land and Federal waters out 50 miles, encompassing 140,000 square miles and ten islands and atolls of the NWHI. A partnership of the Department of Commerce, the Department of the Interior, and the State of Hawaii manages the area. This National Monument status provides the highest form of marine environmental protection under Federal law. 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 out commercial fishing; and banning other types of resource extraction and dumping of waste.

401. In addition, the U.S. Fish and Wildlife Service administers the Hawaiian Islands National Wildlife Refuge (NWR) within the National Monument. The NWR includes most islands within the NWHI and waters out 12 miles.

402. The Papahanaumokuakea Marine National Monument Plan identifies potential stressors to the NWHI habitat as coastal development, marine pollution, terrestrial pollution, dredging, invasive species, fishery debris, climate change and vessel groundings. The

[257] This description reflects the critical habitat as in the proposed rule (2011 Proposed Revised Rule, 76 FR 32034). Since the proposed rule publication, NMFS has reviewed new tracking information on monk seals in the MHI and revised the boundaries of the marine habitat to a 200-m depth contour. All revisions to the designation are discussed in detail in the final rule.

management plan for the Monument allows for very limited human activities within the area, including research, education, Native Hawaiian practices, as well as a limited extent of recreation (one beach), vessel passage, and visits to historical sites at Midway Atoll. While the current management plan prescribes measures to minimize threats to the monk seal and its habitat (including approach distances and educational programs), consultations on these activities are expected to occur to ensure the activities are sufficiently protective of the Hawaiian monk seal and its critical habitat.

12.3.1 FUTURE SECTION 7 CONSULTATIONS

403. NMFS and other Monument managers expect to address consultations regarding Hawaiian monk seal in the NWHI with respect to the following activities:

- Issuance of research permits;
- Education activities;
- Wildlife observation and photography; and
- Recreation management.[258]

404. The majority of the past consultations considering the Hawaiian monk seal in the NWHI have been associated with permitting research activities. The research permitting is overseen by the National Monument; the State of Hawaii, NMFS, and the USFWS all sign the permit and ensure the research plan complies with all relevant requirements, including the Endangered Species Act, and determine whether section 7 consultation is needed.

405. USFWS indicates that there is no difference in the way these types of activities are managed with respect to monk seal in areas that are currently designated as critical habitat and those areas that are not presently critical habitat for the species. This is because the National Wildlife Refuge and National Monument management practices are very protective of the Hawaiian monk seals regardless of critical habitat designation.[259]

406. We expect that, following critical habitat designation, NMFS will continue to consult on the above-referenced activities. Future section 7 consultations will include an incremental amount of administrative cost to address the potential for adverse modification.

407. Our forecast of consultations on research permitting activities in both the NWHI and MHI is based on the locations and frequency of consultations over the past 13 years. Impacts of considering critical habitat as part of future section 7 consultations on research activities in both the NWHI and MHI are quantified in Section 12.5.

408. Our forecast of consultations regarding other activities, such as education and wildlife observation and photography, is similarly based on the locations and frequency of consultations on these activities over the past 13 years. Impacts of considering critical

[258] Communication with Don Palawsky, Deputy Refuge Supervisor U.S. Fish and Wildlife Service Hawaiian and Pacific Islands National Wildlife Refuge Complex, on September 25, 2012.

[259] Communication with Don Palawsky, Deputy Refuge Supervisor U.S. Fish and Wildlife Service Hawaiian and Pacific Islands National Wildlife Refuge Complex, on September 25, 2012.

habitat as part of future section 7 consultations on these miscellaneous other activities in both the NWHI and MHI are quantified in Section 12.6.

12.3.2 MIDWAY ATOLL

409. USFWS submitted a public comment to NMFS in response to the proposed revision to critical habitat for the Hawaiian monk seal in the NWHI. The comment states that Midway Atoll, which was not part of the previous critical habitat designation, has been managed as a NWR since 1988, and as part of the Marine National Monument since 2006. The areas along the western and southwestern shores of the NWR and Turtle Beach on the northern shore have been closed to all human activity in order to protect monk seal populations since the NWR was established in 1988.

410. In addition, USFWS describes Hawaiian monk seal management measures incorporated into the Papahanaumokuokea Monument Management Plan, including at Midway Atoll, which incorporates input from NMFS. Specifically, all staff and visitors to Midway Atoll are required to go through an orientation to the area that includes, among other things, a briefing on avoiding disturbance to the Hawaiian monk seals, specifying a 150 foot viewing distance.[260]

411. The only site in the NWHI that is currently accessible to the public for visitation is a beach on the north side of Sand Island. USFWS does not plan to close this beach to public access in the case that it is designated as critical habitat for the monk seals. USFWS does, however, implement the Visitors Service Plan, which was subject to consultation with NMFS in the past. USFWS plans to consult with NMFS every five years on the plan to ensure it appropriately considers monk seal conservation. USFWS states that law enforcement is present at Sand Island to ensure there is no human interaction with Hawaiian monk seals in the public access area. This has led to a no effect determination for monk seals regarding activities in this area.[261]

412. The comment from USFWS asserts that these areas are accordingly managed to provide a greater level of protection to Hawaiian monk seals than critical habitat designation.[262] Critical habitat designation is therefore not anticipated to affect the management of activities occurring at Midway Atoll. However, section 7 consultation is anticipated every five years for review of the Visitors Service Plan. Future consultations on the Visitors Service Plan are incorporated in the forecast of miscellaneous other activities in Section 12.6.

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[260] Letter from U.S. Fish and Wildlife Service, Hawaiian and Pacific Islands National Wildlife Refuge Complex, to National Marine Fisheries Service, Pacific Islands Regional Office, "Proposed Rulemaking to Revise Critical Habitat for Hawaiian Monk Seals," January 6, 2012.

[261] Communication with Don Palawsky, Deputy Refuge Supervisor U.S. Fish and Wildlife Service Hawaiian and Pacific Islands National Wildlife Refuge Complex, on September 25, 2012.

[262] Letter from U.S. Fish and Wildlife Service, Hawaiian and Pacific Islands National Wildlife Refuge Complex, to National Marine Fisheries Service, Pacific Islands Regional Office, "Proposed Rulemaking to Revise Critical Habitat for Hawaiian Monk Seals," January 6, 2012.

413. Overall, we anticipate the economic costs of critical habitat designation in the NWHI will be similar to past years. Activities will continue to be subject to section 7 consultation, and will require relatively limited effort to consider critical habitat as they are already managed for monk seal conservation under the National Monument management plan and NWR status. Although the current proposal to revise critical habitat incorporates additional areas in the NWHI (marine habitat out to a 200-m depth, and Sand Island at Midway Atoll, these areas are expected to support limited activity. Permits for research, and management of the public access areas of Sand Island are already subject to consultation due to the presence of the monk seals. The addition of critical habitat will add administrative effort to these consultations in the future but is not expected to change the management of the monk seal in these areas.

12.4 IMPACTS TO BEACH RECREATION AND TOURISM

414. A number of public comment on the 2011 proposed rule raised concerns about potential negative impacts of critical habitat designation for the monk seal on beach access and tourism. Public comments point to current restrictions on beach use that occur when monk seals are present, and express concern that critical habitat designation will increase such closures. They also express concern that monk seal critical habitat will lead to increased perception that beaches are dangerous, either due to monk seals themselves, or due to sharks that may pursue them. They express concern that increased perception of danger could lead to decreased tourism to Hawaii. [263]

415. NMFS does not anticipate that critical habitat designation for monk seal will lead to recreational beach closures. The justification for this finding is as follows:

- NMFS states that critical habitat designation is unlikely to limit current access to beaches.[264] Recreational use of beaches does not typically have a Federal nexus compelling consultation, unless such use occurs on Federal lands.
- Under the listing of the species, monk seals are currently found at many popular beach recreation sites, and beach closure has not resulted. In some cases, signs, cones or ropes may be erected temporarily around seals that have hauled out on the beach. These areas, referred to as seal protection zones, are not a legal barrier that closes the beach, rather, the signs notify beachgoers of the seal to reduce disturbance through education.[265] While these actions would be expected to continue with critical habitat for monk seal in place, these actions are conducted for the benefit of the monk seals, and would not be attributable to critical habitat

[263] See for example, Public comments of Frank Jr. Farm, September 27, 2011; Public comments of Bruce Jevallana, August 19, 2011.

[264] Personal communications with NMFS, Protected Resources Division on June 20, 2012 and July 18, 2012.

[265] Personal communications with NMFS, Protected Resources Division on January 23, 2013.

designation.[266] Critical habitat designation would not be expected to change the use of seal protection zones.

- Indirect reductions in future beach recreation will result only in the event that future development in remote areas, which in turn causes increased recreational access, is restricted due to the designation. However, as discussed in Chapter 7 of this report, due to the significant level of baseline protections in place currently, the extent to which the critical habitat designation will generate additional conservation requirements for development activities is uncertain.

12.5 IMPACTS TO SCIENTIFIC RESEARCH ACTIVITIES

416. Scientific permits that may affect listed species require Federal permits, which in turn may lead to section 7 consultation. In study area, 15 past informal consultations involved monk seal on the NWHI; seven more informal consultations occurred on the MHI between 2000 and 2012. The consultation history for consultation actions on research permits is included in Exhibit 12-2. In the future, these actions will need to consider the potential impacts that permitted activities may have on monk seal critical habitat designation.

EXHIBIT 12-2. RESEARCH CONSULTATION ACTIONS FOR MONK SEAL IN STUDY AREA, 2000 THROUGH 2012

SPECIFIC AREA/ISLAND		INFORMAL	TECHNICAL ASSISTANCE	TOTAL
2	Midway Islands	1	0	1
8	French Frigate Shoals	2	0	2
14	Oahu	2	0	2
1-10	All NWHI (general)	12	1	13
16	Hawaii	1	0	1
11-16	All MHI (general)	4	0	4
	Total	**22**	**1**	**23**

Source: Consultation history provided by NMFS, June 2012.
Note: Includes consultation actions through May 2012. According to DLNR, the agency consults on a number of research permits annually. These, however, are all federally-funded (Email communication with F. Oishi, HI DLNR, on November 9, 2012). Since these have a Federal nexus, this analysis assumes they are accounted for in the consultation history.

417. Impacts on conservation activities recommended for scientific research are not expected to be different following critical habitat designation for monk seal. Administrative costs are anticipated for actions occurring in the study area. Exhibit 12-3 presents our assumptions about incremental administrative costs per consultation related to

[266] Personal communications with NMFS, Protected Resources Division on June 20, 2012 and July 18, 2012.

consideration of monk seal critical habitat. Our analysis assumes that the past rate and distribution of consultations on research permits is likely to be a good proxy for the likely future rate of these efforts.

418. As shown in Exhibit 12-4, we forecast that $17,800 in incremental administrative impacts (or $2,530 annually) is likely to be incurred by agencies and third parties as a result of administrative efforts to include monk seal in future consultations related to scientific research permits.

EXHIBIT 12-3. INCREMENTAL ADMINISTRATIVE COSTS FOR RESEARCH PROJECTS AND OTHER ACTIVITIES IN HAWAIIAN MONK SEAL CRITICAL HABITAT (2013$)

Technical Assistance	$277	$0	$277	$554
Informal	$104	$683	$683	$1,470
Formal	$1,040	$1,480	$1,480	$4,000

Sources: Communication with NMFS, September 2012; U.S. Department of Commerce, National Marine Fisheries Service. 2005. Final Economic Analysis of Critical Habitat Designation for 12 West Coast Salmon and Steelhead ESUs.
Note: Technical assistance efforts on energy projects are assumed to involve only NMFS and third parties, with no other federal agencies involved. NMFS estimates of effort associated with in-water and coastal construction were used as a proxy for NMFS effort. Federal agency costs were adapted from the NMFS pacific salmon and steelhead trout analysis, with "Federal Lands Management" used as a proxy for level of Federal agency effort required in consultations on these projects.

