



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1845 Wasp Blvd. Bldg. 176
Honolulu, Hawaii 96818
(808) 725-5000 • Fax (808) 725-5215

Final Environmental Assessment

Specification of Annual Catch Limits and Accountability Measures for Deep 7 Bottomfish in the Main Hawaiian Islands in 2014-15 and 2015-16 (RIN 0648-XD082)

May 14, 2015

Responsible Agency: National Oceanic and Atmospheric Administration (NOAA)
National Marine Fisheries Service (NMFS)
Pacific Islands Region Office (PIRO)

Responsible Official: Michael D. Tosatto
Regional Administrator, PIRO
1845 Wasp Blvd., Bldg. 176
Honolulu, HI 96818
Tel: (808) 725-5000
Fax: (808) 725-5215

Responsible Council: Western Pacific Fishery Management Council (Council)
1164 Bishop St. Suite 1400
Honolulu, HI 96813
Tel. (808)522-8220
Fax. (808)522-8226

Abstract:

NMFS proposes to specify an annual catch limit (ACL) of 346,000 lb of Deep 7 bottomfish in federal waters of the U.S. Exclusive Economic Zone (EEZ; generally 3 to 200 nautical miles or nm) around the main Hawaiian Islands (MHI), as recommended by the Council. Based on a 2011 NMFS stock assessment for MHI Deep 7 bottomfish, the proposed ACL is associated with a 41 percent probability of overfishing. As an accountability measure (AM) to prevent the fishery from exceeding the ACL, NMFS proposes to close, the commercial and non-commercial fisheries for MHI Deep 7 bottomfish in federal waters on the date the NMFS projects the fishery will reach ACL through the end of the fishing year. Although not part of the proposed action, during a federal fishery closure, the State of Hawaii implements a complementary fishery closure in State waters 0-3 nm. In addition, if NMFS and the Council determines that the 2014-15 Deep 7 bottomfish catch exceeded the ACL, NMFS would reduce the Deep 7 bottomfish ACL for the 2015-16 fishing year by the amount of the overage.

The fishing year for Deep 7 bottomfish begins September 1 and ends on August 31 the following year annually. Unless modified by NMFS, the ACL and AM would be applicable in the fishing



year 2014-15. The proposed ACL and AM is identical to the specifications NMFS implemented in the previous 2013-14 fishing year (78 FR 59626, September 27, 2013).

The proposed action is needed to comply with the Magnuson-Stevens Fishery Conservation and Management Act, and is consistent with the provisions of the Fishery Ecosystem Plan for the Hawaii Archipelago, through which NMFS specifies ACLs and AMs for all federally managed species. The Council recommended the ACL and AM, based upon the best available scientific and commercial information and taking into account risk of overfishing, past fishery performance, and acceptable biological catch recommendation from the Council's Scientific and Statistical Committee, and input from the public.

NMFS prepared this environmental assessment (EA) to evaluate the potential environmental impacts of the proposed ACL specification and AMs in fishing years 2014-15 and again in 2015-16. The EA includes a description of the information and methods used by the Council to develop the proposed ACL, and alternatives to the proposed ACL specifications. The analysis revealed that the specification of ACLs and the AM would not result in large and adverse impacts on target, non-target, or bycatch species, protected species, or on marine habitats. This is because the proposed action will continue the existing management regime and would not change the conduct of commercial or non-commercial MHI bottomfish fisheries in any way. NMFS considers the harvest of Deep 7 bottomfish in the MHI bottomfish fisheries to be sustainable, and expects that the ACL and AM specifications to prevent overfishing and provide for continued sustainable harvest.

On April 21, 2015, NMFS solicited public comments on the proposed ACL and AM specification for MHI Deep 7 bottomfish and a draft EA (80 FR 22158). NMFS received three letters of comments, which were considered before finalizing the EA. The draft and final versions of this EA, and public comments received, can be found by searching on RIN 0648-XD082 at www.regulations.gov, or by contacting the responsible NMFS official or the Council at the above address.

Contents

| | | |
|-------|---|----|
| 1 | Background..... | 7 |
| 1.1 | Overview of ACL Specification Process | 8 |
| 1.2 | Purpose and Need..... | 10 |
| 1.3 | Proposed Action..... | 10 |
| 1.4 | Decisions to be Made..... | 11 |
| 1.5 | Public Involvement | 11 |
| 2 | Description of the Alternatives Considered..... | 12 |
| 2.1 | Development of the Alternatives..... | 12 |
| 2.1.1 | 2011 MHI Deep 7 Bottomfish Stock Assessment Update..... | 12 |
| 2.1.2 | 2014 MHI Deep 7 Bottomfish Stock Assessment Update..... | 14 |
| 2.1.3 | Best Scientific Information Available | 15 |
| 2.1.4 | Estimation of OFL | 16 |
| 2.1.5 | Calculation of ABC..... | 17 |
| 2.1.6 | Council ACL and AM Recommendation | 17 |
| 2.2 | ACL Alternatives for Deep 7 Bottomfish Fisheries in the MHI..... | 18 |
| 2.2.1 | Alternative 1: No ACL and AM Management (No Action)..... | 19 |
| 2.2.2 | Alternative 2: Specify an ACL of 346,000 lb (Status Quo/NEPA Baseline/Preferred) | 19 |
| 2.2.3 | Alternative 3: Specify an ACL of 319,000 lb..... | 20 |
| 2.2.4 | Alternative 4: Specify an ACL of 299,000 lb..... | 21 |
| 3 | Affected Environment..... | 21 |
| 3.1 | Target and Non-Target Species..... | 21 |
| 3.1.1 | Deep 7 Bottomfish | 22 |
| 3.1.2 | Non-Deep 7 Bottomfish..... | 24 |
| 3.1.3 | Bycatch | 26 |
| 3.2 | MHI Bottomfish Habitat | 26 |
| 3.2.1 | Bottomfish Habitat..... | 26 |
| 3.2.2 | Essential Fish Habitat and Habitat Areas of Particular Concern | 27 |
| 3.3 | Description of MHI Bottomfish Fisheries..... | 30 |
| 3.3.1 | Participation, Effort and Catch | 30 |
| 3.3.2 | Ex-Vessel Value and Revenue..... | 32 |
| 3.4 | Fishing Communities | 33 |
| 3.5 | Fishery Administration and Enforcement | 33 |

| | | |
|-------|--|----|
| 3.6 | Protected Species..... | 34 |
| 3.6.1 | Species Protected under the Endangered Species Act (ESA)..... | 34 |
| 3.6.2 | Species Protected under the Marine Mammal Protection Act (MMPA) | 36 |
| 3.6.3 | Seabirds of the Hawaiian Archipelago | 38 |
| 4 | Potential Impacts of the Alternatives..... | 39 |
| 4.1 | Potential Impacts to Target and Non-Target Species..... | 39 |
| 4.2 | Potential Impacts to MHI Bottomfish Habitats, including EFH | 42 |
| 4.3 | Potential Impacts to Fishery Participants and Fishing Communities..... | 42 |
| 4.4 | Potential Impacts to Fishery Administration and Enforcement | 44 |
| 4.5 | Potential Impacts to Protected Species..... | 45 |
| 4.6 | Potential Impacts to Biodiversity/Ecosystem Function | 45 |
| 4.7 | Potential Impacts to Scientific, Historic, Archeological or Cultural Resources | 46 |
| 4.8 | Cumulative Effects of the Proposed Action..... | 46 |
| 4.8.1 | Multi-Year ACL and AM for MHI Deep 7 Bottomfish | 46 |
| 4.8.2 | ACL and AM Specification for MHI non-Deep 7 Bottomfish..... | 46 |
| 4.8.3 | ACL and AM Specifications for other Hawaii FEP Fisheries..... | 47 |
| 4.8.4 | Foreseeable Management Actions Related to Hawaii FEP Fisheries..... | 47 |
| 4.8.5 | Other Foreseeable NOAA/NMFS Management Actions | 48 |
| 4.8.6 | Other Foreseeable NOAA Actions | 49 |
| 4.8.7 | Climate Change..... | 49 |
| 5 | Consistency with Other Applicable Laws..... | 50 |
| 5.1 | National Environmental Policy Act | 50 |
| 5.2 | Preparers and Reviewers | 50 |
| 5.3 | Agencies and Persons Consulted..... | 50 |
| 5.4 | Public Coordination..... | 51 |
| 5.5 | Endangered Species Act..... | 51 |
| 5.6 | Marine Mammal Protection Act..... | 52 |
| 5.7 | Coastal Zone Management Act..... | 52 |
| 5.8 | National Historic Preservation Act | 53 |
| 5.9 | Paperwork Reduction Act | 53 |
| 5.10 | Regulatory Flexibility Act..... | 53 |
| 5.11 | Administrative Procedure Act..... | 54 |
| 5.12 | Executive Order 12898: Environmental Justice..... | 54 |
| 5.13 | Executive Order 12866: Regulatory Impact Review | 55 |

| | | |
|------------|---|----|
| 5.14 | Information Quality Act..... | 55 |
| 6 | References..... | 55 |
| Appendix A | Range of Catches and the Associated Probabilities of Overfishing..... | 59 |
| Appendix B | Final Report of the P* and SEEM Working Groups..... | 60 |

Tables

| | | |
|-----------|---|----|
| Table 1. | Hawaii Bottomfish MUS | 7 |
| Table 2. | Summary of ACL alternatives and associated probability of overfishing (P*) percentile for MHI Deep 7 bottomfish, including MSY-based reference points. | 18 |
| Table 3. | Reported MHI Deep 7 bottomfish catch (lb) by species (Fiscal Year 2000-2013) | 23 |
| Table 4. | Annual reported commercial catch of non-Deep 7 bottomfish in the MHI (2000-2013). | 25 |
| Table 5. | EFH and HAPC for Hawaii FEP MUS..... | 28 |
| Table 6. | Characteristics of the MHI Deep 7 bottomfish commercial fishing sector (2007-2014) | 31 |
| Table 7. | Number of MHI non-commercial fishers, trips and reported BMUS catch (2008-2014) | 32 |
| Table 8. | Endangered and threatened marine species and seabirds occurring in the waters of the MHI..... | 34 |
| Table 9. | Non-ESA-listed marine mammals occurring in waters around the MHI | 37 |
| Table 10. | Seabirds occurring in the Hawaiian Islands..... | 39 |
| Table 11. | ESA Section 7 consultations for Hawaii bottomfish fisheries..... | 52 |

Figures

| | | |
|-----------|---|----|
| Figure 1. | General relationship between OFL, ABC, ACL and ACT..... | 10 |
| Figure 2. | General location of bottomfish habitat in the MHI | 27 |

Acronyms and Abbreviations

ABC – Acceptable Biological Catch
 ACL – Annual Catch Limit
 ACT – Annual Catch Target
 AM – Accountability Measure
 BMUS – Bottomfish Management Unit Species
 Council – Western Pacific Fishery Management Council
 CML – Commercial Marine License
 CPUE – Catch per Unit of Effort
 Hawaii DLNR – Hawaii Department of Land and Natural Resources
 EA – Environmental Assessment
 FEP – Fishery Ecosystem Plan

FMP – Fishery Management Plan
FR – Federal Register
HDAR – Hawaii Division of Aquatic Resources
MHI – Main Hawaiian Islands
Magnuson-Stevens Act – Magnuson-Stevens Fishery Conservation and Management Act
MFMT – Maximum Fishing Mortality Threshold
MSST – Minimum Stock Size Threshold
MSY – Maximum Sustainable Yield
NMFS – National Marine Fisheries Service
NWHI – Northwestern Hawaiian Islands
OFL – Overfishing Limit
P* – Acceptable Risk or Probability of Overfishing
PIFSC – NMFS Pacific Islands Fisheries Science Center
SDC – Status Determination Criteria
SEEM – Social, economic, and ecological considerations, or management uncertainty (SEEM)
SSC – Scientific and Statistical Committee
TAC – Total Allowable Catch
WPFMC – Western Pacific Fishery Management Council

1 Background

As authorized by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the National Marine Fisheries Service (NMFS) and Western Pacific Fishery Management Council (Council) manage fisheries for bottomfish in federal waters of the Exclusive Economic Zone (EEZ; generally 3-200 nautical miles or nm) around the Hawaiian Islands under the Fishery Ecosystem Plan for the Hawaii Archipelago (Hawaii FEP).

Historically the fisheries for Hawaii BMUS operated in two management subareas: (1) the inhabited main Hawaiian Islands (MHI) with their surrounding reefs and offshore banks; and (2) the Northwestern Hawaiian Islands (NWHI), a 1,200-nautical mile (nm) chain of largely uninhabited islets, reefs, and shoals. In 2009, NMFS closed the NWHI fishery within the waters of the Papahānaumokuākea Marine National Monument in accordance with the Presidential Proclamation establishing that Monument (71 FR 51134, August 29, 2006). At present, bottomfish fishing managed under the Hawaii FEP only occurs in the MHI.

In the MHI, NMFS and the Council manage bottomfish management unit species (BMUS) as two separate stock complexes: the MHI Deep 7 stock complex and the MHI non-Deep 7 stock complex. The Deep 7 bottomfish stock complex includes onaga (*Etelis coruscans*), ehu (*Etelis carbunculus*), gindai (*Pristipomoides zonatus*), kalekale (*P. sieboldii*), opakapaka (*P. filamentosus*), lehi (*Aphareus rutilans*), and hapuupuu (*Hypothorodus quernus*, formerly *Epinephelus quernus*). The Deep 7 bottomfish are generally found along high-relief, deep slopes, ranging from 80-400 meters. The non-Deep 7 bottomfish include four species of jacks (*Caranx ignobilis*, *Caranx lugubris*, *Seriola dumerili*, and *Pseudocaranx cheilio*), the gray jobfish (*Aprion virescens*) and two lutjanid snappers (*Lutjanus kasmira* and *Pristipomoides auricilla*). Fishermen typically catch the non-Deep 7 bottomfish during Deep 7 bottomfish trips, although at shallower depths (Table 1).