EXHIBIT 12-4. FORECAST ADMINISTRATIVE COSTS RESULTING FROM IMPACTS TO RESEARCH PROJECTS, 2014-2023 (2013$, SEVEN PERCENT DISCOUNT RATE)

SPECIFIC AREA/ISLAND		INFORMAL CONSULTATIONS	TECHNICAL ASSISTANCE ACTIONS	TOTAL PRESENT VALUE	ANNUALIZED
1	Kure Atoll	0.3	0.0	$285	$41
2	Midway Islands	1.1	0.0	$1,110	$158
3	Pearl and Hermes Reef	0.6	0.1	$666	$95
4	Lisianski Island	1.0	0.1	$1,080	$154
5	Laysan Island	0.5	0.0	$507	$72
6	Maro Reef	1.7	0.1	$1,780	$254
7	Gardner Pinnacles	2.1	0.2	$2,200	$313
8	French Frigate Shoals	2.3	0.1	$2,430	$346
9	Necker Island	1.3	0.1	$1,360	$194
10	Nihoa Island	0.5	0.0	$492	$70
11	Kaula Island	0.0	0.0	$36	$5
12	Niihau Island	0.2	0.0	$158	$23
13	Kauai	0.2	0.0	$219	$31
14	Oahu	2.0	0.0	$2,080	$296

15	Maui Nui	1.9	0.0	$2,010	$286
16	Hawaii	1.3	0.0	$1,360	$193
	Total	**16.9**	**0.8**	**$17,800**	**$2,530**

Note: Forecast actions are based on the NMFS consultation history. Forecast consultations for consultations that intersect with the study area on multiple islands are distributed according to the relative area for each island.

12.6 IMPACTS TO OTHER ACTIVITIES

419. A small number of past consultation actions (17, of which 13 were informal consultations) occurred in the study area related to actions previously not addressed in this analysis. For example, these actions included informal consultations with the USFWS for a Visitors Service Plan on Midway Atoll, two permits to film movies on the NWHI, and a FAA National Parks Air Tour Management Plan.

420. In addition to section 7 consultation actions, DLNR has identified a number of instances where the agency considers monk seal critical habitat when issuing temporary permits under the purview of the Land Division for activities such as fireworks displays and corporate parties on beaches.[267] To be conservative, we assume that the administrative effort associated with considering monk seal critical habitat in permit issuances is equivalent to effort involved in an informal consultation. We estimate the number of annual actions based on the number of requests for permits over a one year period that DLNR identified as potentially affecting Hawaiian monk seal critical habitat.

421. This analysis assumes that similar types of actions will continue in the future at a rate similar to past actions, and that only administrative costs will be required. Administrative actions per action are assumed to be equal to those required of research permits, as summarized in Exhibit 12-3. To the extent that additional conservation actions are required, this analysis may underestimate the potential future costs associated with considering monk seal critical habitat. As presented in Exhibit 12-6, our analysis forecasts $260,000 in future administrative costs ($37,100 annually) associated with section 7 and related DLNR permit review efforts associated with miscellaneous actions not already captured elsewhere in this analysis.

[267] Public comments of William J. Aila, DLNR, January 6, 2012; Teleconference communication with DLNR staff, August 30, 2012.

EXHIBIT 12-5. PAST CONSULTATION ACTIONS ON OTHER ACTIVITIES FOR MONK SEAL IN THE STUDY AREA, 2000 THROUGH 2012

SPECIFIC AREA/ISLAND		INFORMAL	TECHNICAL ASSISTANCE	TOTAL	DLNR PERMIT REVIEWS (2012)
2	Midway Islands	1	0	1	0
8	French Frigate Shoals	1	0	1	0
13	Kauai	0	0	0	3
14	Oahu	2	1	3	2
15	Maui Nui	1	0	1	9
16	Hawaii	1	2	3	10
	NWHI	3	0	3	0
	MHI[1]	4	1	5	0
	TOTAL	**13**	**4**	**17**	**24**

Source: Consultation history provided by NMFS, June 2012; Email communication with F. Oishi, HI DLNR, November 9, 2012.
[1] One consultation listed as MHI related to all Hawaiian Islands.

EXHIBIT 12-6. FORECAST ADMINISTRATIVE COSTS RESULTING FROM IMPACTS TO OTHER ACTIVITIES, 2014-2023 (2013$, SEVEN PERCENT DISCOUNT RATE)

SPECIFIC AREA/ISLAND		INFORMAL CONSULTATIONS	TECHNICAL ASSISTANCE ACTIONS	TOTAL PRESENT VALUE	ANNUALIZED
1	Kure Atoll	0.0	0.0	$39	$5
2	Midway Islands	2.3	0.0	$2,430	$345
3	Pearl and Hermes Reef	0.1	0.0	$90	$13
4	Lisianski Island	0.1	0.0	$146	$21
5	Laysan Island	0.1	0.0	$69	$10
6	Maro Reef	0.2	0.0	$241	$34
7	Gardner Pinnacles	0.3	0.0	$298	$42
8	French Frigate Shoals	0.9	0.0	$909	$129
9	Necker Island	0.2	0.0	$184	$26
10	Nihoa Island	0.1	0.0	$67	$9
11	Kaula Island	0.0	0.0	$31	$4
12	Niihau Island	0.1	0.0	$136	$19
13	Kauai	26.8	0.0	$27,700	$3,950
14	Oahu	22.7	1.6	$24,100	$3,430
15	Maui Nui	95.6	0.4	$98,900	$14,100
16	Hawaii	101.2	1.7	$105,000	$15,000
	Total	**250.8**	**3.8**	**$260,000**	**$37,100**

Note: Forecast actions are based on the NMFS consultation history and permit review data provided by DLNR. Forecast consultations for consultations that intersect study area on multiple islands are distributed according to the relative area proposed for each island.

12.7 SUMMARY OF ASSUMPTIONS AND LIMITATIONS

422. Exhibit 12-7 summarizes the major assumptions and limitations of this chapter.

EXHIBIT 12-7. ASSUMPTIONS AND LIMITATIONS

ASSUMPTION/SOURCE OF UNCERTAINTY	DIRECTION OF POTENTIAL BIAS	LIKELY SIGNIFICANCE WITH RESPECT TO ESTIMATED IMPACTS
Specific future management measures that may be necessary to reduce impacts to the Hawaiian monk seal critical habitat from Native Hawaiian fishing activities are uncertain.	May result in an **underestimate** of costs.	**Potentially major.** Specific future management measures that may be necessary to reduce impacts to the monk seal critical habitat from fisheries activities are uncertain. If such restrictions occur, then impacts reported in this analysis, including cultural impacts to Native Hawaiians, would be understated.
The extent to which any future recommendations to modify development projects could affect beach access, impacts are unknown at this time	May result in an **underestimate** of costs.	**Potentially major**. If restricted beach access could result, impacts in this analysis would be understated.
For scientific research and other activities, this analysis relies on patterns of historical consultation to forecast future rates of consultation activity.	**Unknown.** May overestimate or underestimate incremental impacts.	**Likely minor.** This analysis assumes that past consultations provide a good indication of future activity. This could under or overstate future administrative costs.
For scientific research and other activities, the analysis assumes that additional conservation actions will not be necessary.	**Unknown.** May overestimate or underestimate incremental impacts.	**Likely minor.** To the extent that incremental project modifications are required, the analysis may understate impacts.

CHAPTER 13 | POTENTIAL ECONOMIC BENEFITS

423. The previous chapters of this report evaluate the potential project modifications and associated economic impacts that may be generated by the designation of critical habitat for the Hawaiian monk seal. This chapter contemplates potential economic benefits resulting from the possible conservation efforts described in the previous chapters. First, we introduce economic methods employed to quantify benefits of species and habitat conservation, and discuss the availability of existing literature to support valuation in the context of this rulemaking. We then provide a qualitative description of the potential categories of ancillary benefits that may result from the designation.

KEY FINDINGS

- The primary goal of critical habitat designation for the Hawaiian monk seal is to support its long-term conservation and recovery. Conservation and recovery of the species may result in benefits, including use benefits (wildlife-viewing), non-use benefits (existence values), and ancillary ecosystem service benefits (e.g., water quality improvements and enhanced habitat conditions for other marine and coastal species).
- The extent to which critical habitat designation for the Hawaiian monk seal may improve the species' population is unknown. That is, information is not available on the potential percent increase in monk seal populations, or the incremental change in the probability of recovery, generated by the critical habitat rule.
- Benefits of critical habitat designation would stem from changes in the level or type of conservation measures being implemented for the species. As described in the previous chapters, for most part, critical habitat designation is not expected to change the level or types of conservation measures undertaken. However, it is possible that NMFS may recommend modifying activities to avoid adverse modification of critical habitat. In particular, this analysis discusses the potential for restrictions on two activities:
    - Restrictions on the catch limits with respect to bottomfish or coral reef fisheries; and
    - Restrictions on future development projects that may affect terrestrial areas within the study area.
- Absent information on the incremental change in monk seal populations or recovery potential associated with these conservation measures, we are unable to monetize associated incremental use and non-use economic benefits. However, this chapter summarizes available information on values of the monk seals from existing studies. These studies evaluate the benefits of conserving the monk seal using the contingent valuation method to elicit the public's willingness to pay.
- This chapter also qualitatively discusses the potential ancillary ecosystem service benefits, such as maintenance of water quality, that may be generated by monk seal critical habitat.

13.1 ESTIMATING CONSERVATION BENEFITS

424. The primary intended benefit of critical habitat is to support the conservation of threatened and endangered species, such as Hawaiian monk seals.[268] Thus, attempts to develop monetary estimates of the benefits of this critical habitat designation would focus on the public's willingness to pay to achieve the conservation benefits to the monk seals resulting from this designation.

425. Quantification and monetization of species conservation benefits requires two primary pieces of information: (1) data on the incremental change in monk seal population or in the probability of Hawaiian monk seal recovery that is expected to result from the designation; and (2) data on the public's willingness to pay for this incremental change. Neither data element is readily available for this analysis; thus, we do not quantify or monetize the conservation benefits of this designation.

426. Determining the incremental effect of critical habitat on monk seal conservation and recovery is complicated. Such an evaluation would require the ability to isolate and quantify the effect of the designated critical habitat separately from all other ongoing or planned conservation efforts for the Hawaiian monk seal, such as the protections afforded the species due to the implementation of the Marine Mammal Protection Act, the implementation of Recovery Plan, or existing land management plans or Habitat Conservation Plans.

427. A major limitation with respect to distinguishing the incremental effect of the designation on the conservation and recovery of the species is the significant uncertainty regarding how NMFS may differently regulate particular activities to avoid adverse modification of critical habitat. As described in Chapters 1 through 12 of this analysis, in most cases, critical habitat is not expected to change how a project or activity is implemented. In some limited instances, however, NMFS may determine that a project or activity may adversely modify critical habitat and recommend additional conservation, above and beyond what would be recommended to avoid jeopardy or take of the species. For example, Chapter 4 describes the potential for additional conservation to be recommended with respect to bottomfish or coral reef fisheries and Chapter 7 describes the potential for restrictions on development projects adjacent to remote monk seal hotspots.

428. Even in the case that enough information existed to determine the effect of critical habitat designation on the conservation and recovery of the monk seals, it is uncertain whether the existing economics literature would support valuation of that change. While a number of published studies estimate the value the public places on protecting the Hawaiian monk seal, none of these studies specifically estimates the value of the types of incremental changes in recovery probability that could result from the designation.

[268] The term "conservation" means "the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary" (16 U.S.C. 1532).

429. In the remainder of this section, we provide a more detailed description of the economic techniques that economists would employ to monetize these types of conservation benefits. We also present a brief review of the existing literature valuing Hawaiian monk seal protection. These studies provide evidence that the public may have a positive value for efforts that will increase the recovery probability of the species. However, for the reasons described above, they cannot be applied to estimate the incremental changes resulting from critical habitat designation.

13.1.1 ECONOMIC METHODS USED TO VALUE USE AND NON-USE VALUES OF SPECIES AND HABITAT CONSERVATION

430. Various economic benefits, measured in terms of social welfare or regional economic performance, may result from conservation efforts for listed species. The benefits can be placed into two broad categories: (1) those associated with the primary goal of species conservation (i.e. direct benefits), and (2) those additional beneficial services that derive from the conservation efforts but are not the purpose of the Act (i.e., ancillary benefits, such as prevention of water quality degradation).

431. Because the purpose of the Act is to provide for the conservation of endangered and threatened species, the benefits of actions taken under the Act are often measured in terms of the value placed by the public on species preservation (e.g., avoidance of extinction, and/or increase in a species' population). Such social welfare values for a species may reflect both use and non-use values for the species. Use values derive from a direct use for a species, such as commercial harvesting or recreational wildlife-viewing opportunities. Non-use values are not derived from direct use of the species, but instead reflect the utility the public derives from knowledge that a species continues to exist (e.g., existence or bequest values).

432. As a result of actions taken to preserve endangered and threatened species, such as habitat management, various other benefits may accrue to the public. Conservation efforts may result in improved or preserved environmental quality, which in turn may have collateral human health or recreational use benefits. In addition, conservation efforts undertaken for the benefit of a threatened or endangered species may enhance shared habitat for other wildlife. Such benefits may result from modifications to projects, or may be collateral to such actions. For example, in the case that critical habitat designation limits development in remote areas, water quality conditions may be preserved in the area.

433. Economists apply a variety of methodological approaches in estimating both use and non-use values for species and for habitat improvements, including stated preference and revealed preference methods. Stated preference techniques include such tools as the contingent valuation method, conjoint analysis, or contingent ranking methods. In simplest terms, these methods employ survey techniques, asking respondents to state what they would be willing to pay for a resource or for programs designed to protect that resource. A substantial body of literature has developed that describes the application of this technique to the valuation of natural resource assets.

434. More specific to use values for species or habitats, revealed preference techniques examine individuals' behavior in markets in response to changes in environmental or other amenities (i.e., people "reveal" their value through their behavior). For example, travel cost models are frequently applied to value access to recreational opportunities, as well as to value changes in the quality and characteristics of these opportunities. Basic travel cost models are rooted in the idea that the value of a recreational resource can be estimated by analyzing the travel and time costs incurred by individuals visiting the site. Another revealed preference technique is hedonic analysis, which is often employed to determine the effect of site-specific characteristics on property values.

13.1.2 USE AND NON-USE VALUATION STUDIES

435. Numerous published studies estimate individuals' willingness to pay to protect endangered species.[269] The economic values reported in these studies reflect various groupings of benefit categories (including both use and non-use values). For example, these studies assess public willingness to pay for wildlife-viewing opportunities, for the option of seeing or experiencing the species in the future, to assure that the species will exist for future generations, and simply knowing a species exists, among other values. This literature, however, addresses a relatively narrow range of species and circumstances compared to the hundreds of species and habitats that are the focus of the Act.

436. An ideal study for use in valuing the use and non-use values that may derive from critical habitat designation for the Hawaiian monk seal would be specific to the species, the policy question at hand (implementation of the specific conservation efforts associated with critical habitat designation), and the relevant population holding such values (e.g., citizens of Hawaii or of the United States as a whole). No such study has been undertaken to date for the Hawaiian monk seal.

437. Absent primary research specific to the policy question (benefits of critical habitat designation for the Hawaiian monk seal), resource management decisions can often be informed by applying the results of existing valuation research to a new policy question – a process known to economists as benefit transfer. Benefit transfer involves the application of unit value estimates, functions, data, and/or models from existing studies to estimate the benefits associated with the resource under consideration.

438. OMB has written guidelines for conducting credible benefit transfers. The important steps in the OMB guidance are: (1) specify the value to be estimated for the rulemaking; and (2) identify appropriate studies to conduct benefits transfer based on the following criteria:

- The selected studies should be based on adequate data, sound and defensible empirical methods and techniques;

[269] See, for example, the summary in Richardson, L. and J. Loomis. March 2009. The Total Economic Value of Threatened, Endangered, and Rare Species: An Updated Meta-Analysis. Ecological Economics 68(5): 1535-1548.

- The selected studies should document parameter estimates of the valuation function;
- The study and policy contexts should have similar populations (e.g., demographic characteristics). The market size (e.g., target population) between the study site and the policy site should be similar;
- The good, and the magnitude of change in that good, should be similar in the study and policy contexts;
- The relevant characteristics of the study and policy contexts should be similar;
- The distribution of property rights should be similar so that the analysis uses the same welfare measure (i.e., if the property rights in the study context support the use of willingness-to-accept measures while the rights in the rulemaking context support the use of willingness-to-pay measures, benefits transfer is not appropriate); and
- The availability of substitutes across study and policy contexts should be similar.

13.1.3 AVAILABLE LITERATURE VALUING HAWAIIAN MONK SEAL POPULATIONS

439. We undertook a literature review to identify existing research regarding the use and non-use values the public holds for conserving the Hawaiian monk seal. This search identified a number of valuation studies focusing on Hawaiian monk seals (and several focusing on the Mediterranean monk seals, although those studies are not summarized here). The existing Hawaiian monk seal studies did not distinguish separate use (e.g., recreational opportunities) and non-use (the knowledge that the monk seal and its habitat will be conserved in the present and for future generations) values.

440. A study by Samples and Hollyer (1989) explores strengths and limitations of the contingent valuation method for eliciting information on that value of individual species versus for multiple species in aggregate. Specifically, the analysts undertake an empirical study of marine mammal valuation in Hawaii, focusing on the Hawaiian monk seals and humpback whales. The analysis relied on four survey instruments to value humpback whales and Hawaiian monk seals individually and jointly. These surveys were designed to test the effects on the elicited values from Hawaii residents of the order in which the species were valued and the level of species aggregation (i.e., whether the species were valued separately or jointly). The value estimates centered on measuring the respondents' willingness-to-pay to preserve the species at their current population numbers, focusing on the value of avoiding short-run (e.g., disease-associated) drops in population levels. To elicit the values, respondents were asked if they would hypothetically contribute money or time to avoid the decline in population. The calculated lump sum willingness-to-pay for the maintaining Hawaiian monk seal and humpback whale populations ranged between $62 and $142 (average value of $108) in

1986 dollars.[270] This is an average lump sum willingness-to-pay of $227.94 in current year (2012) dollars.

441. Lew and Wallmo (2011) evaluated people's preferences for several proposed expanded protection programs that would protect up to three endangered species: the Puget Sound Chinook salmon, the smalltooth sawfish, and the Hawaiian monk seal. The survey was undertaken by a random sample of households in the U.S. The focus of the study was to determine whether a significant difference exists in willingness to pay for protecting more species and/or achieving greater improvements in the status of the species. Simply stated, respondents to the contingent valuation choice experiment were asked about their willingness-to-pay in terms of additional taxes and increased costs of goods and service to improve the ESA status of the species (i.e., downlisting from endangered to threatened or recovered). The analysts found a positive willingness-to-pay to improve the ESA status of the monk seal; the willingness-to-pay amount varied according to circumstance (the status changes of the other one or two species being considered, and the level of change from endangered to threatened or threatened to recovered).[271]

442. The study identified that U.S. residents were generally more concerned with recovering the Hawaiian monk seal than either of the other species, which may confirm that the public prefers charismatic vertebrate species. Specifically, the mean willingness-to-pay for recovering the Hawaiian monk seal population in 50 years was estimated to be $68.12 per U.S. household per year in 2009 dollars.[272] This equates to $73.45 per year in current year (2012) dollars.

443. The identified studies do not support a benefit transfer based analysis to quantify benefits of the critical habitat designation. First, information on the effect of critical habitat is insufficient to support such an analysis. Appropriate allocation of benefits would require modeling changes in monk seal populations over time, or changes in the probability or timing of monk seal recovery, in response to the specific incremental conservation efforts associated with the critical habitat designation. The timing and extent to which the monk seal populations would be expected to recover, and the extent to which this recovery would be associated with the critical habitat-related conservation efforts, are, however, unknown.[273] Absent this information, conducting a credible benefit transfer analysis that

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[270] Samples, K. and J. Hollyer. 1989. Contingent Valuation of Wildlife Resources in the Presence of Substitutes and Compliments. In: Johnson, T., and G. Johnson. (Eds.) Economic Valuation of Natural Resources: Issues, Theory, and Application. Westview Press, Boulder, CO.

[271] Lew, Daniel K. and Kristy Wallmo. 2011. External Tests of Scope and Embedding in Stated Preference Choice Experiments: An Application to Endangered Species Valuation. Environmental and Resource Economics 48:1-23.

[272] Wallmo, Kristy and Daniel K. Lew. 2011. Valuing Improvements to Threatened and Endangered Species: An Application of Stated Preference Choice Experiments. Journal of Environmental Management 92: 1793-1801.

[273] Richardson and Loomis (2009) developed a model to estimate the value of critical habitat designations based on a meta-analysis of 31 studies published between 1985 and 2005. One of these studies evaluated benefits of the Hawaiian monk seal. The model generates composite willingness to pay values for species conservation based on an estimate of the percent change in species population likely to result from the critical habitat designation. Implementation of the model requires information regarding the change in the population likely to result from the conservation efforts undertaken in response to the listing or critical habitat designation. Such information is not available for this designation. (Richardson, L. and J.

quantifies benefits of this rulemaking on Hawaiian monk seal use and non-use values is not possible. The information in this discussion is therefore provided for context and to demonstrate that the public holds a positive value for conservation of the Hawaiian monk seal. Furthermore, while we have reviewed these studies in order to provide general information on previous research regarding economic values of Hawaiian monk seal populations, we do not promote a particular estimate, nor offer judgments regarding the quality of the underlying valuation studies.

444. As described above, an ideal study for estimating economic use and non-use values of critical habitat designation would be specific to the species in question (or would address a closely related species), would consider valuation in a context close to the policy issues in question (i.e., economic benefits of implementing the conservation efforts associated with designating critical habitat for this species), and would address a relevant population holding these values (citizens of the United States). While the studies identified and described above are specific to the Hawaiian monk seal and address willingness to pay across relevant populations, none consider valuation in the context of the specific conservation efforts that may be associated with critical habitat designation. Lew and Wallmo (2011) estimate the value to U.S. households of recovering monk seal populations. While these values are relevant to critical habitat, they are not benefits expected to result specifically from the critical habitat rule. The estimates represent social welfare benefits of recovery of the species; critical habitat supports recovery of the species but does not in and of itself lead to recovery. The benefits described in this study are associated with the full suite of regulatory and voluntary conservation actions that ultimately lead to recovery of the Hawaiian monk seal population.