Table 1. Hawaii Bottomfish MUS

| Common Name | Scientific Name | Local Name |
|-----------------------|---------------------------------|----------------------|
| *Silver jaw jobfish | <i>Aphareus rutilans</i> | lehi |
| Grey jobfish | <i>Aprion virescens</i> | uku |
| Giant trevally | <i>Caranx ignobilis</i> | white ulua |
| Black jack | <i>C. lugubris</i> | black ulua |
| *Sea bass | <i>Hypothorodus quernus</i> | hapuupuu |
| *Red snapper | <i>Etelis carbunculus</i> | ehu |
| *Longtail snapper | <i>E. coruscans</i> | onaga, ulaula |
| Blue stripe snapper | <i>Lutjanus kasmira</i> | taape |
| Yellowtail snapper | <i>Pristipomoides auricilla</i> | yellowtail, kalekale |
| *Pink snapper | <i>P. filamentosus</i> | opakapaka |
| *Pink Snapper | <i>P. sieboldii</i> | kalekale |
| *Snapper | <i>P. zonatus</i> | gindai |
| Thick lipped trevally | <i>Pseudocaranx dentex</i> | pig ulua, butaguchi |
| Amberjack | <i>Seriola dumerili</i> | kahala |

* Indicates a Deep 7 bottomfish

Federal requirements for the MHI bottomfish fishery include, vessel identification, non-commercial fishing permits, non-commercial catch and effort logbooks, a non-commercial bag limit of five Deep 7 bottomfish per trip, and the specification of an annual catch limit (ACL) for all stocks or stock complexes¹ in the fishery, including accountability measures (AMs) for adhering to the catch limit (i.e. in-season fishery closure in the EEZ). For management purposes, the fishing year for the MHI Deep 7 bottomfish begins on September 1 and ends on August 31 the following year. For non-deep 7 bottomfish, the fishing year begins January 1 and ends on December 31. See [50 CFR 665 – Subpart C](#) for all federal regulations applicable to bottomfish fishing in Hawaii.

The State of Hawaii also regulates State-registered fishing vessels and requires the owner of all commercial and non-commercial vessels fishing for bottomfish to annually register their vessel with the Hawaii Department of Land and Natural Resources (DLNR), Division of Aquatic Resources (HDAR). State law also requires all commercial fishermen to annually obtain a commercial fishing license (CML) and report all catch within five days after the end of each fishing trip, and restricts non-commercial fishermen to five Deep 7 bottomfish per trip. State law also prohibits bottomfish fishing in 12 bottomfish restricted fishing areas (BRFA) to conserve the spawning populations of bottomfish. Additionally, when NMFS projects the fishery will reach the ACL, Hawaii law authorizes DLNR to implement complementary AMs (i.e. in-season fishery closure) in State waters 0-3 nm from shore. See the HDAR website for all State regulations applicable to bottomfish fishing in Hawaii (<http://dlnr.hawaii.gov/dar/>).

1.1 Overview of ACL Specification Process

Federal regulations at 50 CFR 665.4 (76 FR 37285, June 27, 2011) require NMFS to specify an annual catch limit (ACL) and accountability measures (AM) for all Hawaii BMUS, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex. This section provides an overview of the ACL specification process.

In accordance with the Magnuson-Stevens Act and the FEPs, there are three required elements in the development of an ACL specification. The first requires the Council's SSC to calculate an acceptable biological catch (ABC) that is set at or below the stock or stock complex's overfishing limit (OFL). The OFL is an estimate of the catch level above which overfishing is occurring and corresponds with the maximum fishing mortality threshold (MFMT). ABC is the level of catch that accounts for the scientific uncertainty in the estimate of OFL and other scientific uncertainty. To determine the appropriate ABC, the ACL mechanism described in the FEPs includes a five-tiered system of control rules that allows consideration of different levels of scientific information. Tiers 1-2 involve data rich to data moderate situations and include levels of scientific uncertainty derived from model-based stock assessments. Tiers 3-5 involve data poor situations and include levels of scientific uncertainty derived from ad-hoc procedures including simulation models or expert opinion.

¹ The Magnuson-Stevens Act defines the term "stock of fish" to mean a species, subspecies, geographic grouping, or other category of fish capable of management as a unit. Federal regulations at 50 CFR §660.310(c) defines "stock complex" to mean a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar.

When calculating an ABC for a stock or stock complex, the SSC must first evaluate the information available for the stock and assign the stock or stock complex into one of the five tiers. The SSC must then apply the control rule assigned to that tier to determine ABC. For stocks or stock complexes that have estimates of maximum sustainable yield (MSY) and other MSY-based reference points derived from statistically-based stock assessment models (Tier 1-3 quality data), the ABC is calculated by the SSC based on an ABC control rule that accounts for scientific uncertainty in the estimate of the OFL, and the acceptable level of risk (as determined by the Council) that catch equal to the ABC would result in overfishing. In plain English, ABC is the maximum catch at which the probability or risk of overfishing percentile (P*) is less than 50 percent. In accordance with federal regulations, the probability of overfishing cannot exceed 50 percent and should be a lower value (74 FR 3178, January 9, 2011). The Hawaii FEP includes a qualitative process by which the P* value may be reduced below 50 percent by the Council based on consideration of four dimensions of information, including assessment information, uncertainty characterization, stock status, and stock productivity and susceptibility. The FEP also allows the SSC to recommend an ABC that differs from the results of the ABC control rule calculation based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors determined relevant by the SSC. However, the SSC must explain its rationale.

The second element requires the Council to determine an ACL that may not exceed the SSC recommended ABC. The process includes methods by which the ACL may be reduced from the ABC based on social, economic, and ecological considerations, or management uncertainty² (SEEM). An ACL set below the ABC further reduces the probability that actual catch will exceed the OFL and result in overfishing.

The third and final element in the ACL process is the inclusion of AMs. There are two categories of AMs, in-season AMs and post-season AMs. In-season AMs prevent an ACL from being exceeded and may include, but are not limited to, closing the fishery, closing specific areas, changing bag limits, or other methods to reduce catch. The Council may also use an annual catch target (ACT) in the system of AMs so that a fishery does not exceed the ACL. An ACT is the management target of the fishery and accounts for management uncertainty in controlling the actual catch at or below the ACL.

If the Council determines a fishery exceeded the specified ACL, the Council may recommend as an AM, that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage. In determining whether an overage adjustment is necessary, the Council would consider the magnitude of the overage and its impact on the affected stock's status. Additionally, if an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness. Figure 1 illustrates the relationship between the terms used in this section.

For more details on the specific elements of the ACL specification mechanism and process, see Amendment 1 to the PRIA FEP, Amendment 2 to the American Samoa Archipelago FEP, Amendment 2 to the Mariana FEP, Amendment 3 to the Hawaii Archipelago FEP (WPFMC and

² Management uncertainty occurs because of the lack of sufficient information about catch (e.g., late reporting, under reporting, and misreporting of landings).

NMFS 2011), and the final implementing regulations at 50 CFR §665.4 (76 FR 37286, June 27, 2011).

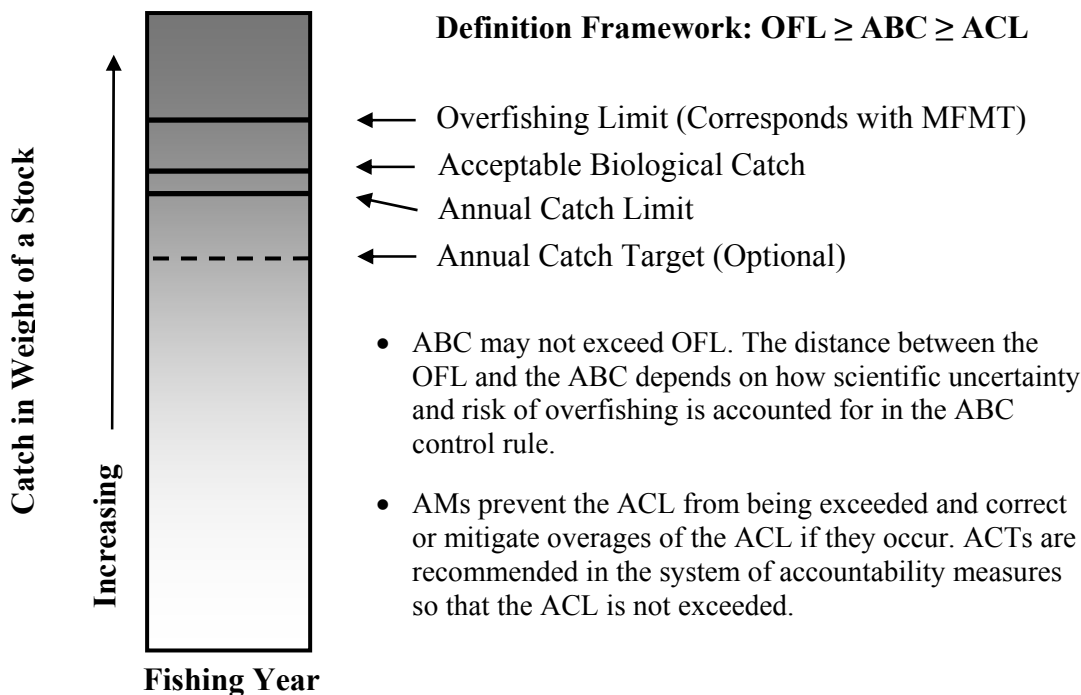


Figure 1. General relationship between OFL, ABC, ACL and ACT

1.2 Purpose and Need

The purpose of this action is to use the best available scientific information to specify an ACL and AMs for the MHI Deep 7 bottomfish fishery. An ACL and AMs are needed to comply with the Magnuson-Stevens Act and provisions of the Hawaii FEP under which NMFS specifies an ACL for all stocks or stock complexes in the MHI Deep 7 bottomfish fishery. NMFS and the Council developed the ACL and AMs in accordance with the approved FEP mechanism and process, considering the best available scientific, commercial, and other information about the fishery, and taking into account the associated risk of overfishing. Under the Hawaii FEP, AMs are implemented to ensure the ACL specification is not exceeded and to correct or mitigate overages of ACLs if they occur. The fishery management objective is to specify an ACL and AMs that will prevent overfishing from occurring, and ensure long-term sustainability of Hawaii’s bottomfish stocks while allowing fishery participants to continue to benefit from the managed harvest of the fishery resources.

1.3 Proposed Action

NMFS proposes to specify an ACL of 346,000 lb of main Hawaiian Islands (MHI) Deep 7 bottomfish in fishing year 2014-15, as recommended by the Council. The EA also includes an analysis of continuing the ACL of 346,000 of MHI Deep 7 bottomfish and AMs for fishing year 2015-16, which will be updated, as appropriate, following Council action. Consistent with Federal fishing regulations at 50 CFR 665.4, on the date NMFS projects the ACL will be

reached, NMFS would close the commercial and non-commercial fisheries for MHI Deep 7 bottomfish in the EEZ through the end of the fishing year. During the fishery closure, no person may fish for, retain, or possess any Deep 7 bottomfish in the EEZ around the MHI. The purpose of this AM is to prevent the ACL from being exceeded. Although not part of the Federal action, during a federal fishery closure, the State of Hawaii implements a complementary closure in state waters, and prohibits any person from fishing for, possessing or selling MHI Deep 7 bottomfish after the closure date. The proposed ACL and AM are identical to those NMFS implemented in the immediate past fishing year 2013-14 (78 FR 59626, September 27, 2013).

In addition, if NMFS and the Council determine that the final 2014-15 Deep 7 bottomfish catch exceeds the proposed ACL of 346,000 lb, NMFS would reduce the Deep 7 bottomfish ACL for the 2015-16 fishing year by the amount of the overage. Because the 2014-15 fishing year has already begun, NMFS proposes to retroactively count all catches of MHI Deep 7 bottomfish made since September 1, 2014 (the start of the fishing year) towards the 2014-15 ACL using all available commercial data collected by HDAR through State CML reporting, and all non-commercial data collected by NMFS through federal logbook reporting. While Hawaii BMUS include other non-Deep 7 bottomfish species identified in Table 1, NMFS will propose a separate ACL and AM for the non-Deep 7 bottomfish stock complex through a separate action. Therefore, the specification of ACLs and AMs for non-Deep 7 bottomfish are not part of the proposed action.

1.4 Decisions to be Made

After considering public comments on the proposed action and alternatives considered, NMFS will specify an ACL and AM for the MHI Deep 7 bottomfish MUS for the 2014-15 fishing year. NMFS will also use the information in this EA to consider the impacts of proposed action and alternatives considered during the 2015-16 fishing year. NMFS will supplement this analysis, as appropriate, following the Council's recommendation of an ACL for the MHI Deep 7 bottomfish MUS for the 2015-16 fishing year. Finally, the Regional Administrator of the NMFS Pacific Islands Regional Office (PIRO) will also use the information in this EA to make a determination about whether the selected ACL specifications and AM would be a major federal action with the potential to have a significant environmental impact that would require the preparation of an environmental impact statement.