445. A recent study by Richardson and Loomis (2009) estimates a model (i.e., a willingness to pay function) to value threatened or endangered species based on estimates from multiple studies. This type of study is referred to as a "meta-analysis."[274] The meta-analysis is based on 31 studies with 67 willingness to pay (WTP) observations published from 1985 to 2005 evaluating economic values of endangered, threatened or rare species primarily applying contingent valuation methods. The economic values expressed in the studies that inform the model reflect primarily recreational use, as well as nonuse values. Some of the studies, however, are solely focused on the nonuse component of the economic value. The species included in the study are primarily marine and riverine species (whales, dolphins, seals, otters, sea lions, sea turtles, salmon and other listed fish species), but include some avian and other species, including, most relevantly, the Hawaiian monk seal. The study referenced in the meta-analysis is the Samples and Hollyer (1989) study described above.

Loomis. March 2009. The Total Economic Value of Threatened, Endangered, and Rare Species: An Updated Meta-Analysis. Ecological Economics 68(5): 1535-1548.)

[274] Richardson, Leslie and John Loomis. 2009. The Total Economic Value of Threatened, Endangered and Rare Species: An Updated Meta-Analysis. *Ecological Economics*: 1535-1548. This paper updates a 1996 study on the same topic by Loomis and White (Loomis, John and D.S. White. Economic Benefits of Rare and Endangered Species: A Meta-Analysis. Ecological Economics (1996): 197-206).

446. A key variable required for the resulting willingness to pay function is the change in the species population levels resulting from the rule. Thus, absent the information on the effect of the critical habitat designation on monk seal populations, the Richardson and Loomis model does not provide a means to estimate the incremental benefit of the rule in terms of the public's willingness to pay.

447. Overall, the studies identified through our literature review provide some indication of the values to humans of Hawaiian monk seal populations. The absence of information on the effect of the designation on monk seal populations, however, precludes application of these values to estimate a public willingness to pay for monk seal conservation.

13.2 QUALITATIVE DISCUSSION OF THE ANCILLARY BENEFITS OF CRITICAL HABITAT DESIGNATION FOR THE HAWAIIAN MONK SEAL

448. Benefits beyond use and non-use values may also be achieved through a species listing or designation of critical habitat. For example, the public may hold a value for habitat conservation, beyond its willingness to pay for conservation of a specific species. Studies have estimated the public's willingness to pay for wildlife management and preservation programs, and for marine species protection in general. These studies do not provide values that can be used to establish the incremental values associated with this designation, however.

449. The remainder of this Chapter includes a qualitative benefits discussion, summarizing the Hawaiian monk seal conservation efforts discussed in the previous chapters if this report and linking them with potential categories of economic benefit that may derive from their implementation.

450. Exhibit 13-1 summarizes potential benefits associated with the specific conservation efforts for the Hawaiian monk seal that may result from critical habitat designation. In general, the ancillary benefits described in Exhibit 13-1 could derive from conservation measures that may be implemented to avoid destruction or adverse modification of critical habitat. Although NMFS anticipates that restrictions on these activities are unlikely, if mitigations methods were implemented the categories of related economic benefits include:

- **Preserved water quality:** Chapter 7 describes that critical habitat designation may result in restrictions on development activities, particular in remote areas near monk seal hotspots. These restrictions may result in decreased density of development in particular coastal areas. Decreased levels of development may preserve water quality in these areas to the extent that there is less expansion of impervious surface in the area and fewer new sources of contamination. Improved water quality may improve conditions for recreation and have human or ecological health benefits.
- **Enhanced marine habitat:** Restrictions on allowable catch for bottomfish and coral reef fisheries may improve habitat conditions for other fish and marine species. For example, reduced extraction, and reduced chances of bycatch of non-target species, may enhance the quality of marine habitat. This provides a

benefit to people to the extent that the enhanced habitat and associated preservation of marine species biodiversity improves conditions for recreational activities, such as reef diving or snorkeling.

451. In addition to these categories of potential benefits, all of the conservation efforts described in Exhibit 13-1 are related to the broader conservation and recovery of the species. All conservation efforts therefore relate to the maintenance or enhancement of the use and non-use value (e.g., existence value) that the public may hold specifically for the Hawaiian monk seal. Further, conservation efforts undertaken for the monk seal may also result in improvements to ecosystem health that are shared by other, coexisting species (including other endangered or threatened species). The maintenance or enhancement of use and non-use values for these other species, or for biodiversity in general, may also result from these conservation efforts for the monk seal.

452. The third column of Exhibit 13-1 identifies the relevant critical habitat units in which the described benefits may occur.

EXHIBIT 13-1. POSSIBLE CONSERVATION EFFORTS FOR THE HAWAIIAN MONK SEAL AND POTENTIAL ASSOCIATED ANCILLARY BENEFITS

POSSIBLE CONSERVATION EFFORT	POTENTIAL ASSOCIATED BENEFITS	RELEVANT UNITS
Restrictions on development activities	• Preserved water quality generating enhanced conditions for recreation, as well as potential human and ecological health benefits	Remote hotspots that may experience development pressure, including areas on Oahu and Kauai
Restrictions on bottomfish or coral reef fisheries	• Enhanced marine habitat conditions	Areas within the Main Hawaiian Islands that support bottomfish and coral reef fisheries
Notes: All conservation efforts are intended to support the survival and/or recovery of the species.		

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APPENDIX A | PRESENTATION OF UNDISCOUNTED IMPACTS

453. This analysis employs standard discounting techniques to calculate the present value of economic impacts that are expected to occur across different points in time. The present value figures provided in the main body of the report are calculated using a real discount rate of seven percent. This appendix provides undiscounted results for comparison. See Appendix B for a presentation of economic impacts assuming a three percent real discount rate. Exhibit A-1 reports total undiscounted value of economic impacts by activity across the ten year study period. Exhibit A-2 presents the distribution of these impacts across the 16 specific units that compose the study area for this analysis.

EXHIBIT A-1. ESTIMATED IMPACTS OF CRITICAL HABITAT DESIGNATION BY ACTIVITY, 2014-2023

ACTIVITY	TOTAL VALUE (UNDISCOUNTED)	PERCENT OF TOTAL
In-Water & Coastal Construction	$2,320,000	80.8%
Fisheries	$22,800	0.8%
Dredging & Disposal of Dredged Material	$1,750	0.1%
Energy Projects	$74,000	2.6%
Aquaculture	$11,200	0.4%
Oil Spill, Vessel Grounding, and Marine Debris Response	$20,700	0.7%
Military Activities	$19,700	0.7%
Research	$25,300	0.9%
Other	$371,000	12.9%
Total	**$2,870,000**	**100%**

Note: Forecast economic impacts are undiscounted. See the main body of the report for impacts discounted at a seven percent real discount rate, and Appendix B for a discussion of the sensitivity of impacts to varying discount rates.

EXHIBIT A-2. ESTIMATED IMPACTS OF CRITICAL HABITAT DESIGNATION BY SPECIFIC UNIT, 2014-2023 (2013$)

SPECIFIC AREA/ISLAND		TOTAL VALUE (UNDISCOUNTED)	PERCENT OF TOTAL
1	Kure Atoll	$2,780	0.1%
2	Midway Islands	$10,400	0.4%
3	Pearl and Hermes Reef	$2,320	0.1%
4	Lisianski Island	$3,760	0.1%
5	Laysan Island	$6,240	0.2%
6	Maro Reef	$6,650	0.2%
7	Gardner Pinnacles	$7,670	0.3%
8	French Frigate Shoals	$10,800	0.4%
9	Necker Island	$4,750	0.2%
10	Nihoa Island	$1,720	0.1%
11	Kaula Island	$5,460	0.2%
12	Niihau Island	$33,900	1.2%
13	Kauai	$192,000	6.7%
14	Oahu	$767,000	26.7%
15	Maui Nui	$1,150,000	40.1%
16	Hawaii	$663,000	23.1%
	Total	**$2,870,000**	**100%**

Note: Forecast economic impacts are undiscounted. See the main body of the report for impacts discounted at a seven percent real discount rate, and Appendix B for a discussion of the sensitivity of impacts to varying discount rates.

APPENDIX B | SENSITIVITY OF RESULTS TO DISCOUNT RATE

454. Economic impacts presented in the main body of the report are calculated assuming a seven percent real discount rate and using standard discounting techniques to calculate the present value of impacts occurring at different points in time. To test the sensitivity of these findings to alternative discount rates, this appendix provides estimates of economic impacts assuming both a three percent and seven percent real discount rate. For further comparison, see Appendix A for a presentation of undiscounted economic impacts across activities and specific areas. Exhibit B-1 reports total present value of economic impacts by activity across the ten year study period, calculated using both a three percent and seven percent discount rate. Exhibit B-2 presents the distribution of these impacts across the 16 specific units that compose the study area for this analysis. Assuming a three percent discount rate, total present value of forecast impacts is $2.46 million, compared with $2.04 million using a seven percent discount rate.

EXHIBIT B-1. ESTIMATED IMPACTS OF CRITICAL HABITAT DESIGNATION BY ACTIVITY, 2014-2023

ACTIVITY	TOTAL PRESENT VALUE (3% DISCOUNT RATE)	TOTAL PRESENT VALUE (7% DISCOUNT RATE)
In-Water & Coastal Construction	$1,990,000	$1,650,000
Fisheries	$19,400	$16,000
Dredging & Disposal of Dredged Material	$1,490	$1,230
Energy Projects	$64,300	$54,400
Aquaculture	$9,520	$7,840
Oil Spill, Vessel Grounding, and Marine Debris Response	$17,700	$14,600
Military Activities	$17,400	$14,900
Research	$21,600	$17,800
Other	$316,000	$260,000
Total	**$2,460,000**	**$2,040,000**

Note: See Appendix A for a presentation of undiscounted impacts.

EXHIBIT B-2. ESTIMATED IMPACTS OF CRITICAL HABITAT DESIGNATION BY SPECIFIC UNIT, 2014-2023 (2013$)

	SPECIFIC AREA/ISLAND	TOTAL PRESENT VALUE (3% DISCOUNT RATE)	TOTAL PRESENT VALUE (7% DISCOUNT RATE)
1	Kure Atoll	$2,380	$1,970
2	Midway Islands	$8,860	$7,310
3	Pearl and Hermes Reef	$2,000	$1,680
4	Lisianski Island	$3,250	$2,720
5	Laysan Island	$5,340	$4,420
6	Maro Reef	$5,740	$4,800
7	Gardner Pinnacles	$6,630	$5,550
8	French Frigate Shoals	$9,250	$7,650
9	Necker Island	$4,100	$3,430
10	Nihoa Island	$1,480	$1,240
11	Kaula Island	$4,670	$3,860
12	Niihau Island	$28,900	$23,900
13	Kauai	$165,000	$137,000
14	Oahu	$658,000	$545,000
15	Maui Nui	$986,000	$815,000
16	Hawaii	$568,000	$469,000
	Total	**$2,460,000**	**$2,040,000**

Note: See Appendix A for a presentation of undiscounted impacts.

APPENDIX C | FINAL REGULATORY FLEXIBILITY ANALYSIS AND ENERGY IMPACTS ANALYSIS

455. This analysis considers the extent to which the potential economic impacts associated with the designation of critical habitat for the Hawaiian monk seal could be borne by small businesses. The analysis presented is conducted pursuant to the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996. Information for this analysis was gathered from the Small Business Administration (SBA) and U.S. Census Bureau. The energy analysis in Section A.2 is conducted pursuant to Executive Order No. 13211.

456. The analyses of impacts to small entities and the energy industry rely on the estimated incremental impacts resulting from the critical habitat designation. Incremental impacts are detailed in chapters 3 through 12 of this analysis.

C.1 FINAL REGULATORY FLEXIBILITY ANALYSIS (FRFA)

457. This FRFA uses the best available information to identify the potential impacts of critical habitat on small entities. However, a number of uncertainties complicate quantification of these impacts, including: 1) significant uncertainty regarding the potential effects of critical habitat designation, as discussed in the main body of this report, require that some categories of potential impacts are described qualitatively; and 2) the manner in which these potential impacts will be allocated between large and small entities is unknown. This analysis therefore focuses on providing the best available information regarding the potential magnitude of impacts to small entities in affected industries. As much of the critical habitat is marine habitat, this analysis references the number of small businesses in each affected industry throughout Hawaii.

C.1.1 SUMMARY OF FINDINGS

458. Estimated impacts to small entities are summarized by industry in Exhibit B-1. Within the potentially affected industries, approximately 94 percent of businesses are classified as "small." The quantified annualized impacts to small entities are estimated to be $121,000, or approximately 42 percent of total quantified incremental impacts anticipated as a result of this rule.[275] However, as noted in elsewhere in this report, we also describe a number of categories of unquantified impacts, for which significant uncertainty

[275] Total annualized impacts to small entities is calculated by first taking the portion of administrative costs that may be borne by third parties. This analysis then assumes that the portion of these impacts that may be borne by small entities is equivalent to the percentage of businesses that are considered small. For example, if 97 percent of entities engaged in development activities in a given unit are considered small, this analysis assumes that 97 percent of impacts for that unit and industry will be borne by small entities.

precluded quantification. In particular, these could include impacts to bottomfish and coral reef fishery fishermen, developers on Oahu and Kauai. Additional impacts to fishermen would be expected if changes to fisheries management were to occur such that allowable fish catch or access to the fishery is reduced. Impacts to development could occur if the critical habitat designation becomes a limiting factor for a development project. We identified three potential development projects for which potential exists for critical habitat to reduce the scope or scale of the development. Impacts to Niihau could occur if Niihau Ranch or the PMRF range users limit or avoid activities due to the critical habitat designation.

459. Exhibit C-1 presents an estimate of the number of potentially affected small entities, as well as the per-entity impact of the rule, according to two scenarios. These scenarios are intended to reflect the range of uncertainty regarding the number of small entities that may be affected by the designation and the potential impacts of critical habitat designation on their annual revenues. Under Scenario 1, this analysis estimates the number of small entities located within areas affected by the designation, and assumes that incremental impacts are distributed evenly across all entities in each affected industry. Scenario 1 accordingly estimates an upper bound estimate of the number of potentially affected small entities and a low end estimate of the potential effect in terms of percent of revenue for each entity. However, not every entity in Hawaii that meets the definition of a small entity is likely to participate in section 7 consultation for the monk seals. This scenario therefore overstates the number of small entities likely to be affected by the rule and understates the potential revenue effect. Specifically, under Scenario 1, we estimate that 5,055 entities have the potential bear an impact of up to $532 per entity (depending on the industry), which would represent between less than 0.00 and 0.03 percent of average revenues.[276]

460. Under Scenario 2, this analysis assumes all future costs to an industry are borne by a single small entity within that industry. This method understates the number of small entities affected but overstates the likely impacts on an entity. As such, this method arrives at a low end estimate of potentially affected entities and a high-end estimate of potential effects on revenue per entity, assuming that quantified costs represent a complete accounting of the costs likely to be borne by private entities. Under this scenario, 10 small entities would bear costs of between $526 and $19,200 per entity, which would represent between 0.02 and 23 percent of average annual revenues for those entities, depending on the industry.

461. While these scenarios present a broad range of potentially affected entities and the associated revenue effects, we expect the actual number of small entities effected and revenue effects will be somewhere in the middle. In other words, some subset greater than ten and less than 5,000 of the small entities will participate in section 7 consultations

[276] We note that due to data limitations, recent updates to the small business thresholds are not reflected in the 5,055 estimate of entities under Scenario 1. Because thresholds have been raised, this analysis may somewhat understate the number of potentially affected entities for those industries. In particular, the estimates of the number of entities may be underestimated for: in-water & coastal construction, fisheries, development, and activities generating water pollution.

and bear associated impacts. Regardless, our analysis demonstrates that, even if we assume a low end estimate of affected small entities, the greatest potential revenue effect is still less than one percent. Importantly, however, we also highlight the potential unquantified impacts throughout this analysis that are not incorporated into our estimate of the potential revenue effects.

C.1.2 FRFA REQUIREMENTS

462. First enacted in 1980, the RFA was designed to ensure that Federal agencies consider the potential for their regulations to unduly inhibit the ability of small entities to compete. The goals of the RFA include increasing the government's awareness of the impact of regulations on small entities and to encourage agencies to exercise flexibility in their rulemakings to provide regulatory relief to small entities.

463. When a Federal agency proposes regulations, the RFA requires the agency to prepare and make available for public comment an analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions).[277] For this rulemaking, this analysis takes the form of a final regulatory flexibility analysis (FRFA). Under 5 U.S.C., Section 604(a) of the RFA, a FRFA is required to contain:

- "a succinct statement of the need for, and objectives of, the rule;
- a summary of significant issues raised by public comments in response to the initial regulatory flexibility analysis, a summary of assessment of the agency of such issues, and a statement of any changes in the proposed rule as a result of such comments (this is contained in the final rule for Hawaiian monk seal critical habitat in the Summary of Changes to the Proposed Rule Section);
- a description of and an estimate of the number of small entities to which the rule will apply or an explanation of why no such estimate is available;
- a description of the projected reporting, recordkeeping and other compliance requirements of the rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record; and
- a description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected," (this is contained in the final rule for Hawaiian monk seal critical habitat and in section C.1.7 below).

[277] 5 U.S.C. 601 et seq.

EXHIBIT C-1. SUMMARY OF QUANTIFIED IMPACTS TO SMALL ENTITIES BY ACTIVITY TYPE

		IN-WATER AND COASTAL CONSTRUCTION	FISHERIES	ENERGY PROJECTS[2]	DEVELOPMENT	AQUACULTURE	ACTIVITIES GENERATING WATER POLLUTION	RESEARCH
[A]	Total Annualized Impacts to Small Entities[1]	$115,000	$920	$3,490	Not Quantified	$526	Impacts Unlikely	$1,180
[B]	Estimated Average Annual Revenues for Small Entities[1]	$8,220,000	$3,800[8]	$9,880,000	$6,210,000	n/a	$8,550,000	$7,660,000
Scenario 1: Assumes All Small Entities within Critical Habitat Share Incremental Costs Equally[4]								
[C]	Estimated Number of Small Entities conducting activities in critical habitat areas (Hawaii)[5]	216	916[3]	8	2,900	46	1,860	Data Not Available
[D]	Estimated Impact per Small Entity ([A]/[C])	$532	$1	$436	Not Quantified	$11	Impacts Unlikely	n/a
[E]	Impact per Small Entity as Percentage of Revenues ([D]/[B])	0.01%	0.03%	0.00%		n/a		
Scenario 2: Assumes All Consultations Involve One Small Entity								
[F]	Estimated Number of Small Entities Expected to Undergo Consultation	6[7]	1	1	Not Quantified	1	Not Quantified/ Not Expected	1
[G]	Estimated Impact per Small Entity ([A]/[F])	$19,200	$920	$3,490		$526		$1,180
[H]	Impact per Small Entity as Percentage of Revenues ([G]/[B])	0.23%	23%	0.04%		n/a		0.02%

1. Annual revenues are estimated using Risk Management Association (RMA), *Annual Statement Studies: Financial Ratio Benchmarks 2011 to 2012*, 2011. The following method was used to develop these estimates:

(a) We matched affected economic activities to available NAICS codes in RMA data. The following codes are used for affected industries: for In-Water and Coastal Construction, 212321 (Construction Sand and Gravel Mining), 237110 (Water and Sewer Line and Related Structures Construction), 237120 (Oil and Gas Pipeline and Related Structures Construction), 237130 (Power and Communication Line and Related Structures Construction), 237310 (Highway, Street, and Bridge Construction), 237990 (Other Heavy and Civil Engineering Construction); for Fisheries, 114111 (Finfish Fishing) and 114112 (Shellfish Fishing); for Energy Projects, 221122 (Electric Power Distribution); for Development, 236115 (New Single-Family Housing Construction (Except For-Sale Builders), 236116 (New Multifamily Housing Construction (Except For-Sale Builders), 236117 (New Housing For-Sale Builders), 236118 (Residential Remodelers), 236210 (Industrial Building Construction), 236220 (Commercial and Institutional Building Construction); for Aquaculture, data was not available; for Activities that Generate Water Pollution, a sample of 31-33 NAICS codes representative of the manufacturing industry in Hawaii was used, in addition to

	IN-WATER AND COASTAL CONSTRUCTION	FISHERIES	ENERGY PROJECTS[2]	DEVELOPMENT	AQUACULTURE	ACTIVITIES GENERATING WATER POLLUTION	RESEARCH

212312 (Crushed and Broken Limestone Mining and Quarrying), 212313 (Crushed and Broken Granite Mining and Quarrying), 212319 (Other Crushed and Broken Stone Mining and Quarrying), 112120 (Dairy Cattle and Milk Production), in addition to 221310 (Water Supply and Irrigation Systems), 221320 (Sewage Treatment Facilities). Where possible, these correspond to the NAICS codes noted in Exhibit B-2.

(b) For each NAICS code, RMA provides the net sales and the number of entities falling within several sales categories: $0 to $1 million, $1 to 3 million, $3 to $5 million, $5 to $10 million, $10 to $25 million, and greater than $25 million. Based on the number of entities and total net sales falling within each sales category, this analysis developed an estimate of average net sales (revenues) per small entity. Specifically, the analysis averages data for the sales categories at or below the small business threshold for each industry. For example, if the small business threshold is $7 million, this analysis uses the following sales categories: $0 to $1 million, $1 to 3 million, $3 to $5 million, and $5 to $10 million. For transportation-related activities (threshold of $33.5 million), this analysis used sales categories up to $10 to $25 million. This represents a conservative approach to the analysis, as revenues per entity will appear lower, and therefore impacts higher, than if higher revenue categories were included. For industries that have a threshold based on the number of employees, all categories up to the $10 to $25 million category are used.

2. Chapter 6 identifies a list of specific energy projects expected to occur within critical habitat. This analysis uses that list to determine the number and size of entities potentially affected.

3. Estimated number of bottomfish fishermen holding commercial licenses. (Hospital, Justin and Courtney Beavers. 2012. "Economic and Social Characteristics of Bottomfish Fishing in the Main Hawaiian Islands." NOAA, Pacific Islands Fisheries Science Center. April.)

4. The number of small entities in Scenario 1 were determined using thresholds that are slightly lower for some industries than the thresholds listed in Exhibit C-3, as thresholds were recently updated. This could mean that the number of small entities estimated in this exhibit are somewhat lower than would be estimated with current thresholds. The impact, however, is that our analysis more conservatively estimates the number of affected entities and costs per entity (i.e., is more likely to overstate rather than to understate impacts). In particular, June 2014 adjustments to account for inflation increased the small business thresholds for development and in-water construction (aside from the dredging subset) industries from $33.5 million to $36.5 million. For Dredging and Surface Cleanup, a subset of Other Heavy and Civil Engineering Construction, since Dun and Bradstreet searches were completed, the threshold increased from $20 million to $25.5 million to $27.5 million. The threshold for finfish fishing increased from $4 million to $19 million to $20.5 million. The threshold for Shellfish fishing increased from $4 million to $5 million to $5.5 million. The threshold for Water Supply and Irrigation Systems increased from $7 million to $25.5 million to $27.5 million. The threshold for Sewage Treatment Facilities increased from $7 million to $19 million to $20.5 million. Thresholds for agricultural industries set to $750,000 by statute did not change.