1.5 Public Involvement

At its 160th and 161st meetings held respectively on June 25-27, 2014, and October 21-23, 2014, the Council considered and discussed issues relevant to the MHI Deep 7 bottomfish ACL and AMs, including the fishing level recommendations of its 116th and 117th SSC, which were held June 14-16, 2014, and October 14-16, 2014, respectively. All four meetings were open to the public and advertised in Hawaii media as well as the Federal Register (79 FR 57887, September 26, 2014; 79 FR 59742, October 3, 2014), and on the Council's website. Fishermen present at the SSC and Council meetings all supported the proposed action. Reports of the 160th and 161st Council meetings and the 116th and 117th SSC meetings can be obtained from the Council. See Section 2.1.5 and 2.1.6 for a summary of the respective recommendations of the SSC and Council from these meetings.

On April 21, 2015, NMFS solicited public comments on the proposed ACL and AM specification for MHI Deep 7 bottomfish and a draft EA (80 FR 22158). NMFS received three letters of comments, which were considered before finalizing the EA (see Section 5.4).

2 Description of the Alternatives Considered

The alternatives considered in this EA are limited to the ACL and AMs as they are the management measures to be applied to the fishery for the MHI Deep 7 bottomfish stock complex. Although the OFL and ABC are part of the ACL mechanism, the establishment of these reference points is not part of the proposed federal action, but are described for informational purposes.³

2.1 Development of the Alternatives

The alternatives considered in this EA are based upon the best available scientific, commercial, and other information about the MHI Deep 7 bottomfish fishery. NMFS Pacific Islands Fisheries Science Center (PIFSC) compiles these information sources to produce a stock assessment, which describes the past and current status of the MHI Deep 7 bottomfish stock complex, and predicts potential effects on stock status at various levels of catch. Currently, there are two recent PIFSC stock assessments that provide information relevant to the status of MHI Deep 7 bottomfish, which are briefly summarized below.

2.1.1 2011 MHI Deep 7 Bottomfish Stock Assessment Update

In 2011, PIFSC completed a stock assessment update for the MHI Deep 7 bottomfish fishery (2011 stock assessment) using data through 2010 (Brodziak et al. 2011). The 2011 stock assessment used similar commercial fishery data as in a 2008 assessment update (Brodziak et al. 2009), but includes a modified treatment of unreported catch and catch per unit effort (CPUE) standardization, as well as new research information on the likely life history characteristics of bottomfish (A. Andrews, PIFSC, unpublished 2010 research) in response to recommendations from the Western Pacific Stock Assessment Review (WPSAR) of the 2008 update (Stokes, 2009). Additionally, while the 2008 assessment considered the entire assemblage of Hawaii BMUS on an archipelagic basis (NWHI and MHI), the 2010 assessment focused solely on the Deep 7 bottomfish stock complex in the MHI.

To address the unreported catch issue, the 2011 assessment included four scenarios of unreported catch developed from available information. The four scenarios are labeled in order of magnitude from the highest (Scenario 1) to the lowest (Scenario 4) estimates of unreported catch.

- **Catch Scenario 1:** Unreported catch is 2 times commercial reported catch
- **Catch Scenario 2:** Unreported catch equals the commercial reported catch
- **Catch Scenario 3:** Unreported catch is one-fifth the commercial reported catch
- **Catch Scenario 4:** There is no unreported catch

³ OFL is an estimate of the catch level above which overfishing is occurring. ABC accounts for scientific uncertainty in the estimate of OFL. OFL and ABC are biologically-based reference points and are not part of the federal action.

According to the 2011 assessment the Catch Scenario 2 is the baseline (i.e., most plausible scenario) because it used the best available information on unreported to reported catch ratios estimated for individual MHI Deep7 bottomfish species.

To determine the appropriate CPUE, the 2011 assessment included three scenarios to represent changes in fishing power of the fleet that targets Deep 7 bottomfish for commercial catch. CPUE is used in stock assessments as an index of relative stock abundance. Standardizing CPUE from different anglers over different areas and over many years helps to minimize the effects that could bias CPUE as an index of stock abundance.

- **CPUE Scenario 1:** Negligible change in bottomfish fishing power through time.
- **CPUE Scenario 2:** Moderate change in bottomfish fishing power through time. Specifically, this scenario assumed that: (i) there was no change in fishing power during 1949-1970; (ii) fishing power increased at a rate of 0.25 percent per year during 1971-1980; fishing power increased at a rate of 0.5 percent per year during 1981-1990; (iii) fishing power increased at a rate of 0.25 percent per year during 1991-2000; and (iv) fishing power did not change during 2001-2010.
- **CPUE Scenario 3:** Substantial change bottomfish fishing power through time. Specifically, this scenario assumed that a substantial change in fishing power scenario had occurred since the 1950s with an average increase in fishing power of roughly 1.2 percent per year.

According the 2011 assessment CPUE Scenario 1 is the baseline (i.e., most plausible scenario) because it represented the best scientific information about the efficiency of the Deep7 bottomfish fishing fleet through time, and because it did not include ad hoc assumptions about changes in fishing power for the deep handline fishery that has traditionally harvested the Deep7 bottomfish complex.

Based on the Catch 2/CPUE 1 scenario combination, the 2011 assessment estimates a maximum sustainable yield (MSY) of 417,000 lb for the MHI Deep 7 bottomfish stock complex. The 2011 stock assessment also included projection results of a range of commercial catches of Deep 7 bottomfish that would produce probabilities of overfishing ranging from 0 percent to 100 percent and at five percent intervals (Table 19.1 in Brodziak et al., 2011, and shown in Appendix A). Under the Catch 2/CPUE 1 scenario combination, the catch limit associated with a 50 percent probability of overfishing is 383,000 lb of MHI Deep 7 bottomfish. Therefore, while the long-term MSY for the fishery is 417,000 lb, the OFL for fishery is 383,000 lb.

Findings of an Independent Peer Review

In January 2011, PIFSC contracted the Center for Independent Experts (CIE) to provide three independent experts to review a draft of the 2011 stock assessment and prepare a report of their independent findings and recommendations, and whether the 2011 stock assessment is the best scientific information available for management purposes. In general, the CIE review panel found that the 2011 stock assessment was scientifically sound, applied appropriate modeling approaches and methods given data limitations. In addition, each reviewer provided recommendations on how to improve the next assessment particularly with respect to providing credible CPUE standardization. The reports of the CIE reviewers are available on the PIFSC website at http://www.pifsc.noaa.gov/do/peer_reviews/.

2.1.2 2014 MHI Deep 7 Bottomfish Stock Assessment Update

In 2014, the PIFSC completed a draft 2014 stock assessment update for the MHI Deep 7 bottomfish fishery (2014 stock assessment), using data through fishing year the 2013 (Brodziak et al. 2014). The 2014 stock assessment update uses the previous 2011 stock assessment's methods for data analysis, modeling, and stock projections, with one improvement--it included the State of Hawaii's CML data as a variable to standardize CPUE over time. The State began issuing CMLs uniquely and consistently to individuals through time starting in 1994. Therefore, beginning in 1994 the CML number assigned to an individual has remained the same. The 2014 stock assessment included individual CMLs in the CPUE standardization for that year onward. This improvement is highly significant, resulting in a two-fold increase in the explanatory power (R-squared) of the CPUE standardization and a substantial decrease in the Akaike information criterion value of the CPUE standardization, which now explains over 50% of the variation in observed CPUE over time. Additionally, in the three additional years (2011-13) covered by the 2014 assessment, the biomass of the Deep 7 species and the exploitation rate were about the same as in the preceding three years. Therefore, the updated estimates of the values for management (i.e., MSY, OFL, probability of overfishing etc.) are not a result of any significant change in biomass or exploitation rate, but are due to better estimation of the values provided by the previous assessment.

Based on the revised CPUE standardization method and three years of additional catch data, the 2014 stock assessment update re-estimates MSY to be 415,000 lb, which is similar to the previous MSY estimate of 417,000 lb reported in the 2011 stock assessment. The 2014 stock assessment also included projection results of a range of commercial catches of Deep 7 bottomfish that would produce probabilities of overfishing ranging from 0 percent to 100 percent and at five percent intervals (Table 15 in Brodziak et al., 2014). Based on a maximum potential harvest of 325,000 lb of MHI Deep 7 bottomfish in the then-ongoing 2013-14 fishing year, the 2014 stock assessment estimated an OFL of 316,000 lb, which is 67,000 lb less than the OFL estimate in the 2011 stock assessment. These updated estimates of MSY and OFL are not the result of any significant change in biomass or exploitation rate, but are due to better estimations resulting from the revised CPUE standardization method.

Findings of an Independent Peer Review

In December 2014, PIFSC again contracted the CIE to provide three independent experts to review the 2014 stock assessment and prepare a report of their independent findings and recommendations, and to assist NMFS in determining whether the 2014 stock assessment is the best scientific information available for management purposes. In summary, the CIE panel found that including individual CML data as a variable to standardize CPUE over time was an improvement over the method used in the 2011 stock assessment. However, the CIE panel had strong reservations regarding the quality of input catch data and CPUE index of abundance used in both the 2011 and 2014 stock assessments. Specifically, the panel raised concern about the historical pre-1990 data for CPUE calculation and estimates of unreported catch. Given the concerns with the incomplete effort information, the CIE panel concluded that the 2014 stock assessment had serious flaws that compromised its utility for management. In particular, the CIE panel noted that because the 2014 stock assessment was an update only, and required

improvements in the index and the population model, the science reviewed in the 2014 stock assessment is not considered the best available. The reports of the CIE reviewers are available on NMFS website at <http://www.st.nmfs.noaa.gov/science-quality-assurance/cie-peer-reviews/cie-review-2015>.

2.1.3 Best Scientific Information Available

National Standard 2 requires that conservation and management measures be based on the best scientific information available, and be founded on comprehensive analyses. National Standard 2 guidelines (78 FR 43087, July 19, 2013) state that scientific information that is used to inform decision making should include an evaluation of its uncertainty and identify gaps in the information (50 CFR 600.315(a)(1)). The guidelines also recommend scientific information used to support conservation and management be peer reviewed (50 CFR 600.315(a)(6)(vii)). However, the guidelines also state that mandatory management actions should not be delayed due to limitations in the scientific information or the promise of future data collection or analysis (50 CFR 600.315(a)(6)(v)).

On March 3, 2014, PIFSC outlined reasons why the fisheries data in the 2014 assessment produced results that the CIE panel advised were not ready for management application, and identified two ways in which the fisheries data can be improved for future application in the new CPUE standardization method.

1. Although catch per day fished is the best available CPUE that is available continuously over the whole time series, it may not be the best available over the most recent time series. If the time series is to be split with CPUE issues addressed differently before and after the split, one could also analyze and include detailed effort data that has been collected only for the last dozen years. This data could strongly influence recent trends. This was not seen by PIFSC as work that could be done as a simple update in 2014, because it is a complex undertaking.

The use of CPUE defined as catch per day fished is subject to great criticism, and one way to address this is by using details on hours and numbers of lines and hooks used by fishermen over the last dozen years. Only inexplicit, undescribed differences among fishermen linked through time were applied to the recent stanza in the 2014 CPUE standardization. Using the recent effort detail would still allow differences between individual fishermen to be standardized, and also allow changes in effort details through time, to be addressed. Both were factors of great concern to the reviewers. Differences among areas and seasons and other such factors that can be applied throughout the whole time series have remained part of the CPUE standardization in both 2011 and 2014.

2. Further efforts could be made to apply the CPUE standardization to account for differences among fishermen to more data using various exploratory methods and other data sets. The 2014 assessment overlooked a compilation of confidential non-electronic records held by the State of Hawaii that may help to link fisher's identities back through an earlier stanza of time.

Although the CIE panel noted the improvement in catch rate standardization in the 2014 stock assessment compared to 2011, it had strong reservations regarding the input catch data in both stock assessments. However, PIFSC cannot improve the assessment for MHI Deep 7 bottomfish in the ways described above in short order because it is a complex undertaking. Although catch per day fished may not be the best available CPUE data that can be used in the superior split-stanza CPUE standardization (i.e. after 1994), it is the best available CPUE data that is available over the entire time series, and thus appropriate for use in the 2011 assessment approach, which does not utilize a split-stanza CPUE standardization approach. Therefore, NMFS believes that a much more simple update of the 2011 assessment using data from the three most recent years available (i.e., 2011, 2012 and 2013) provides the best scientific information available for management. Applying this updated data, NMFS revised the MSY for MHI Deep 7 bottomfish from 417,000 lb to 404,000 lb and the OFL from 383,000 lb to 352,000 lb. These values do not reflect a drastic change in stock status from the information considered by the Council, and the proposed ACL of 346,000 lb remains below the revised OFL of 352,000 lb.

However, while PIFSC determined the 2011 assessment using data from the three most recent years available provides the best scientific information for management, this information was not available at the 116th or 117th SSC or the 160th or 161st Council meetings when these bodies provided their respective ABC and ACL recommendations for the currently ongoing 2014-15 fishing year. Moreover, because the 118th SSC, and the 162nd Council were scheduled to meet starting on March 10, and March 16, 2015, respectively, there was insufficient time to publish a notice in the *Federal Register* revising the meeting agendas to include an action item to revisit the SSC and Council's 2014-15 ABC/ACL recommendation of 346,000 lb.