5. We include the number of small entities in all of Hawaii based on revenue or number of employees, as the particular location of entities that could be affected by critical habitat for monk seal are unknown.

6. This exhibit does not include potential unquantified impacts to bottomfish and coral reef fishery fishermen, developers on Maui and Oahu, and the communities of Niihau. Additional impacts to fishermen would be expected if changes to fisheries management were to occur such that allowable fish catch or access to the fishery is reduced. Impacts to development

	IN-WATER AND COASTAL CONSTRUCTION	FISHERIES	ENERGY PROJECTS[2]	DEVELOPMENT	AQUACULTURE	ACTIVITIES GENERATING WATER POLLUTION	RESEARCH
could occur if the critical habitat designation becomes a limiting factor for a development project, instead of having only incurring additional administrative considerations, as is currently assumed. Impacts to Niihau could occur if Niihau Ranch or the PMRF range users limit or avoid activities due to potential administrative burden. 7. There are 42 in-water and coastal construction consultation efforts expected to occur annually. Whereas it is unfeasible that one entity would undertake 115 projects of varying types in a year, we assume that these 42 consultations will be distributed equally across six representative entities (one from each represented NAICS code.) 8. Estimated annual revenues for small entities for fisheries is calculated as a weighted average of per entity revenues for reef fish and bottomfish revenues for commercial marine license holders. Source: Hawaii Department of Land and Natural Resources -Division of Aquatic Resources dealer data, summarized by the NOAA Fisheries Pacific Islands Fisheries Science Center Socioeconomic Group on August 11, 2014.							

C.1.3 NEEDS AND OBJECTIVES OF THE RULE

Why Action by the Agency is Being Considered

464. The Hawaiian monk seal (*Monachus schauinslandi*) was listed as endangered throughout its range under the ESA in 1976 (41 FR 51611; November 23, 1976). Critical habitat for the Hawaiian monk seal was last revised in 1988 to include specific areas located throughout the Northwestern Hawaiian Islands (NWHI). Since the 1988 designation, new information has become available with regard to monk seal foraging in the marine environment and use of the main Hawaiian Islands (MHI). NMFS was petitioned in 2008 to incorporate this new information into a revision of critical habitat for the Hawaiian monk seal to enhance the conservation of the species. Based on the new information available, NMFS found the Petitioners' request to be warranted in the 12-month finding (74 FR 27988; June 12, 2009). This action is being considered in compliance with section 4 of the ESA and in efforts to best meet the conservation mandates that the ESA provides for the listed Hawaiian monk seal.

Objectives of, and Legal Basis for, the Rule

465. The objective of the rule is to utilize the best scientific and commercial information available to revise critical habitat for the Hawaiian monk seal to best meet the conservation needs of the species in order to meet recovery goals. Section 4(b)(ii) of the ESA allows NMFS to revise designations to critical habitat as appropriate and is the legal basis for this rule. Section 4(b)(2) of the Act requires NOAA to designate critical habitat for threatened and endangered species "on the basis of the best scientific data available and after taking into consideration the economic impact, impact on national security, and any other relevant impact, of specifying any particular area as critical habitat." The Act defines critical habitat under Section 3(5)(A) as:

> "(i) the specific areas within the geographical area occupied by the species, at the time it is listed..., on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
>
> (ii) specific areas outside the geographical area occupied by the species at the time it is listed… upon a determination by the Secretary that such areas are essential for the conservation of the species."

C.1.4 SUMMARY OF SIGNIFICANT PUBLIC COMMENTS ON THE RULE AND ASSESSMENT OF ISSUES RAISED

466. No comments were received that address the potential impacts to small businesses directly; however, representatives from multiple industries including small businesses potentially impacted by the designation submitted concerns regarding the inadequacy of the assessment of potential impacts, including impacts to fisheries, energy projects, aquaculture, ocean science research, and tourism.

- Fifteen comments address the impacts to commercial bottom fishing and near-shore fisheries, including concerns regarding restricted access and activity and

depletion of available fish.[278] Much of the critical habitat overlaps commercial bottom fishing grounds. The Deep 7 fishery is noted in several comments as an important fishery that will be impacted by the designation, but is not adequately addressed in the economic analysis.[279] Finally, the Hawaiian Monk Seal Recovery Team notes that the draft economic analysis needs to clearly outline which fisheries would be subject to section 7 review.[280]

- Two commenters indicate that the economic analysis needs to further investigate the impacts to Hawaii's future energy development, given the State's energy initiatives to reduce fossil fuel use. The analysis needs to look at impacts to the future renewable energy projects such as ocean thermal energy conversion (OTEC), wave energy, sea water air conditioning, and offshore wind in windward areas.[281]
- One comment notes the inadequate consideration of impacts to the offshore and inshore aquaculture industry.[282]
- One comment notes that the economic report does not characterize impacts to ocean science research. The commenter is concerned that the designation will restrict various research activities and introduce procedural steps that are not feasible given the short time frame of many research projects.[283]
- Five comments address negative impacts to the tourism industry caused by an increase in seals in populated areas. Commenters raise concerns that beach closures and impacts to recreational activity, as well as increased risk to humans, will make Hawaii a less attractive tourist destination. The Hawaiian economy depends heavily on the tourism industry, so reduced tourism will have major repercussions. Two comments state that increased seal presence would attract tourists and bolster the tourism industry.[284]

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[278] See for example: Public comments of Kitty M. Simonds, Western Pacific Regional Fishery Management Council, August 30, 2011; Public comments of Frank Jr. Farm, August 28, 2011; Public comments of Roy Morioka, August 31, 2011, Public comments of James Hori January 4, 2012, Public comments of Andrew Tellio, September 27, 2011.

[279] Public comment of Jeff Muir, August 21, 2011 (NOAA-NMFS-2011-0041-0067).

[280] Public comment of the Hawaiian Monk Seal Recovery Team, August 30, 2011 (NOAA-NMFS-2011-0041-0125).

[281] Public comment of Sharon Har, Hawaii House Committee on Water, Land and Ocean Resources and Senate Committee on Water, Land and Housing, December 15, 2011 (NOAA-NMFS-2011-0041-0168); Public comment of Mark Glick, State Energy Office, January 5, 2012 (NOAA-NMFS-2011-0041-0180).

[282] Public comment of Kitty Simonds, Western Pacific Regional Fishery Management Council, August 31, 2011 (NOAA-NMFS-2011-0041-0088).

[283] Public comment of Alan Hilton, National Defense Center of Excellence for Research in Ocean Science (CEROS), August 31, 2011 (NOAA-NMFS-2011-0041-0114).

[284] See for example public comment of Jennifer Pomroy, August 19, 2011 (NOAA-NMFS-2011-0041-0093; Public comment of Dean Takahashi, September 27, 2011 (NOAA-NMFS-2011-0041-0138).

- Additionally, Hawaii DLNR commented that the designation could impact coastal small business development grants.[285]

467. This economic report has been updated to clarify the discussion on affected industries, and now estimates expected impacts resulting from consideration of Hawaiian monk seal in future consultations for each activity of concern addressed in public comment. This FRFA also includes a characterization of the size of businesses in the impacted industries in the areas affected by critical habitat, and an analysis of the expected impact to each industry's businesses that are considered small. Though the tourism industry is not addressed in this FRFA, as discussed in Chapter 12, NMFS does not expect the designation to result in recreational beach closures. Regarding DLNR's comment regarding small business development grants, impacts expected to activities permitted by DLNR are discussed in Chapter 3 of this analysis. Impacts to these activities are expected to consist solely of the administrative costs associated with addressing monk seal critical habitat. Economic impacts resulting from the designation are not expected to be substantial to any one specific industry; therefore, NMFS has not made any changes to the rule as a result of these economic comments.

C.1.5 DESCRIPTION AND ESTIMATE OF THE NUMBER OF SMALL ENTITIES TO WHICH THE RULE APPLIES

468. Three types of small entities are defined in the RFA:

- **Small Business -** Section 601(3) of the RFA defines a small business as having the same meaning as small business concern under section 3 of the Small Business Act. This includes any firm that is independently owned and operated and is not dominant in its field of operation. The U.S. Small Business Administration (SBA) has developed size standards to carry out the purposes of the Small Business Act, and those size standards can be found in 13 CFR 121.201. The size standards are matched to North American Industry Classification System (NAICS) industries. The SBA definition of a small business applies to a firm's parent company and all affiliates as a single entity.
- **Small Governmental Jurisdiction -** Section 601(5) defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000. Special districts may include those servicing irrigation, ports, parks and recreation, sanitation, drainage, soil and water conservation, road assessment, etc. When counties have populations greater than 50,000, those municipalities of fewer than 50,000 can be identified using population reports. Other types of small government entities are not as easily identified under this standard, as they are not typically classified by population.

[285] Public comment of William J. Aila, Jr., Hawaii Board of Land and Natural Resources, September 27, 2011 (NOAA-NMFS-2011-0041-126).

- **Small Organization -** Section 601(4) defines a small organization as any not-for-profit enterprise that is independently owned and operated and not dominant in its field. Small organizations may include private hospitals, educational institutions, irrigation districts, public utilities, agricultural co-ops, etc.

The courts have held that the RFA/SBREFA requires Federal agencies to perform a regulatory flexibility analysis of forecast impacts to small entities that are directly regulated. In the case of *Mid-Tex Electric Cooperative, Inc., v. Federal Energy Regulatory Commission (FERC),* FERC proposed regulations affecting the manner in which generating utilities incorporated construction work in progress in their rates. The generating utilities that expected to be regulated were large businesses; however, their customers -- transmitting utilities such as electric cooperatives -- included numerous small entities. In this case, the court agreed that FERC simply authorized large electric generators to pass these costs through to their transmitting and retail utility customers, and FERC could therefore certify that small entities were not directly impacted within the definition of the RFA.[286]

469. Similarly, *American Trucking Associations, Inc. v. Environmental Protection Agency* (EPA) addressed a rulemaking in which EPA established a primary national ambient air quality standard for ozone and particulate matter.[287] The basis of EPA's RFA/SBREFA certification was that this standard did not directly regulate small entities; instead, small entities were indirectly regulated through the implementation of state plans that incorporated the standards. The court found that, while EPA imposed regulation on states, it did not have authority under this rule to impose regulations directly on small entities and therefore small entities were not directly impacted within the definition of the RFA.

470. The Small Business Administration (SBA) in its guidance on how to comply with the RFA recognizes that consideration of indirectly affected small entities is not required by the RFA, but encourages agencies to perform a regulatory flexibility analysis even when the impacts of its regulation are indirect.[288] "If an agency can accomplish its statutory mission in a more cost-effective manner, the Office of Advocacy [of the SBA] believes that it is good public policy to do so. The only way an agency can determine this is if it does not certify regulations that it knows will have a significant impact on small entities even if the small entities are regulated by a delegation of authority from the Federal agency to some other governing body."[289]

471. The regulatory mechanism through which critical habitat protections are enforced is section 7 of the Act, which directly regulates only those activities carried out, funded, or

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[286] 773 F. 2d 327 (D.C. Cir. 1985).

[287] 175 F. 3d 1027, 1044 (D.C. Cir. 1999).

[288] Small Business Administration, Office of Advocacy. May 2003. A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act, pg. 20.