While NMFS will add this topic as an action item to be discussed at the June 2015 SSC and Council meeting, it is unlikely NMFS could implement a revised ABC/ACL recommendation for the 2014-15 fishing year, as the season will end on August 31, 2015. The National Standard 2 Guidelines, 50 CFR § 600.315(a)(6)(v), recognize that data collection is a continuous process, and that new information that cannot be considered in decision-making may be reserved for use in subsequent updates. For these reasons, NMFS proposes to implement the Council recommended ACL of 346,000 lb for the 2014-15 fishing year, and will request the SSC and Council to consider in June 2015, the new information for recommending an ABC and ACL for the 2015-16 fishing year, which begins on September 1, 2015. Alternative ACL's under the 2014 stock assessment are not further considered in this analysis.

2.1.4 Estimation of OFL

OFL is an estimate of the annual amount of catch that corresponds with the maximum fishing mortality threshold (MFMT), and is expressed in terms of weight (pounds) of fish. In other words, if catch exceeds the OFL, there is a 50 percent probability that overfishing is occurring. OFL is a biologically-based reference point estimated by NMFS Pacific Islands Fisheries Science Center through a stock assessment. According to the 2011 stock assessment update (Brodziak et al. 2011), the Catch 2/CPUE 1 scenario combination represents the best approximation (with a 0.400 probability) of the true state of nature of the bottomfish fishery and Deep 7 bottomfish population dynamics. Under the Catch 2/CPUE 1 scenario combination, the long-term maximum sustainable yield (MSY) of the MHI Deep 7 bottomfish

stock complex is estimated to be 417,000 lb. The assessment model also included projection results of a range of commercial catches of Deep 7 bottomfish that would produce probabilities of overfishing ranging from zero percent to 100 percent, and at five percent intervals (Table 19.1 in Brodziak et al. 2011, and shown in Appendix A). Based on these results, the 2011 stock assessment estimates that the level of catch associated with a 50 percent probability of overfishing the MHI Deep 7 bottomfish complex is 383,000 lb. Therefore, while the long-term MSY for the fishery is 417,000 lb, the OFL for the fishery is 383,000 lb.

2.1.5 Calculation of ABC

At its 116th meeting held June 14-16, 2014, the SSC reviewed a draft of the 2014 bottomfish stock assessment update and expressed concerns with the CPUE standardization procedures applied because of the reductions in management reference points (e.g., OFL) compared to the 2011 assessment. Consequently, the SSC recommended that the CPUE standardization procedure be examined in some detail, resulting in the December 2014 CIE review described in section 2.1.2 above. The SSC also stated that it did not foresee an adverse consequence of continuing to use the 2011 assessment as the best available science for management purposes until the SSC's CPUE standardization concerns are resolved. Therefore, at its 116th meeting, the SSC recommended that ABC for the MHI Deep 7 bottomfish in 2014-15 fishing year be set at 346,000. Based on the probability of overfishing projections provided in the 2011 stock assessment (Table 19.1 in Brodziak et al., 2011, and shown in Appendix A), this level of catch is associated with a 41 percent probability of overfishing MHI Deep 7 bottomfish. This ABC is identical to the SSC's fishing level recommendation for the immediate past fishing year 2013-14 (78 FR 59626, September 27, 2013). In accordance with National Standard 1 guidelines of the Magnuson-Stevens Act, the probability of overfishing cannot exceed 50 percent and should be a lower value (74 FR 3178, January 9, 2011). See Appendix B for additional information on the procedures for setting ABC, including the selection of a probability of overfishing percentile (P*) of 41.

At the 117th SSC meeting held October 14-16, 2014, the SSC again expressed concerns with the CPUE standardization procedures applied in the 2014 stock assessment because applying a P* of 41 percent to the probability of overfishing projections in the 2014 assessment would result in a 23 percent reduction in ABC from 346,000 lb to 266,000 lb. The SSC recognized that improvements and additional data have been incorporated into the 2014 draft assessment but reiterated the fact that (at the time of the 117th SSC meeting), the 2014 assessment had not yet undergone an independent peer review. Therefore, the SSC again set the ABC at 346,000 lb for the 2014-15 fishing year. Reports of the 116th and 117th SSC meetings are available from the Council.

2.1.6 Council ACL and AM Recommendation

Based on the recommendations of its 116th SSC, the Council at its 160th meeting held June 25-27, 2014, recommended the ACL for the MHI Deep 7 bottomfish in fishing year 2014-15 be set equal to ABC, or 346,000 lb. This level of catch is associated with a 41 percent probability of overfishing MHI Deep 7 bottomfish. At this meeting, Council also recommended that in order to prevent the ACL from being exceeded, NMFS utilize an in-season AM and close the fishery on

the projected date the ACL will be reached. This is a continuation of the AM that has been in place since the 2007-08 fishing year.

At the 161st Council meeting held October 21-23, 2014, the Council noted that the release of the 2014 draft MHI Deep 7 bottomfish stock assessment update created a situation resulting in greater scientific uncertainty because it conflicted with the results of the 2011 stock assessment. However, because the Council had a number of outstanding questions regarding the application of the new CPUE standardization methods used in the 2014 stock assessment, it ultimately decided that the 2011 stock assessment is the best scientific information available. Based on the recommendations of its 117th SSC, the Council again recommended ACL for the MHI Deep 7 bottomfish in 2014-15 fishing year be set equal to ABC, or 346,000 lb. This ACL is identical to the Council’s recommendation for the immediate past fishing year 2013-14 (78 FR 59626, September 27, 2013). As an additional AM, the Council also recommended that should the 2014-15 catch exceed the ACL, the ACL specification for the 2015-16 fishing year will be reduced by the amount of the overage. However, the Council did not recommend use of an annual catch target (ACT) as an additional AM as was recommended in the 2012-13 fishing year. This is because the State of Hawaii changed its catch reporting requirements from a monthly reporting requirement to a trip basis, thus decreasing the management uncertainty in monitoring catch towards the ACL. Reports of the 160th and 161st Council meetings are available on the Council’s website (www.wpcouncil.org).

2.2 ACL Alternatives for Deep 7 Bottomfish Fisheries in the MHI

This section describes a range of ACL alternatives for MHI Deep 7 bottomfish fisheries in fishing years 2014-15 and 2015-16 and expected fishery outcomes. Table 2 summarizes the alternatives considered, including their associated probability of overfishing percentiles (P*) based on risk projections from the 2011 stock assessment (Table 19.1 in Brodziak et al., 2011, and shown in Appendix A). In accordance with National Standard 1 guidelines of the Magnuson-Stevens Act, the probability of overfishing cannot exceed 50 percent and should be a lower value (74 FR 3178, January 9, 2011).

Table 2. Summary of ACL alternatives and associated probability of overfishing (P*) percentile for MHI Deep 7 bottomfish, including MSY-based reference points.

| MHI Deep 7 Bottomfish | | |
|--|-----------------|--|
| <i>MSY = 417,000 lb</i> | | |
| <i>OFL = 383,000 lb (P*=50%)</i> | | |
| <i>ABC = 346,000 lb (P*=41%)</i> | | |
| | <i>ACL (lb)</i> | <i>Probability of Overfishing (P*)</i> |
| Alternative 1 (No Action) | No ACL | not applicable |
| Alternative 2 (Status Quo and Preferred) | 346,000 | 41 |
| Alternative 3 (Lower than Preferred) | 319,000 | 35 |
| Alternative 4 (Lower than Preferred) | 299,000 | 30 |

Source: Brodziak et al. (2011)

2.2.1 Alternative 1: No ACL and AM Management (No Action)

Currently, NMFS has not specified an ACL and AMs for the MHI Deep 7 bottomfish fishery for the 2014-15 fishing year, which is currently ongoing. Under Alternative 1, NMFS would not specify an ACL or AMs for the MHI Deep 7 bottomfish fishery for the 2014-15 fishing year. However, this alternative would not comply with the Magnuson-Stevens Act or the provisions of the Hawaii FEP, which require NMFS to specify an ACL and AMs for all stocks and stock complexes.

2.2.1.1 Expected Fishery Outcome

Under the no-action alternative, the lack of an ACL or AM is not expected to result in large changes to the conduct of the fishery including gear types used, areas fished, level of catch or effort, target and non-target stocks, or protected species. This is because, based upon the best available commercial and scientific information, the MHI Deep 7 bottomfish fishery historically harvests less than the stock complex's maximum sustainable year, even without an ACL and AM. As shown in Table 6, commercial catches of MHI Deep 7 bottomfish have consistently remained below the estimated OFL of 383,000 lb and long-term MSY of 417,000 lb. In the 2013-14 fishing year, the fishery reported harvesting a total of 309,485 lb of MHI Deep 7 bottomfish. This is the highest level of catch since NMFS implemented a catch limit system in the 2007-08 fishing year. During fishing year 2013-14, the fishery remained open year round. In fishing years 2014-15 and 2015-16, total reported catch is expected to be similar to 2013-14 catch, and is not expected to result in overfishing. Therefore, the expected fishery outcome under Alternative 1 is expected to be identical to the expected fishery outcome described under Alternative 2 below. Without an ACL and AM, the fishery could continue to catch Deep 7 even after the OFL is reached. If this were to happen, overfishing could eventually occur. Therefore, even though in the short term, the lack of an established ACL or AM would not have large adverse impacts to target stocks; however, in the long term, MHI Deep 7 bottomfish stocks could be adversely affected.

2.2.2 Alternative 2: Specify an ACL of 346,000 lb (Status Quo/NEPA Baseline/Preferred)

Under Alternative 2, NMFS would specify an ACL of 346,000 lb for the 2014-15 fishing year as recommended by the Council. As an AM to prevent the fishery from exceeding the ACL, NMFS also proposes to close the commercial and non-commercial fisheries for MHI Deep 7 bottomfish in federal waters on the date NMFS projects the fishery would reach ACL through the end of the fishing year. Although not part of this action, during a federal fishery closure, the State of Hawaii implements a complementary closure in State waters, and prohibit any person from fishing for, possessing or selling MHI Deep 7 bottomfish after the closure date. Based on probability of overfishing projections contained in the 2011 stock assessment (Table 19.1 in Brodziak et al. 2011 and shown in Appendix A), an ACL of 346,000 lb is associated with a 41 percent probability of overfishing the MHI Deep 7 bottomfish stock complex should the entire ACL be caught. This ACL and AM is identical the ACL NMFS specified for the fishery in fishing year 2012-13 (77 FR 56791, September 9, 2012, and 2013-14 (78 FR 59626, September 27, 2013). As an additional AM, if NMFS and the Council determine the fishery exceeded the 2014-15 ACL, NMFS would reduce the 2015-16 ACL by the amount of the overage. Alternative

2 is the status quo alternative, the NMFS and Council preferred alternative and the NEPA baseline to which all other alternatives are compared.

2.2.2.1 Expected Fishery Outcome

Under Alternative 2, the specification of an ACL of 346,000 lb and the associated AMs are not expected to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch or effort. This is because total reported catch in 2014-15 and 2015-16 is expected to be similar to 2013-14 catch (i.e., 309,485 lb), and remain below the ACL of 346,000 lb. Thus, the in-season AM of a fishery closure to prevent the ACL from being exceeded is not likely to be triggered and like under Alternative 1, the fishery is expected to remain open for the entire fishing year (e.g. from September 1 to August 31 the following year). However, if the fishery were to attain the ACL of 346,000 lb in 2014-15 or 2015-16, NMFS would implement a fishery closure of the commercial and non-commercial fisheries for MHI Deep 7 bottomfish in federal waters. When this occurs, the State of Hawaii implements a complementary fishery closure in state waters. The in-season AM of a fishery closure is expected to keep total catch of MHI Deep 7 bottomfish below the OFL of 383,000 lb and prevent overfishing from occurring. Because state and federal laws require fishermen to report on a per-trip basis, it is unlikely that management uncertainty (i.e. late reporting) would occur and cause the fishery to exceed the ACL of 346,000 lb. Thus, an overage adjustment AM in 2015-16 is not likely to be necessary. However, if the fishery does exceed the ACL in 2014-15, NMFS would reduce the ACL in fishing year 2015-16 by the amount of the overage.

2.2.3 Alternative 3: Specify an ACL of 319,000 lb

Under Alternative 3, NMFS would specify an ACL of 319,000 lb of MHI Deep 7 bottomfish for the 2014-15 fishing year. As an AM to prevent the fishery from exceeding the ACL, NMFS also proposes to close the commercial and non-commercial fisheries for MHI Deep 7 bottomfish in federal waters on the date NMFS projects the fishery would reach ACL through the end of the fishing year. Based on the probability of overfishing projections contained in the 2011 stock assessment (Table 19.1 in Brodziak et al. 2011 and shown in Appendix A), an ACL of 319,000 lb is associated with a 35 percent probability of overfishing should the entire ACL be caught. As an additional AM, if the NMFS and the Council determine the fishery exceeded the 2014-15 ACL, NMFS would reduce the 2015-16 ACL by the amount of the overage.

2.2.3.1 Expected Fishery Outcome

Under Alternative 3, the fishery is not likely to reach the ACL of 319,000 lb for the same reasons explained under Alternative 2. However, if the fishery were to attain the ACL of 319,000 lb in 2014-15 or 2015-16, NMFS would implement a fishery closure of the commercial and non-commercial fisheries for MHI Deep 7 bottomfish in federal waters. When this occurs, the State of Hawaii implements a complementary fishery closure in state waters. The in-season AM of a fishery closure is expected to keep total catch of MHI Deep 7 bottomfish below the OFL of 383,000 lb and prevent overfishing from occurring.

Because state and federal laws require fishermen to report on a per trip basis, it is unlikely that management uncertainty (i.e. late reporting) would occur and cause the fishery to exceed the ACL of 319,000 lb. Thus, an overage adjustment AM in 2015-16 is not likely to be necessary. However, in the unlikely event the fishery exceeds an ACL set at 319,000 lb, NMFS would reduce the ACL in fishing year 2015-16 by the amount of the overage.

2.2.4 Alternative 4: Specify an ACL of 299,000 lb

Under Alternative 4, NMFS would specify an ACL of 299,000 lb of MHI Deep 7 bottomfish for the 2014-15 fishing year. As an AM to prevent the fishery from exceeding the ACL, NMFS also proposes to close the commercial and non-commercial fisheries for MHI Deep 7 bottomfish in federal waters on the date NMFS projects the fishery would reach ACL through the end of the fishing year. Based on the probability of overfishing projections contained in the 2011 stock assessment (Table 19.1 in Brodizak et al. 2011), an ACL of 299,000 lb is associated with a 30 percent probability of overfishing.

2.2.4.1 Expected Fishery Outcome

Under Alternative 4, the fishery is expected to reach the ACL of 299,000 lb before the end of the fishing year. Based on monthly MHI Deep 7 bottomfish catches in the 2013-14 fishing year, the fishery attained 299,000 lb of MHI Deep 7 bottomfish in August 2014, the last month of the fishing year (HDAR unpublished data). If the fishery reached 299,000 lb in the 2014-15 fishing year, this would trigger the in-season closure of the commercial and non-commercial fisheries for MHI Deep 7 bottomfish in federal waters and the complementary closure in state waters. This in-season AM closure is expected to keep total catch of MHI Deep 7 bottomfish below the OFL of 383,000 lb and prevent overfishing from occurring.

Because state and federal laws require fishermen to report on a per trip basis, it is unlikely that management uncertainty (i.e. late reporting) would occur and cause the fishery to exceed the ACL of 299,000 lb. Thus, an overage adjustment AM in 2015-16 is not likely to be necessary. However, in the unlikely event the fishery exceeds an ACL set at 299,000 lb, NMFS would reduce the ACL in fishing year 2015-16 by the amount of the overage.

3 Affected Environment

This section describes the affected biological and physical resources that could be affected by MHI Deep 7 bottomfish fisheries under the proposed action.

3.1 Target and Non-Target Species

The MHI bottomfish fishery harvests an assemblage, or complex, of 14 species that include nine snappers, four jacks (trevally) and a single species of grouper (Table 1). However, the target species of the fishery, and the species of primary management concern are six deep-water snappers and the grouper, the “Deep 7 bottomfish” described above.

3.1.1 Deep 7 Bottomfish

There is a limited amount of quantitative information on the life history parameters of the Deep 7 bottomfish, and in particular, the early life stages and juvenile characteristics are not well described. Adults tend to inhabit deep waters of roughly 100-400 m depth in the MHI although some species (e.g., opakapaka) may shoal to mid-water depths to feed. The paragraphs below in this section are drawn from WPFMC and NMFS (2007) and are intended to provide the reader with basic information about seven Deep 7 bottomfish species.

Onaga: Large specimens of onaga will reach at least three feet in length and weigh up to 30 pounds. They inhabit deep, rocky bottoms offshore and are known to occur between 80 and 250 fathoms (fm). Onaga are commonly caught off the bottom or in areas of steep drop-offs, ledges, and pinnacles. Onaga feed on small fishes, squids, and crustaceans, and are thought to reach sexual maturity at about 21 inches and five pounds, at approximately five years of age. Females with ripe ovaries have been reported during August and September. Onaga are distributed throughout the Indo-Pacific region.

Ehu: Adult ehu will reach a length of at least 24 inches and a weight of up to about 12 pounds. They inhabit deeper offshore water beyond the reef, mainly occurring over rocky bottoms, usually between 80 and 218 fathoms. They feed on fishes and larger invertebrates such as squids, shrimps, and crabs, and reach sexual maturity at about 11.7 inches fork length, or one pound in weight, at approximately three years of age. Ehu, or ulaula, were determined to spawn in the NWHI from July – September in a study by Everson (1984). Ehu are distributed throughout the Indo-Pacific region.

Kalekale: Large specimens of kalekale can reach up to 24 inches in length and six pounds. Commonly, they are found at around 12 inches in length. They inhabit deeper offshore water beyond the reef, occurring over rocky bottoms usually between 40 and 200 fathoms. They feed on fish, shrimps, crabs, polychaetes, cephalopods, and urochordates. Fish of 14 inches fork length are approximately two pounds in weight and five years of age. Kalekale are distributed throughout the Indo-Pacific region.

Opakapaka: Large specimens will reach a length of at least three feet and weigh up to about 20 pounds. They inhabit deeper offshore water beyond the reef, occurring over rocky bottoms, usually between 40 and 120 fathoms. Fish apparently migrate into shallower depths near 40 fathoms at night. They feed on small fishes, squids, shrimps, crabs, pyrosomes, and zooplankton. Sexual maturity is reached at about 1.8 years and they generally spawn at about 2.2 years (1.5 pounds, 13 inches fork length). Their spawning season in the NWHI was determined in a 1980 study to be from June – December with peak spawning in August (Kikkawa 1980). Previous research on the age and growth of opakapaka estimated a maximum age of 18 years (Ralston and Miyamoto, 1983). However, recent ageing research based on bomb radiocarbon and lead radium decay dating of archival otolith samples indicate that this species has a life span on the order of 40 years. (A. Andrews, PIFSC, unpublished data, in Brodziak et al., 2011). Information on the expected natural mortality rate (M) of opakapaka was estimated to be 0.25, based research from the research thesis of Martinez-Andrade (2003).

Gindai: Gindai will reach up to 20 inches in length and six pounds in weight. They inhabit deeper offshore water beyond the reef, occurring over rocky bottoms, usually between 60 and 130 fathoms. They feed on fishes, shrimps, crabs, cephalopods, and other invertebrates. Gindai are distributed throughout the Indo-Pacific region.

Lehi: Large lehi specimens will reach a length of at least three feet and weigh up to about 30 pounds. They inhabit reefs and rocky bottom areas usually between 60 and 100 fathoms. They feed on fish, squid, and crustaceans. Lehi are distributed throughout the Indo-Pacific region.

Hapuupuu: This grouper reaches lengths of up to four feet and weighs up to 60 pounds. They occur in waters 11 to 208 fathoms deep. They feed mainly on fish and crustaceans. The hapuupuu is endemic to the Hawaiian Islands and Johnston Island.

Table 3 summarizes the annual reported commercial catches of MHI Deep 7 bottomfish catch by species from 2000-2013. Note that the data in Table 3 covers the HDAR fiscal year, which begins July 1 and ends June 30 the following year. For ACL management, NMFS and the Council monitor MHI Deep 7 bottomfish catches based on the fishing year, which begins September 1 and ends August 31, the following year. See Table 6 for annual reported catches of all MHI Deep 7 bottomfish combined by fishing year.

Table 3. Reported MHI Deep 7 bottomfish catch (lb) by species (Fiscal Year 2000-2013)

| Year | Hapuupuu | Kalekale | Opakapaka | Ehu | Onaga | Lehi | Gindai | Total |
|------|----------|----------|-----------|--------|--------|--------|--------|---------|
| 2000 | 13,100 | 15,900 | 165,900 | 26,700 | 72,100 | 11,100 | 3,200 | 308,000 |
| 2001 | 15,400 | 15,300 | 124,800 | 26,500 | 62,900 | 11,500 | 3,600 | 260,000 |
| 2002 | 9,000 | 10,300 | 103,500 | 16,900 | 59,600 | 10,800 | 2,400 | 212,400 |
| 2003 | 9,400 | 12,000 | 127,700 | 16,300 | 68,800 | 8,500 | 2,100 | 244,800 |
| 2004 | 7,900 | 8,000 | 87,200 | 19,200 | 75,700 | 4,900 | 2,100 | 205,000 |
| 2005 | 10,400 | 7,800 | 104,400 | 22,600 | 89,600 | 6,900 | 2,000 | 243,700 |
| 2006 | 7,200 | 5,200 | 72,100 | 18,700 | 74,100 | 6,300 | 1,600 | 185,300 |
| 2007 | 7,500 | 6,100 | 92,400 | 19,400 | 85,500 | 8,400 | 2,300 | 221,700 |
| 2008 | 6,600 | 5,500 | 96,200 | 18,200 | 55,700 | 11,000 | 2,800 | 196,000 |
| 2009 | 7,900 | 9,600 | 132,900 | 24,500 | 59,200 | 16,700 | 3,600 | 254,500 |
| 2010 | 8,200 | 8,200 | 105,400 | 24,700 | 57,900 | 6,100 | 2,800 | 213,400 |
| 2011 | 8,200 | 9,900 | 148,400 | 24,500 | 67,700 | 11,600 | 3,100 | 273,400 |
| 2012 | 9,100 | 11,300 | 105,100 | 25,700 | 52,600 | 7,900 | 3,700 | 215,300 |
| 2013 | 10,500 | 12,300 | 95,700 | 30,100 | 66,900 | 13,000 | 3,400 | 231,900 |

Source: Table 4 in Brodziak et al (2014)

Stock Status for MHI Deep 7 Bottomfish

Under the Hawaii FEP (WPFMC 2009), bottomfish overfishing occurs when the fishing mortality rate (F) for one or more years is greater than the fishing mortality rate that produces MSY (F_{MSY}). This threshold is termed the maximum fishing mortality threshold (MFMT) and is expressed as a ratio, $F/F_{MSY} = 1.0$. Thus, if the F/F_{MSY} ratio is greater than 1.0 for one year or

more, overfishing is occurring. A stock is considered overfished when its biomass (B) has declined below the level that jeopardizes the capacity of the stock to produce MSY on a continuing basis (B_{MSY}). This threshold is termed the minimum stock size threshold (MSST). For MHI Deep 7 bottomfish, the Hawaii FEP sets MSST at $(1-M)$ multiplied by B_{MSY} , if M (the natural mortality of the stock) is less than or equal to 0.5. If M is greater than 0.5, the Hawaii FEP sets MSST at a default of 0.5 multiplied B_{MSY} .

Because of the limited quantitative information on life history parameters of Deep 7 bottomfish, the 2011 NMFS stock assessments assumes the natural mortality rate estimate for *opakapaka* ($M=0.25$) to be representative of all stocks in the Deep 7 bottomfish stock complex (Brodziak et al 2011). The assessment further noted that *opakapaka* is the most numerically abundant species in the complex and has historically accounted for the highest proportions of reported landings. Therefore, expressed as a ratio, the MHI stock complex is considered overfished when $B/B_{MSY} < 0.75$.

Results of the 2011 stock assessment indicate that the MHI Deep 7 bottomfish stock complex was not experiencing overfishing in 2010 as $F_{2010}/F_{MSY}=0.58$. The assessment also indicated that the MHI Deep 7 bottomfish stock complex was not overfished in 2010 as $B_{2010}/B_{MSY} = 0.92$. However, the 2011 assessment indicated MHI Deep 7 bottomfish biomass declined below the biomass necessary to produce MSY (B_{MSY}) starting in 1990 and has remained below this level since (Brodziak et al 2011; Table 17.1).

3.1.2 Non-Deep 7 Bottomfish

In addition to the Deep 7 bottomfish, the fishery also harvest four species of jacks and three snappers. Termed the “non-Deep 7 bottomfish, they include the giant trevally or white ulua (*Caranx ignobilis*), black jack or black ulua (*Caranx lugubris*), amberjack or kahala (*Seriola dumerili*), thick lipped trevally or butaguchi (*Pseudocaranx cheilio*) gray jobfish/snapper or uku (*Aprion virescens*), blue lined snapper or taape (*Lutjanus kasmir*), and yellowtail snapper or yellow kalekale (*Pristipomoides auricilla*). Uku is the primary non-Deep 7 bottomfish species harvested and accounts for approximately 80 percent of the total non-Deep 7 bottomfish catch annually, followed by white ulua (*Caranx ignobilis*), black ulua (*Caranx lugubris*), and butaguchi (*Pseudocaranx dentex*). Catches of yellowtail kalekale (*Pristipomoides auricilla*) are insignificant relative to other species.

Table 4 provides a summary of the annual reported commercial catch of MHI non-Deep 7 bottomfish by species (excluding taape and kahala) between the years 2000-2013. Note that the unlike MHI Deep 7 bottomfish, the fishing year for non-Deep 7 bottomfish is the calendar year. Uku (*Aprion virescens*) is the primary non-Deep 7 bottomfish species harvested and accounts for approximately 80 percent of the total non-Deep 7 bottomfish catch annually, followed by white ulua (*Caranx ignobilis*), black ulua (*Caranx lugubris*), and butaguchi (*Pseudocaranx dentex*). Catches of yellowtail kalekale (*Pristipomoides auricilla*) are insignificant relative to other species.

Since 2000, catch of non-Deep 7 bottomfish has increased culminating in a record high of 158,245 lb in 2013. Anecdotal information suggests that the increase, driven primarily by catches

of *uku* was a result of NMFS implementation of a catch limit system in 2007-08. In fishing years 2007-08 to 2009-10, NMFS closed the MHI Deep 7 bottomfish fishery each year to prevent the fishery from exceeding the specified catch limit (Table 6). This resulted increased catch of *uku* to meet market demand for a substitute for Deep 7 bottomfish. With a new market for *uku*, catches have remained above 100,000 lb since 2010.