[289] Ibid., pg. 21.

permitted by a Federal agency. By definition, Federal agencies are not considered small entities, although the activities they may fund or permit may be proposed or carried out by small entities. Given the SBA guidance described above, this analysis considers the extent to which this designation could potentially affect small entities, regardless of whether these entities would be directly regulated by the NMFS through the designation or by a delegation of impact from the directly regulated entity.

Description of Economic Activities for Which Impacts Are Most Likely

472. This FRFA focuses on small entities that may bear the incremental impacts of this rulemaking quantified in chapters 3 through 12 of this economic analysis on seven categories of economic activity potentially requiring modification to avoid destruction or adverse modification of Hawaiian monk seal critical habitat. Small entities also may participate in section 7 consultation as a third party (the primary consulting parties being NMFS and the Federal action agency). It is therefore possible that the small entities may spend additional time considering critical habitat during section 7 consultation for the Hawaiian monk seal. Potentially affected activities include:

Chapter 3: In-Water and Coastal Construction (including Transportation)

Chapter 4: Fisheries

Chapter 6: Energy Projects

Chapter 7: Development

Chapter 8: Aquaculture

Chapter 9: Activities that Generate Water Pollution

Chapter 12: Research and Other Miscellaneous Activities

473. As described above and detailed in Chapters 3 through 12 of this report, incremental impacts associated with this rulemaking are expected to consist largely of administrative costs associated with section 7 consultations. In total, annualized incremental impacts are estimated at $290,000, of which approximately $121,000 may be borne by small entities. In addition to the quantified impacts, we also recognize that economic impacts that cannot be quantified are possible in the MHI related to fisheries, residential and commercial development, as well as military operations on Niihau. While most of these unquantified impacts would not be expected to change the relative rank of the affected units, unquantified impacts to Niihau could elevate that unit to be equal or greater in costs to the other MHIs. These potential impacts are described in greater detail below.

474. Of the activities analyzed, consultations on dredging, response activities for oil spills and spills of other hazardous substances, and military activities are not expected to impact third parties, and are therefore are not expected to affect small entities. Further, impacts are not quantified for development or for activities that generate water pollution; therefore, impacts to small entities cannot be estimated for these activities. Nonetheless, this analysis provides summary information to characterize these industries where available. Exhibit C-1 describes potentially affected small businesses by NAICS code,

highlighting the relevant small business thresholds. Although businesses affected indirectly are considered, this analysis considers only those entities for which impacts would not be measurably diluted. In other words, we focus on those entities that may bear some additional costs associated with participation in section 7 consultation, but do not consider broader regional economic implications on small entities of implementation of the rule.

- **Project Modifications.** Because of the high level of baseline protection in areas for many of the affected economic activities incremental impacts from conservation efforts for activities occurring in critical habitat areas are considered to be unlikely for most areas. In addition, scientific uncertainty regarding Hawaiian monk seal's biological needs over and above those baseline protections may limit NOAA's ability to recommend modifications, at least in the foreseeable future. Further, limited information regarding the exact location of projects limits NOAA's ability to forecast which essential features may be impacted by economic activities. Potential modifications are discussed in each activity chapter throughout the economic analysis; however, Exhibit C-2 presents a summary of potential project modifications associated with each essential feature of critical habitat that identified by NMFS.
- **Administrative Costs.** Based primarily on the number of past consultations and information about potential future actions likely to take place within critical habitat areas, this analysis forecasts the number of additional consultations that may take place as a result of critical habitat (see chapters 3 through 12). Based on this forecast, annual incremental consultation costs that may be borne by third parties are forecast at $121,000 (discounted at seven percent), some portion of which may be borne by small entities.[290]

475. Ideally, this analysis would directly identify the number of small entities which may engage in activities that overlap with the designation; however, the NMFS consultation database tracks the Federal agency that is involved in the consultation process; it does not track the identity of past permit recipients or the particulars that would allow NMFS to determine whether the recipients were small entities. Nor does the database include information that would determine how often Federal agencies have hired small entities to complete various actions associated with these consultations.

476. In the absence of this information, this analysis utilizes Dun and Bradstreet databases, with supplemental data for fisheries participation, to determine the number of small businesses operating within the NAICS codes identified in Exhibit C-3 in each affected Hawaiian county. Exhibit C-4 presents the number of potentially affected small businesses by county and specific area for each industry, and Exhibit C-5 presents the proportion of small businesses estimated to fall within each county.

[290] Note: this total does not appear in Chapter 5 because it reflects only the administrative costs to third parties, rather than the full cost of the consultation, including NMFS and Federal agency time. In addition, it excludes annualized impacts associated with non-native species consultation because costs associated this mitigation are expected to be borne by Federal agencies.

EXHIBIT C-2. POTENTIAL PROJECT MODIFICATIONS BASED ON THE PRESENCE OF ESSENTIAL FEATURES

ESSENTIAL FEATURES	PROJECT MODIFICATIONS
Preferred Pupping Beaches & Marine Areas Adjacent to Pupping Beaches	• Restrictions on the spatial extent of the project • Monitoring efforts to identify impacts to monk seal use • Increased education efforts with an emphasis on habitat protection • Monitoring efforts to identify impacts to benthic community or prey species • Limitations on providing new or increased access to remote areas
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
Marine Foraging Areas & Prey Quantity and Quality	• Monitoring efforts to identify impacts to benthic community or prey species • Monitoring efforts regarding impacts to monk seal use • Restrictions on the spatial extent of the project • Changes to Hawaii's water quality standards • Reduction to the annual catch limit
Source: National Marine Fisheries Service, *Revision of Critical Habitat for Hawaiian Monk Seals: Biological Report*, October 2013, received from NMFS on November 13, 2013.	

EXHIBIT C-3. MAJOR RELEVANT ACTIVITIES AND A DESCRIPTION OF THE INDUSTRY SECTORS ENGAGED IN THOSE ACTIVITIES

MAJOR RELEVANT ACTIVITY	DESCRIPTION OF INCLUDED INDUSTRY SECTORS	NAICS CODE	SBA SIZE STANDARD
In-Water And Coastal Construction	**Sand, Gravel, Clay and Ceramic Mining and Quarrying** - This industry comprises (1) establishments primarily engaged in developing the mine site and/or mining, quarrying, dredging for sand and gravel, or mining clay, (e.g., china clay, paper clay and slip clay) and (2) preparation plants primarily engaged in beneficiating (e.g., washing, screening, and grinding) sand and gravel, clay, and ceramic and refractory minerals.	21232	500 employees
	Water and Sewer Line and Related Structures Construction - This industry comprises establishments primarily engaged in the construction of water and sewer lines, mains, pumping stations, treatment plants, and storage tanks.	237110	$36.5 million
	Oil and Gas Pipeline and Related Structures Construction - This industry comprises establishments primarily engaged in the construction of oil and gas lines, mains, refineries, and storage tanks.	237120	
	Power and Communication Line and Related Structures Construction - This industry comprises establishments primarily engaged in the construction of power lines and towers, power plants, and radio, television, and telecommunications transmitting/receiving towers.	237130	
	Highway, Street, and Bridge Construction - This industry comprises establishments primarily engaged in the construction of highways (including elevated), streets, roads, airport runways, public sidewalks, or bridges.	237310	
	Other Heavy and Civil Engineering Construction - This industry comprises establishments primarily engaged in heavy and engineering construction projects (excluding highway, street, bridge, and distribution line construction).	237990	
	Dredging and Surface Cleanup Activities (a subset of Other Heavy and Civil Engineering Construction, above)	2379901	$27.5 million

MAJOR RELEVANT ACTIVITY	DESCRIPTION OF INCLUDED INDUSTRY SECTORS	NAICS CODE	SBA SIZE STANDARD
Fisheries	**Finfish Fishing** - This U.S. industry comprises establishments primarily engaged in the commercial catching or taking of finfish (e.g., bluefish, salmon, trout, tuna) from their natural habitat.	114111	$20.5 million
	Shellfish Fishing - This U.S. industry comprises establishments primarily engaged in the commercial catching or taking of shellfish (e.g., clams, crabs, lobsters, mussels, oysters, sea urchins, shrimp) from their natural habitat.	114112	$5.5 million
Energy Projects	**Other Electric Power Generation** - This U.S. industry comprises establishments primarily engaged in operating electric power generation facilities (except hydroelectric, fossil fuel, nuclear). These facilities convert other forms of energy, such as solar, wind, or tidal power, into electrical energy. The electric energy produced in these establishments is provided to electric power transmission systems or to electric power distribution systems.	221119	250 employees
	Electric Bulk Power Transmission, Control, and Distribution - This industry comprises establishments primarily engaged in operating electric power transmission systems, controlling (i.e., regulating voltages) the transmission of electricity, and/or distributing electricity. The transmission system includes lines and transformer stations. These establishments arrange, facilitate, or coordinate the transmission of electricity from the generating source to the distribution centers, other electric utilities, or final consumers. The distribution system consists of lines, poles, meters, and wiring that deliver the electricity to final consumers.	22112	500 employees

MAJOR RELEVANT ACTIVITY	DESCRIPTION OF INCLUDED INDUSTRY SECTORS	NAICS CODE	SBA SIZE STANDARD
Development	**Construction of Buildings -** The Construction of Buildings subsector comprises establishments primarily responsible for the construction of buildings. The work performed may include new work, additions, alterations, or maintenance and repairs. The on-site assembly of precut, panelized, and prefabricated buildings and construction of temporary buildings are included in this subsector. Part or all of the production work for which the establishments in this subsector have responsibility may be subcontracted to other construction establishments--usually specialty trade contractors. Establishments in this subsector are classified based on the types of buildings they construct. This classification reflects variations in the requirements of the underlying production processes.	236	$36.5 million
Aquaculture	**Finfish Farming and Fish Hatcheries** - This U.S. industry comprises establishments primarily engaged in (1) farm raising finfish (e.g., catfish, trout, goldfish, tropical fish, minnows) and/or (2) hatching fish of any kind.	112511	$0.75 million
	Shellfish Farming - This U.S. industry comprises establishments primarily engaged in farm raising shellfish (e.g., crayfish, shrimp, oysters, clams, mollusks).	112512	
	Other Aquaculture - This U.S. industry comprises establishments primarily engaged in (1) farm raising of aquatic animals (except finfish and shellfish) and/or (2) farm raising of aquatic plants. Alligator, algae, frog, seaweed, or turtle production is included in this industry.	112519	

MAJOR RELEVANT ACTIVITY	DESCRIPTION OF INCLUDED INDUSTRY SECTORS	NAICS CODE	SBA SIZE STANDARD
Activities That General Water Pollution	**Water Supply and Irrigation Systems** - This industry comprises establishments primarily engaged in operating water treatment plants and/or operating water supply systems. The water supply system may include pumping stations, aqueducts, and/or distribution mains. The water may be used for drinking, irrigation, or other uses.	221310	$27.5 million
	Sewage Treatment Facilities - This industry comprises establishments primarily engaged in operating sewer systems or sewage treatment facilities that collect, treat, and dispose of waste.	221320	$20.5 million
	Nonmetallic mineral mining and quarrying. This industry group comprises establishments primarily engaged in developing mine sites, or in mining or quarrying nonmetallic minerals (except fuels). Also included are certain well and brine operations, and preparation plants primarily engaged in beneficiating (e.g., crushing, grinding, washing, and concentrating) nonmetallic minerals.	2123	500 employees
	Manufacturing – The Manufacturing sector comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. The assembling of component parts of manufactured products is considered manufacturing, except in cases where the activity is appropriately classified in Sector 23, Construction. In Hawaii, the manufacturing industries represented include: 311 (Food, specifically, sugar, fruit & vegetable preserving, dairy products, animal processing, seafood packaging, bread/cookie/cracker bakeries), 312 (Beverage and tobacco, specifically, soft drink and ice manufacturing), 315 (Apparel), 323 (Printing), 325 (Chemicals), 327 (Nonmetallic mineral products, specifically, cement and concrete), 332 (Fabricated metal products), 336 (Transportation equipment), 337 (Furniture), 339 (Miscellaneous, including, medical equipment and supplies, jewelry, and athletic goods)	31-33	500 to 1,000 employees, depending on specific industry. Most commonly 500.
	Animal Production, specifically, Dairy Cattle and Milk Production - This industry comprises establishments primarily engaged in milking dairy cattle.	112120	$0.75 million

MAJOR RELEVANT ACTIVITY	DESCRIPTION OF INCLUDED INDUSTRY SECTORS	NAICS CODE	SBA SIZE STANDARD
Research	**Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology).** This industry comprises establishments primarily engaged in conducting research and experimental development (except biotechnology research and experimental development) in the physical, engineering, and life sciences, such as agriculture, electronics, environmental, biology, botany, computers, chemistry, food, fisheries, forests, geology, health, mathematics, medicine, oceanography, pharmacy, physics, veterinary and other allied subjects.	541712	500 employees

[1] To be considered small for purposes of Government procurement, a firm must perform at least 40 percent of the volume dredged with its own equipment or equipment owned by another small dredging concern.