Table 4. Annual reported commercial catch of non-Deep 7 bottomfish in the MHI (2000-2013).

| Fishing Year | Uku | Butaguchi | Black ulua | White ulua | Yellowtail kalekale | Total (lb) |
|--------------|---------|-----------|------------|------------|---------------------|------------|
| 2000 | 83,318 | 2,947 | 73 | 4,044 | 0 | 90,382 |
| 2001 | 58,436 | 1,814 | 122 | 4,199 | 5 | 64,576 |
| 2002 | 57,155 | 1,659 | 421 | 4,183 | 1 | 63,420 |
| 2003 | 45,704 | 1,635 | 1,180 | 12,873 | 0 | 61,391 |
| 2004 | 76,815 | 1,394 | 1,034 | 14,112 | 43 | 93,399 |
| 2005 | 63,505 | 1,493 | 453 | 11,213 | 25 | 76,688 |
| 2006 | 59,569 | 298 | 267 | 9,076 | 32 | 69,241 |
| 2007 | 68,953 | 880 | 773 | 26,722 | 0 | 97,328 |
| 2008 | 92,872 | 1,193 | 405 | 15,856 | 6 | 110,331 |
| 2009 | 87,175 | 1,083 | 549 | 13,794 | 35 | 102,636 |
| 2010 | 123,250 | 772 | 3,348 | 17,986 | 27 | 145,383 |
| 2011 | 109,497 | 1,385 | 1,554 | 18,904 | 51 | 131,391 |
| 2012 | 101,758 | 742 | 827 | 12,368 | 0 | 115,695 |
| 2013 | 138,822 | 1,028 | 1,155 | 17,240 | 0 | 158,245 |

Source: Catch data for 2000-2011 obtained from NMFS (2013), catch data for 2012 and 2013 obtained from NMFS WPacFIN website:

http://www.pifsc.noaa.gov/wpacfin/hi/dar/Pages/hi_data_3.php, accessed 11/13/2014.

Stock Status for MHI Non-Deep 7 Bottomfish

NMFS has not prepared any stock assessment for the MHI non-Deep 7 bottomfish stock complex. Therefore, stock status of MHI non-Deep 7 bottomfish relative to the SDC for overfishing (F/F_{MSY}) and overfished (B/B_{MSY}) reference points are unknown. However, Sabater and Kleiber (2014) recently estimated MSY and OFL for this complex based on a modeling approach that uses commercial catch data from the State of Hawaii as described above; together with a measure of population growth (r), carrying capacity (k), and biomass data from NMFS PIFSC underwater fish census surveys (Williams 2010). This model, termed the “Biomass Augmented Catch-MSY” model creates annual biomass projections from a set of r and k combinations that would not result in biomass that would exceed the carrying capacity or the stock being depleted.

Based on the Biomass Augmented Catch-MSY model, Sabater and Kleiber (2014) estimate MSY for MHI non-Deep 7 bottomfish to be 265,000 lb. However, catch projection results generated from the model estimate the level of catch associated with a 50 percent probability of exceeding MSY to be 259,200 lb. Consistent with National Standard 1 guidelines (74 FR 3178, January 9,

2011), the Council at its 160th meeting, set OFL for MHI non-Deep 7 bottomfish equal to the level of catch associated with a 50 percent probability of exceeding MSY.

3.1.3 Bycatch

As is the case for most fisheries, some of the catch are lost or discarded. Fish may be stripped off the lines by sharks (i.e., lost) or they may be deliberately discarded due to shark damage or because of concerns regarding ciguatoxins.

Bycatch (i.e. discards) information from the MHI commercial bottomfish fishery has been summarized from catch and effort data submitted to HDAR by MHI commercial bottomfish fishery participants during 2003 and 2004. Overall, fishing for Deep 7 bottomfish is target-specific, and the bycatch rate of non-BMUS is relatively low, with 8.5 percent of the catch reported as not retained either because it was either lost or deliberately discarded (Kawamoto and Gonzales 2005).

The majority of the BMUS bycatch is composed of jacks (kahala, butaguchi and white ulua). Kahala were released likely because the fish are known to be ciguatoxic and have little or no market value in Hawaii (WPFMC, 2007). For example, in 2013, the annual reported catch of kahala was 13,194 lb, of which 1,739 lb retained was sold (NMFS unpublished data at <http://www.pifsc.noaa.gov/wpacfin/reportlanding.php>, accessed December 12, 2014). Other than this data, there is no recent bycatch information for the MHI Deep 7 bottomfish fishery.

It is also believed that bycatch of sharks does not result in mortality because fishermen tend to release hooked sharks alive by cutting their hook leaders, and sharks generally do not suffer from barotrauma when brought up from depth (WPFMC and NMFS 2007). Additionally, when shark depredation occurs, fishermen will move to another area to avoid losing more fish to sharks. There is no updated information on bycatch in the MHI bottomfish fishery.

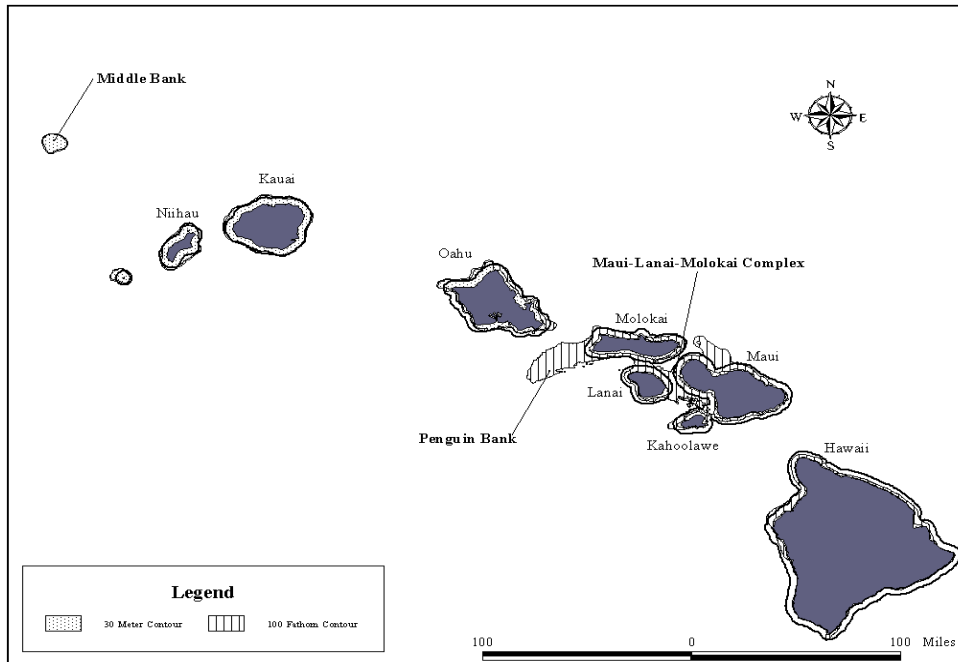
Additionally, the Hawaii FEP includes five non-regulatory measures aimed at further reducing bycatch and bycatch mortality and improving bycatch reporting in MHI bottomfish fisheries. They include: (1) outreach to fishermen and engagement of fishermen in management, including research and monitoring in order to raise their awareness of bycatch issues and options to reduce bycatch and bycatch mortality; (2) research into fishing gear and method modifications to reduce bycatch and bycatch mortality; (3) research into the development of markets for discarded fish species; (4) improvement of data collection and analysis systems to better measure bycatch; and (5) training and outreach in methods to reduce the mortality of released fish due to barotrauma. These non-regulatory measures will continue in the fishery, regardless of the ACL that is specified.

3.2 MHI Bottomfish Habitat

3.2.1 Bottomfish Habitat

Commercially important deepwater bottomfish are found along the deep slopes of island coasts and banks at depths of 100 to 400 meters (55 to 218 fathoms). Because of the volcanic nature of

the islands within the Hawaiian Islands archipelago, most bottomfish habitat occurs in steep slope areas on the margins of the islands and banks. Recent mapping of bottomfish habitat in the MHI has shown that approximately 47 percent of the bottomfish habitat lies in State waters (Parke 2007). Bottomfish fishing grounds within federal waters (3 to 200 nm offshore) around the MHI include Middle Bank located northwest of Kauai, most of Penguin Bank located between Oahu and Molokai, and habitat within the Maui–Molokai–Lanai complex (see Fig. 2).



Source: WPFMC and NMFS 2007

Figure 2. General location of bottomfish habitat in the MHI

Specific bottomfish fishing locales favored by fishermen vary seasonally according to sea conditions and the availability and price of target species. An analysis of average annual reported commercial catches of MHI Deep 7 bottom in HDAR fiscal years 2010-2013 indicate that the island group of Maui, Molokai (including Penguin bank) and Lanai account for the majority of the catch (64 percent), followed by Hawaii Island (21 percent), Kauai (9 percent) and Oahu (6 percent). (Brodziak et al., 2014).

3.2.2 Essential Fish Habitat and Habitat Areas of Particular Concern

Essential fish habitat (EFH) is defined as those waters and substrate as necessary for fish spawning, breeding, feeding, and growth to maturity. This includes the marine areas and their chemical and biological properties that are utilized by the organism. Substrate includes sediment, hard bottom, and other structural relief underlying the water column along with their associated biological communities. In 1999, the Council developed and NMFS approved EFH definitions for management unit species (MUS) of the Bottomfish and Seamount Groundfish FMP (Amendment 6), Crustacean FMP (Amendment 10), Pelagic FMP (Amendment 8), and Precious Corals FMP (Amendment 4) (74 FR 19067, April 19, 1999). NMFS approved additional EFH

definitions for coral reef ecosystem species in 2004 as part of the implementation of the Coral Reef Ecosystem FMP (69 FR8336, February 24, 2004). NMFS approved EFH definitions were for deepwater shrimp through an amendment to the Crustaceans FMP in 2008 (73 FR 70603, November 21, 2008).

Ten years later, in 2009, the Council developed and NMFS approved five new archipelagic-based fishery ecosystem plans (FEP). The FEP incorporated and reorganized elements of the Councils' species-based FMPs into a spatially-oriented management plan (75 FR 2198, January 14, 2010). EFH definitions and related provisions for all FMP fishery resources were subsequently carried forward into the respective FEPs. In addition to and as a subset of EFH, the Council described habitat areas of particular concern (HAPC) based on the following criteria: ecological function of the habitat is important, habitat is sensitive to anthropogenic degradation, development activities are or will stress the habitat, and/or the habitat type is rare. In considering the potential impacts of a proposed fishery management action on EFH, all designated EFH must be considered. The designated areas of EFH and HAPC for all Hawaii FEP MUS by life stage are summarized in Table 5.

At its 154th meeting held June 2012, the Council recommended amending the Hawaii FEP to refine the EFH descriptions for individual species of bottomfish and seamount groundfish and modify the extent of HAPC designations for these management units. The recommended revisions would not change the overall designation of EFH shown in Table 8 below. While the Council recommended additional HAPC be added, such designations are a subset of EFH and do not result in any changes to management or administrative requirements.

Table 5. EFH and HAPC for Hawaii FEP MUS

| MUS | Species Complex | EFH | HAPC |
|-----------------------|---|---|---|
| Bottomfish MUS | <p>Deep 7 bottomfish species: ehu (<i>Etelis carbunculus</i>), onaga (<i>Etelis coruscans</i>), opakapaka (<i>Pristipomoides filamentosus</i>), , kalekale (<i>P. sieboldii</i>), gindai (<i>P. zonatus</i>), hapuupuu (<i>Hyporthodus quernus</i>, formerly <i>Epinephelus quernus</i>), lehi (<i>Aphareus rutilans</i>)</p> <p>Non-Deep 7 bottomfish species: uku (<i>Aprion virescens</i>), thicklip trevally (<i>Pseudocaranx dentex</i>), giant trevally (<i>Caranx ignobilis</i>), black trevally (<i>Caranx lugubris</i>), amberjack (<i>Seriola dumerili</i>), taape (<i>Lutjanus kasmira</i>), yellowtail kalekale (<i>P. auricilla</i>)</p> | <p>Eggs and larvae: the water column extending from the shoreline to the outer limit of the EEZ down to a depth of 400 m (200 fathoms)</p> <p>Juvenile/adults: the water column and all bottom habitat extending from the shoreline to a depth of 400 meters (200 fm)</p> | <p>All slopes and escarpments between 40–280 m (20 and 140 fm)</p> <p>Three known areas of juvenile opakapaka habitat: two off Oahu and one off Molokai</p> |

| MUS | Species Complex | EFH | HAPC |
|--------------------------------|--|--|---|
| Seamount Groundfish MUS | Hawaii Seamount groundfish species (50–200 fm): armorhead (<i>Pseudopentaceros wheeleri</i>), raftfish/butterfish (<i>Hyperoglyphe japonica</i>), alfonsin (<i>Beryx splendens</i>) | Eggs and larvae: the (epipelagic zone) water column down to a depth of 200 m (100 fm) of all EEZ waters bounded by latitude 29°–35° N Juvenile/adults: all EEZ waters and bottom habitat bounded by latitude 29°–35° N and longitude 171° E–179° W between 200 and 600 m (100 and 300 fm) | No HAPC designated for seamount groundfish |
| Crustaceans MUS | Spiny and slipper lobster complex: spiny lobster (<i>Panulirus marginatus</i>), spiny lobster (<i>P. penicillatus</i> , <i>P. spp.</i>), ridgeback slipper lobster (<i>Scyllarides haanii</i>), Chinese slipper lobster (<i>Parribacus antarcticus</i>) Kona crab: Kona crab (<i>Ranina ranina</i>) | Eggs and larvae: the water column from the shoreline to the outer limit of the EEZ down to a depth of 150 m (75 fm) Juvenile/adults: all of the bottom habitat from the shoreline to a depth of 100 m (50 fm) | All banks in the NWHI with summits less than or equal to 30 m (15 fathoms) from the surface |
| Crustaceans MUS | Deepwater: (<i>Heterocarpus spp.</i>) | Eggs and larvae: the water column and associated outer reef slopes between 550 and 700 m Juvenile/adults: the outer reef slopes at depths between 300-700 m | No HAPC designated for deepwater shrimp. |

| MUS | Species Complex | EFH | HAPC |
|---------------------------------|--|--|---|
| Precious Corals MUS | <p>Shallow-water precious corals (10-50 fm): black coral (<i>Antipathes dichotoma</i>), black coral (<i>Antipathis grandis</i>), black coral (<i>Antipathes ulex</i>)</p> <p>Deep-water precious corals (150–750 fm): Pink coral (<i>Corallium secundum</i>), red coral (<i>C. regale</i>), pink coral (<i>C. laauense</i>), midway deepsea coral (<i>C. sp nov.</i>), gold coral (<i>Gerardia spp.</i>), gold coral (<i>Callogorgia gilberti</i>), gold coral (<i>Narella spp.</i>), gold coral (<i>Calyptrophora spp.</i>), bamboo coral (<i>Lepidisis olapa</i>), bamboo coral (<i>Acanella spp.</i>)</p> | <p>EFH for Precious Corals is confined to six known precious coral beds located off Keahole Point, Makapuu, Kaena Point, Wespac bed, Brooks Bank, and 180 Fathom Bank</p> <p>EFH has also been designated for three beds known for black corals in the Main Hawaiian Islands between Milolii and South Point on the Big Island, the Auau Channel, and the southern border of Kauai</p> | <p>Includes the Makapuu bed, Wespac bed, Brooks Banks bed</p> <p>For Black Corals, the Auau Channel has been identified as a HAPC</p> |
| Coral Reef Ecosystem MUS | Coral Reef Ecosystem MUS (all FEP areas) | EFH for the Coral Reef Ecosystem MUS includes the water column and all benthic substrate to a depth of 50 fm from the shoreline to the outer limit of the EEZ | Includes all no-take MPAs identified in the CREFMP, all Pacific remote islands, as well as numerous existing MPAs, research sites, and coral reef habitats throughout the western Pacific |

Source: WPFMC 2009.

3.3 Description of MHI Bottomfish Fisheries

3.3.1 Participation, Effort and Catch

3.3.1.1 Commercial Fishing Sector

The number of fishermen engaged in commercial bottomfish fishing in the MHI increased dramatically in the 1970s peaking in 1980s with over 500 active vessels annually. However, participation in the fishery then declined in the early 1990s, rebounded somewhat in the late 1990s, but in 2003 reached its lowest level since 1977, with 325 vessels (WPFMC, 2007). The decline in vessels and fishing effort during this period may have been due to the long-term decrease in catch rates in the bottomfish fishery and a shift of fishing effort towards tuna and other pelagic species.

In the 2007-08 fishing year, NMFS and the Council implemented suite of measures to reduce fishing mortality on MHI bottomfish, including a total allowable catch (TAC) limit system (WPFMC and NMFS 2007). Since that time, participation in the commercial fishery sector (measured by the number of fishermen reporting catch of MHI Deep 7 bottomfish) initially increased, but now appears to be decreasing. In the 2007-08 fishing year, 351 fishermen actively engaged in the fishery, increasing to 468 fishermen in fishing year 2008-09. Fishing year 2009-10 saw a slight decline to 451 fishermen, but rebounded again to 475 in the 2010-11 fishing year. In next three fishing years, participation in the fishery declined from 468 fishermen in 2011-12, to 457 in 2012-13 and 419 in 2013-14. Over the course of these seven years, fishing effort (measured by the number of fishing trips) generally mirrored participation, initially increasing then declining (Table 12).

Table 6 provides a summary of characteristics of the MHI Deep 7 commercial bottomfish fishing sector for fishing years 2007-08 through 2013-14, including number of vessels, total trips, catch limit and reported catch.

Table 6. Characteristics of the MHI Deep 7 bottomfish commercial fishing sector (2007-2014)

| Fishing Year | Number of Active Fishermen | Total Trips | Catch Limit (lb) | Total Reported Catch (lb) | Date Fishery Closed | Overage (+)/ Underage (-) |
|------------------------|----------------------------|-------------|------------------|---------------------------|-----------------------|---------------------------|
| 2007-2008 | 351 | 2,345 | 178,000 | 196,147 | Apr. 16, 2008 | +18,147 lb (+10.2%) |
| 2008-2009 | 468 | 3,275 | 241,000 | 259,194 | Jul. 6, 2009 | +18,194 lb (+7.5%) |
| 2009-2010 | 451 | 2,791 | 254,050 | 208,412 | Apr. 20, 2010 | -45,638 lb (-17.9%) |
| 2010-2011 | 475 | 3,331 | 254,050 | 268,089 | Mar. 12, 2011 | +14,039 lb (+5.5%) |
| 2011-2012 ¹ | 468 | 3,075 | 346,000 | 228,388 | Fishery did not close | -117,612 lb (-34%) |
| 2012-2013 ¹ | 457 | 2,980 | 346,000 | 238,705 | Fishery did not close | -108,566 lb (-31%) |
| 2013-2014 | 419 | 3,162 | 346,000 | 309,485 | Fishery did not close | -36,515 (-11%) |

Source: HDAR unpublished data

¹ Fishery managed using annual catch target set at 325,000 lb

3.3.1.2 Non-Commercial Fishing Sector

There is very limited data on the MHI non-commercial bottomfish fishing sector. In the 2007-08 fishing year, NMFS and the Council implemented suite of measures to reduce fishing mortality on MHI bottomfish, including mandatory permit and reporting requirement for the non-

commercial bottomfish sector to complement the State of Hawaii’s commercial license reporting requirement (WPFMC and NMFS 2007). Initially, NMFS issued 80 permits in 2008. However, since then, the number permits issued have declined precipitously. Because federal regulations limit non-commercial fishermen to five Deep 7 bottomfish fish per trip bag limit, anecdotal information suggests non-commercial bottomfish fishermen have opted to obtain a State CML, instead of the federal non-commercial permit because both are comparable in cost, but the CML does not limit fishermen to five Deep 7 bottomfish per trip. Cost-earning surveys conducted by Hospital and Beavers (2012) report that over 20 percent of CML holders do not sell bottomfish indicating that a substantial number of CML holders are non-commercial. Similarly, State of Hawaii records for the 2013-14 fishing year report that 343 of 419 CML holders who caught bottomfish (82 percent) sold their catch (HDAR unpublished data). Therefore, it is possible that non-commercial catch of both Deep 7 and non-Deep 7 bottomfish is being reported through the CML system rather than through federal non-commercial logbooks.

Table 7 summarizes the number of federal non-commercial bottomfish permits issued by NMFS between 2008 and 2014, the number of federal permit holders reporting catch of any BMUS, including the number of trips and estimated non-commercial catch of Deep 7 and non-Deep 7 bottomfish. During the most recent three-year period (2011-2013), there was no non-commercial bottomfish fishing activity reported by the federal permit holders.

Table 7. Number of MHI non-commercial fishermen, trips and reported BMUS catch (2008-2014)

| Year | No. of Federal Permits Issued | No. of Permits Reporting Catch of BMUS | No. of Trips in the MHI EEZ | Total Reported Logbook Catch (lb) | |
|------|-------------------------------|--|-----------------------------|--|--|
| | | | | Deep 7 Bottomfish (from Sept 1-Aug. 31 the following year) | Non-Deep 7 Bottomfish (from Jan. 1 to Dec. 31) |
| 2008 | 80 | 4 | 9 | 182 | 32 |
| 2009 | 59 | 4 | 17 | 309 | 10 |
| 2010 | 22 | confidential | confidential | confidential | confidential |
| 2011 | 18 | 0 | 0 | 0 | 0 |
| 2012 | 10 | 0 | 0 | 0 | 0 |
| 2013 | 3 | 0 | 0 | 0 | 0 |
| 2014 | 2 | 0 | 0 | 0 | 0 |

Source: Kawamoto and Sender (2015)

3.3.2 Ex-Vessel Value and Revenue

In the 2013-14 fishing year, 419 commercial fishermen reported catching 309,485 lb of Deep 7 bottomfish. However, State of Hawaii records report 343 of the 419 fishermen sold MHI Deep 7 bottomfish. These 343 individuals sold a combined total of 269,571 lb at a value of \$1,798,713. Thus, in 2013-14, commercial fishermen sold approximately 87 percent their MHI Deep 7 bottomfish catch.

NMFS does not have individual catch and revenue data for individual CML holder. Therefore, based on a strict averaging approach, each of the 343 commercial fishermen would have sold 785.92 lb of MHI Deep 7 bottomfish in 2013-14 valued at \$5,244.06 per individual. Based on these revenues, the average price for MHI Deep 7 bottomfish in 2013-14 was approximately \$6.67/lb. NMFS assumes the remaining 76 commercial fishermen either sold no fish, or the State of Hawaii reporting program did not capture their sales.

3.4 Fishing Communities

The Magnuson-Stevens Act defines a fishing community as “...a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities” (16 U.S.C. § 1802(16)). NMFS further specifies in the National Standard guidelines that a fishing community is “...a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries dependent services and industries (for example, boatyards, ice suppliers, tackle shops)”. National Standard 8 of the Magnuson-Stevens Act requires that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and the rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (a) provide for the sustained participation of such communities and (b) to the extent practicable, minimize adverse economic impacts on such communities.

In 2002, the Council identified each of the islands of Kauai, Niihau, Oahu, Maui, Molokai, Lanai and Hawaii as a fishing community for the purposes of assessing the effects of fishery conservation and management measures on fishing communities, providing for the sustained participation of such communities, minimizing adverse economic impacts on such communities, and for other purposes under the Magnuson-Stevens Act. The Secretary of Commerce subsequently approved these definitions on August 5, 2003 (68 FR 46112). Sustainable management of the Hawaii’s lobster fishery will allow continued harvest of a resource that is important to fishermen, their families, community networks, markets, and visitors for personal consumption (sustenance), and supplemental income.

3.5 Fishery Administration and Enforcement

Fishing for BMUS in federal waters around the MHI is managed by regulations implemented by both the State of Hawaii and NMFS. In general, commercial bottomfish fishing in federal waters is managed almost exclusively through measures implemented by the State of Hawaii, which include a CML and reporting requirements and 12 bottomfish restricted fishing areas (BRFA) where all fishing, including non-commercial fishing is prohibited.

Federal requirements in 50 Code of Federal Regulations (CFR) 665 generally pertain to non-commercial fishing and require non-commercial bottomfish fishermen in Hawaii to obtain a federal permit and report all catch, and adhere to a bag limit of no more than 5 Deep 7 bottomfish per trip. Federal law also prohibits the use of bottom trawls and bottom set gillnets.

Although both Deep 7 and non-Deep 7 bottomfish are typically harvested together during a bottomfish fishing trip, NMFS and the Council manage the Deep 7 bottomfish and non-Deep 7 bottomfish as two separate stock complexes with separate ACLs and AMs. For the MHI Deep 7 bottomfish stock complex, the fishing year begins on September 1 and ends August 31 the following year. For the non-Deep 7 bottomfish stock complex, the fishing year begins January 1 and ends December 31 annually. Federal regulations also require NMFS to specify ACLs and AMs for each stock or stock complex of MUS identified in an FEP, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex. NMFS and the Council conduct monitoring of catch against a specified ACL and implementation of AMs.

Federal law also requires the Council-appointed Hawaii FEP plan team to prepare an annual report on the performance of all federal fisheries, including MHI bottomfish fisheries by June 30 of each year. The report must contain, among other things, recommendations for Council action and an assessment of the urgency and effects of such actions.

3.6 Protected Species

3.6.1 Species Protected under the Endangered Species Act (ESA)

A number of protected species are documented as occurring in the waters around the Hawaiian Islands. Table 8 lists endangered or threatened species occurring in the waters around Hawaii. They include five whales, the Hawaiian monk seal, five listed sea turtles, and three seabirds. Although there is currently no critical habitat designated for ESA-listed marine species around the main Hawaiian Islands, NMFS has proposed to revise designated critical habitat for endangered Hawaiian monk seals to include areas in the MHI (76 FR 32026, June 2, 2011). However, NMFS has not yet made a determination on whether to designate critical habitat in the MHI.