Source: U.S. Small Business Administration, "Table of Small Business Size Standards Matched to North American Classification System Codes". January 22, 2014. Accessed at http://www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf on June 11, 2014; Small Business Administration. 2014. Small Business Size Standards: Inflation Adjustment to Monetary Based Size Standards. 79 FR 33647.

C.1.6 DESCRIPTION OF REPORTING AND RECORDKEEPING EFFORTS

477. The critical habitat rule will require that Federal agencies insure their actions do not destroy or adversely modify critical habitat through a section 7 consultation. During formal section 7 consultation under the ESA, NMFS, the Action agency (Federal agency) and a third party participant applying for Federal funding or permitting, may communicate in efforts to minimize potential adverse impacts to the habitat and/or the essential features. Communication may include written letters, phone calls, and/or meetings. Project variables such as the type of consultation, the location, impacted essential features, and activity of concern, may in turn dictate the complexity of these interactions. Third party costs may include administrative work, such as cost of time and materials to prepare for letters, calls, or meetings. The cost of analyses related to the activity and associated reports may be included in these administrative costs. In addition, following the section 7 consultation process, entities may be required to monitor progress during the said activity to ensure that impacts to the habitat and features have been minimized. The rule does not directly mandate "reporting" or "record keeping" within the meaning of the Paperwork Reduction Act (PRA). The rule does not impose record keeping or reporting requirements on small entities.

C.1.7 A DESCRIPTION OF ALTERNATIVES TO THE RULES WHICH ACCOMPLISH THE OBJECTIVES AND WHICH MINIMIZE IMPACTS ON SMALL ENTITIES

478. In accordance with the requirements of the RFA (as amended by SBREFA, 1996) this analysis considered various alternatives to the critical habitat designation for the Hawaiian monk seal.

Alternative 1: No Action Alternative

479. The alternative of not revising the critical habitat designation for the Hawaiian monk seal was considered because it would impose no additional economic, national security or other relevant impacts. Under this alternative Hawaiian monk seals would continue to receive protection provided under the "jeopardy" provisions of section 7 of the ESA throughout their range; however, protections provided by the "habitat" provisions of section 7 would be limited to those areas and features in the NWHI that were identified in the 1988 designation. The essential features that form the basis for critical habitat designations are also essential to the conservation of the species, and conservation of the species is meant to bring about recovery. As discussed earlier in this report and the Biological Report Hawaiian monk seal numbers have been declining in the NWHI, but monk seal numbers are increasing in the MHI. Favorable conditions in the MHI may be the key to preservation and possibly recovery of this endangered species. The no action alternative would fail to provide any additional conservation benefit to the species that is experiencing a continued decline. This alternative was considered and rejected because this alternative is not consistent with the requirement of the ESA to designate critical habitat to the maximum extent prudent and determinable and would not provide for the conservation of the species based on the best available science.

Alternative 2: Designating all specific areas

480. Although the benefits of exclusion for particular areas appear to outweigh the benefits of designation, NMFS is considering the alternative of designating all specific areas (i.e., no area excluded), and will evaluate comments received. The designation of all specific areas would likely increase the impacts that this rule may have on small businesses, as discussed above and presented in Exhibit C-1.

Alternative 3: Preferred Alternative

481. An alternative to designating critical habitat within all of the areas considered for designation is the designation of critical habitat within a subset of those 16 areas. Under section 4(b)(2) of the ESA, NMFS must consider the economic impacts, impacts to national security, and other relevant impacts of designating any particular area as critical habitat. NMFS has the discretion to exclude an area from designation as critical habitat if the benefits of exclusion (i.e. the impacts that would be avoided if an area was excluded from the designation) outweigh the benefits of designation (i.e., the conservation benefits to the Hawaiian monk seal if an area was designated), so long as exclusion of the area will not result in extinction of the species. Exclusion under section 4(b)(2) of the ESA of one or more of the particular areas considered for designation would reduce the total impacts of designation. This is the preferred alternative because it would result in a critical habitat designation that provides for the conservation of the species while potentially reducing the economic, national security and other relevant impacts on entities. As discussed early in chapter 1 of this report, four areas have been identified for the purposes of exclusion on the basis of national security under this alternative because the benefits of exclusion due to national security appear to outweigh the benefits of designation. Although these areas are being considered due to national security concerns, the exclusion of these areas from the designation may also in turn lessen the economic impacts on small businesses that may be contracted for work in these areas by the Department of Defense or on small businesses that plan on utilizing parts of these areas for other activities. The extent to which the economic impact to small entities would be reduced has not been determined based on the available information. Based on this FRFA, impacts to small businesses resulting from the preferred alternative appear to be small, resulting in costs of 0.04 percent or less of small business revenue (see Exhibit C-1). NMFS has no additional information to indicate that small businesses will be disproportionately impacted by this designation.

EXHIBIT C-4. ESTIMATED TOTAL NUMBER OF REGULATED ENTITIES BY SPECIFIC AREA AND COUNTY, NOVEMBER 2012

COUNTY	SPECIFIC AREA	IN-WATER AND COASTAL CONSTRUCTION	AFFECTED FISHERIES (LICENSED FISHERMEN)	ENERGY PROJECTS	DEVELOPMENT	AQUACULTURE	ACTIVITIES GENERATING WATER POLLUTION	RESEARCH	TOTAL REGULATED ENTITIES
Honolulu	Kure Atoll								
	Midway Islands[291]								
	Pearl and Hermes Reef								
	Lisianski Island								
	Laysan Island								
	Maro Reef								
	Gardner Pinnacles								
	French Frigate Shoals								
	Necker Island								
	Nihoa Island								
	Oahu	173	300	4	1,699	26	1,282	n/a	3,484
Kauai	Kaula Island								
	Niihau Island								
	Kauai	16	112	0	257	5	142	n/a	532
Maui	Maui Nui	32	187	3	539	4	324	n/a	1,089
Hawaii	Hawaii	42	314	1	471	21	300	n/a	1,149
Total		**263**	**916**	**8**	**2,966**	**56**	**2,048**	**n/a**	**6,254**

Source: Dunn and Bradstreet databases. Accessed on July 14, 2014.
Source (number of licensed bottomfish fishermen): Hospital, Justin and Courtney Beavers. 2012. Economic and Social Characteristics of Bottomfish Fishing in the Main Hawaiian Islands. NOAA, Pacific Islands Fisheries Science Center. April. Table 17.

[291] In the NWHI, Midway Islands is Federal property and is not assigned to the County of Honolulu.

EXHIBIT C-5. PROPORTION OF TOTAL REGULATED ENTITIES THAT ARE SMALL, BY SPECIFIC AREA AND COUNTY, NOVEMBER 2012

COUNTY	SPECIFC AREA	IN-WATER AND COASTAL CONSTRUCTION	AFFECTED FISHERIES (LICENSED FISHERMEN) [1]	ENERGY PROJECTS	DEVELOPMENT	AQUACULTURE	ACTIVITIES GENERATING WATER POLLUTION	RESEARCH
Honolulu	Kure Atoll							
	Midway Islands							
	Pearl and Hermes Reef							
	Lisianski Island							
	Laysan Island							
	Maro Reef							
	Gardner Pinnacles							
	French Frigate Shoals							
	Necker Island							
	Nihoa Island							
	Oahu	84%	100%	75%	97%	88%	90%	n/a
Kauai	Kaula Island							
	Niihau Island							
	Kauai	75%	100%	0%	98%	40%	92%	n/a
Maui	Maui Nui	78%	100%	67%	99%	100%	90%	n/a
Hawaii	Hawaii	81%	100%	0%	97%	81%	93%	n/a
Percent of all regulated entities		**82%**	**100%**	**63%**	**98%**	**82%**	**91%**	**n/a**

Source: Dunn and Bradstreet databases. Accessed on July 14, 2014.

[1]Here, we report the number of licensed fishermen rather than an estimated number of entities. We assume that 100 percent of licensed bottomfish and coral reef fishery fisherman will be affected.

C.2 POTENTIAL IMPACTS TO THE ENERGY INDUSTRY

482. Pursuant to Executive Order No. 13211, "Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use," issued May 18, 2001, Federal agencies must prepare and submit a "Statement of Energy Effects" for all "significant energy actions." The purpose of this requirement is to ensure that all Federal agencies "appropriately weigh and consider the effects of the Federal Government's regulations on the supply, distribution, and use of energy."[292]

483. The Office of Management and Budget provides guidance for implementing this Executive Order, outlining nine outcomes that may constitute "a significant adverse effect" when compared with the regulatory action under consideration:

- Reductions in crude oil supply in excess of 10,000 barrels per day (bbls);
- Reductions in fuel production in excess of 4,000 barrels per day;
- Reductions in coal production in excess of 5 million tons per year;
- Reductions in natural gas production in excess of 25 million Mcf per year;
- Reductions in electricity production in excess of 1 billion kilowatts-hours per year or in excess of 500 megawatts of installed capacity;
- Increases in energy use required by the regulatory action that exceed the thresholds above;
- Increases in the cost of energy production in excess of one percent;
- Increases in the cost of energy distribution in excess of one percent; or
- Other similarly adverse outcomes.[293]

484. As discussed in Chapter 6, energy projects may affect the essential features of critical habitat for the monk seal if they are developed near nursing and pupping areas, if construction impacts habitat or prey quality, and if development in more remote locations creates disturbance.

485. Due to the extensive requirements of proposed energy projects to consider environmental impacts, including impacts on marine life, even absent critical habitat designation for the monk seal, we anticipate it is unlikely that critical habitat will change conservation measures recommended during section 7 consultation for these projects. Consequently, it is unlikely the identified projects will be affected by the designation beyond the quantified administrative impacts. Therefore, the designation is not expected to impact the level of energy production in Hawaii. It is unlikely that any impacts to the industry that remain unquantified will result in a change in production above the one billion

[292] Memorandum For Heads of Executive Department Agencies, and Independent Regulatory Agencies, Guidance For Implementing E.O. 13211, M-01-27, Office of Management and Budget, July 13, 2001, http://www.whitehouse.gov/omb/memoranda/m01-27.html.

[293] Ibid.

kilowatt-hour threshold identified in the Executive Order. Therefore, it appears unlikely that the energy industry will experience "a significant adverse effect" as a result of the critical habitat designation for the Hawaiian monk seal.