Table 8. Endangered and threatened marine species and seabirds occurring in the waters of the MHI.

| Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters of the Hawaiian Archipelago | | | |
|--|-------------------------------|------------------------------|--|
| Common name | Scientific Name | ESA listing status in Hawaii | Occurrence in Hawaii |
| Listed Sea Turtles | | | |
| Green sea turtle | <i>Chelonia mydas</i> | Threatened | Most common turtle in the Hawaiian Islands. Most nesting occurs in the northwestern Hawaiian Islands. Foraging and haulout in the MHI. |
| Hawksbill sea turtle | <i>Eretmochelys imbricata</i> | Endangered | Small population foraging around Hawaii and low level nesting on Maui and Hawaii Islands. |

| Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters of the Hawaiian Archipelago | | | |
|---|-------------------------------------|-------------------------------------|---|
| Common name | Scientific Name | ESA listing status in Hawaii | Occurrence in Hawaii |
| Leatherback sea turtle | <i>Dermochelys coriacea</i> | Endangered | Not common in Hawaii. |
| Olive ridley sea turtle | <i>Lepidochelys olivacea</i> | Threatened | Range across Pacific: |
| North Pacific loggerhead sea turtle DPS | <i>Caretta caretta</i> | Endangered | Not common in Hawaii. |
| Listed Marine Mammals | | | |
| Hawaiian Monk seal | <i>Neomonachus schauinslandi</i> | Endangered | Endemic tropical seal. Occurs throughout the archipelago. Overall population in decline; MHI population increasing |
| Blue whale | <i>Balaenoptera musculus</i> | Endangered | No sightings or strandings reported in Hawaii but acoustically recorded off of Oahu and Midway Atoll. |
| Fin whale | <i>Balaenoptera physalus</i> | Endangered | Infrequent sightings in Hawaii waters. |
| Humpback whale | <i>Megaptera novaeangliae</i> | Endangered | Migrate through the archipelago and breed during the winter. Est. 6,000-10,000 individuals. |
| Sei whale | <i>Balaenoptera borealis</i> | Endangered | Worldwide distribution. Primarily found in cold temperate to subpolar latitudes. Rare in Hawaii. |
| Sperm whale | <i>Physeter macrocephalus</i> | Endangered | Found in tropical to polar waters worldwide, most abundant cetaceans in the region. Sighted off the NWHI and the MHI. |
| MHI insular false killer whale DPS | <i>Pseudorca crassidens</i> | Endangered | Found in waters within 140 km (60 nm) of the MHI. |
| Listed Sea Birds | | | |
| Newell's Shearwater | <i>Puffinus auricularis newelli</i> | Threatened | Rare. Breeds only in colonies on the MHI where it is threatened by predators and urban development. |
| Hawaiian petrel | <i>Pterodroma phaeopygia</i> | Endangered | Rare. |
| Short-tailed Albatross | <i>Phoebastria albatrus</i> | Endangered | Nest in small numbers on Midway in the NWHI. |

Source: <http://www.nmfs.noaa.gov/pr/species/esa/listed.htm>, accessed October 31, 2014.

Applicable ESA Consultations – Hawaii Bottomfish fisheries

To date, there have been no observed or reported interactions between MHI bottomfish fisheries and ESA-listed species. In a biological opinion (BiOp) covering MHI bottomfish fishery, dated March 18, 2008, NMFS determined that except for the Hawaiian green sea turtle, bottomfish fishing activities are not likely to adversely affect any other ESA-listed marine species that may be found in federal waters of the MHI, or result in the destruction or adverse modification of critical habitat.

For green sea turtles, NMFS determined that there is a potential for them to be killed by vessel transiting State waters en route to and from federal waters around the MHI and authorized an incidental take of up to two green sea turtles per year. However, this analysis was based on an estimated 71,800 bottomfish fishing trips per year. As shown in Tables 6 and 7, the total annual number of commercial and non-commercial bottomfish fishing trips since the 2008 has been less than 3,500 per year. Therefore, the potential for collisions with bottomfish vessels is substantially lower than was estimated in the 2008 BiOp and is expected to be negligible.

In 2013, NMFS re-initiated consultation under ESA in response to listing of MHI insular false killer whale distinct population segment under the ESA. In a modification to the 2008 BiOp dated August 7, 2013, NMFS determined that commercial and non-commercial bottomfish fisheries in the MHI are not likely to adversely affect MHI insular false killer whale because of the spatial separation between the species and bottomfish fishing activities, the low likelihood of collisions, and the lack of observed or reported fishery interactions among other reasons.

On June 2, 2011 (76 FR 32026) NMFS published a proposed rule to designate areas in the main Hawaiian Islands (MHI) as monk seal critical habitat. Specific areas proposed include terrestrial and marine habitats from 5 m inland from the shoreline extending seaward to the 500 m depth contour around Kaula Island, Niihau, Kauai, Oahu, Maui Nui (including Kahoolawe, Lanai, Maui and Molokai) and Hawaii Island. The final determinations on whether to designate monk seal critical habitat in the MHI have not yet been made. Should NMFS designate critical habitat for this species, or any other ESA-listed species in the future, NMFS will initiate consultation in accordance with Section 7 of the ESA to ensure that Hawaii FEP fisheries, including the commercial and non-commercial bottomfish fisheries in the MHI would not result in the destruction or adverse modification of critical habitat.

3.6.2 Species Protected under the Marine Mammal Protection Act (MMPA)

Several non-ESA listed whales, dolphins and porpoises, occur in waters around Hawaii and are protected under the MMPA. Table 9 provides a list of non-ESA listed marine mammals known to occur or reasonably expected to occur in waters around the Hawaiian Archipelago that have the potential to interact with bottomfish fisheries in the MHI.

The commercial and non-commercial bottomfish fisheries in the MHI are not known to have the potential for a large and adverse effect on non-ESA listed marine mammals listed in Table 9. Although these species occur in EEZ waters where the fisheries operate, there have been no

observed or reported interactions between the fishery and marine mammals. Similarly, there have been no observed or reported interactions between the fishery and ESA listed marine mammals listed in Table 8 above.

Table 9. Non-ESA-listed marine mammals occurring in waters around the MHI

| Non-ESA-listed marine mammals known to occur or reasonably expected to occur in waters around the Hawaiian Archipelago | | |
|---|-----------------------------------|---|
| Common Name | Scientific Name | Interactions with MHI bottomfish fishery |
| Blainville's beaked whale | <i>Mesoplodon densirostris</i> | No interactions observed or reported. |
| Bottlenose dolphin | <i>Tursiops truncatus</i> | No interactions observed or reported. |
| Bryde's whale | <i>Balaenoptera edeni</i> | No interactions observed or reported. |
| Common dolphin | <i>Delphinus delphis</i> | No interactions observed or reported. |
| Cuvier's beaked whale | <i>Ziphius cavirostris</i> | No interactions observed or reported. |
| Dall's porpoise | <i>Phocoenoides dalli</i> | No interactions observed or reported. |
| Dwarf sperm whale | <i>Kogia sima</i> | No interactions observed or reported. |
| False killer whale (other than MHI Insular DPS) | <i>Pseudorca crassidens</i> | No interactions observed or reported. |
| Fraser's dolphin | <i>Lagenodelphis hosei</i> | No interactions observed or reported. |
| Killer whale | <i>Orcinus orca</i> | No interactions observed or reported. |
| Longman's beaked whale | <i>Indopacetus pacificus</i> | No interactions observed or reported. |
| Melon-headed whale | <i>Peponocephala electra</i> | No interactions observed or reported. |
| Minke whale | <i>Balaenoptera acutorostrata</i> | No interactions observed or reported. |
| Pantropical spotted dolphin | <i>Stenella attenuate</i> | No interactions observed or reported. |
| Pygmy killer whale | <i>Feresa attenuata</i> | No interactions observed or reported. |
| Pygmy sperm whale | <i>Kogia breviceps</i> | No interactions observed or reported. |
| Risso's dolphin | <i>Grampus griseus</i> | No interactions observed or reported. |
| Rough-toothed dolphin | <i>Steno bredanensis</i> | No interactions observed or reported. |

| | | |
|--------------------------|-----------------------------------|---------------------------------------|
| Short-finned pilot whale | <i>Globicephala macrorhynchus</i> | No interactions observed or reported. |
| Spinner dolphin | <i>Stenella longirostris</i> | No interactions observed or reported. |
| Spotted dolphin | <i>Stenella attenuata</i> | No interactions observed or reported. |
| Striped dolphin | <i>Stenella coeruleoalba</i> | No interactions observed or reported. |

Source: Council website: <http://www.wpcouncil.org>

Applicable MMPA Coordination – Hawaii Bottomfish Fisheries

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries (LOF) that classifies U.S. commercial fisheries into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery. A Category 1 fishery is one with frequent incidental mortality and serious injury of marine mammals. A Category 2 fishery is one with occasional incidental mortality and serious injury of marine mammals. A Category 3 fishery is one with a remote likelihood or no known incidental mortality and serious injury of marine mammals. On December 29, 2014, (79 FR 77919), NMFS published the final LOF for 2015 which classified the Hawaii bottomfish handline fishery as a Category III fishery under Section 118 of the MMPA. Participants in Category 3 fisheries are not required to register in the Marine Mammal Authorization Program prior to engaging in commercial fishing. The proposed action does not change the conduct of the bottomfish fishery in any way and therefore will not introduce impacts not previously considered in prior MMPA determinations.

3.6.3 Seabirds of the Hawaiian Archipelago

Seabirds found on and around Hawaii that could potentially interact with fisheries are listed in Table 10. The short-tailed albatross, which is listed as endangered under the ESA, is a migratory seabird that has nested in the NWHI and could be present in the waters of the Hawaii Archipelago. Other listed seabirds found in the region are the endangered Hawaiian petrel (*Pterodroma phaeopygia*) and the threatened Newell’s shearwater (*Puffinus auricularis newelli*). Non-listed seabirds known to be present in Hawaii include the black-footed albatross (*Phoebastria nigripes*); Laysan albatross (*P. immutabilis*); wedge-tailed (*Puffinus pacificus*), Audubon’s (*P. griseus*), short-tailed (*P. tenuirostris*) and Christmas (*P. nativitatis*) shearwaters, as well as the masked (*Sula dactylatra*), brown (*S. leucogaster*), and red-footed (*S. sula*) boobies (or gannets), and a number of petrels and terns, frigate birds, and tropicbirds. Seabirds forage in both State and federal waters, but are not known to and are unlikely to interact with the MHI bottomfish fishery. In addition, bottomfish fishing gear is deployed close to the vessel and does not afford much opportunity for seabirds to attack the bait. When bottomfish fishing, a weighted mainline is deployed vertically over the side of the vessel and it sinks rapidly beyond the range of a diving seabird. It is retrieved rapidly with electric or hydraulic pullers. The time that bait is within the range of a diving seabird is limited, and the proximity of the vessel hull is a significant

deterrent. There have been no reports of interactions between the MHI bottomfish fishery and seabirds.

Table 10. Seabirds occurring in the Hawaiian Islands

| Seabirds of the Hawaiian Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor) | | |
|--|--------------------------------|--|
| | Common name | Scientific name |
| R | Hawaiian petrel | <i>Pterodroma phaeopygia</i> (ESA: Endangered) |
| R | Newell’s shearwater | <i>Puffinus auricularis newelli</i> (ESA:Threatened) |
| R | Short-tailed albatross | <i>Phoebastria albatrus</i> (ESA: Endangered) |
| R | Black-footed albatross | <i>Phoebastria nigripes</i> |
| R | Laysan albatross | <i>Phoebastria immutabilis</i> |
| R | Wedge-tailed shearwater | <i>Puffinus pacificus</i> |
| V | Audubon’s shearwater | <i>Puffinus lherminieri</i> |
| Vc | Short-tailed shearwater | <i>Puffinus tenuirostris</i> (common visitor) |
| R | Christmas shearwater | <i>Puffinus nativitatis</i> |
| V | Leach’s storm-petrel | <i>Oceanodroma leucorhoa</i> |
| V | Matsudaira’s storm-petrel | <i>Oceanodroma matsudairae</i> |
| R | Red-footed booby | <i>Sula sula</i> |
| R | Brown booby | <i>Sula leucogaster</i> |
| R | Masked booby | <i>Sula dactylatra</i> |
| R | White-tailed tropicbird | <i>Phaethon lepturus</i> |
| R | Red-tailed tropicbird | <i>Phaethon rubricauda</i> |
| R | Great frigatebird | <i>Fregata minor</i> |
| R | Sooty tern | <i>Onychoprion fuscatus, formerly Sterna fuscata</i> |
| R | Brown noddy | <i>Anous stolidus</i> |
| R | Black noddy | <i>Anous minutus</i> |
| R | White tern / Common fairy-tern | <i>Gygis alba</i> |

Source: WPFMC 2009

4 Potential Impacts of the Alternatives

This section describes the potential impacts of the proposed ACL and AM specifications on the elements of the affected environment described in Section 3. Although NMFS proposes to specify an ACL and AM for the 2014-15 year only, the environmental impacts analysis evaluates the potential impacts of the proposed ACL specification and AMs in fishing years 2014-15 and again in 2015-16.

4.1 Potential Impacts to Target and Non-Target Species

Alternative 1: No ACL and AM Management (No Action)

Currently, NMFS has not specified an ACL and AMs for the MHI Deep 7 bottomfish fishery for the 2014-15 fishing year, which is currently ongoing. Under the no action alternative, NMFS

would not specify an ACL for Deep 7 bottomfish in the MHI and AMs would not be necessary. However, NMFS and the Council would continue to monitor catches based on all available sources of information. Under this alternative, the lack of an ACL or AMs in fishing year 2014-15 and 2015-16 is not likely to result in overfishing of MHI Deep 7 bottomfish in any year. As shown in Table 6, commercial catches of MHI Deep 7 bottomfish have consistently remained below the estimated OFL of 383,000 lb and long-term MSY of 417,000 lb. In the 2013-14 fishing year, the fishery reported a total of 309,485 lb of MHI Deep 7 bottomfish. This is the highest level of catch since NMFS implemented a catch limit system in the 2007-08 fishing year. During fishing year 2013-14, the fishery remained open year round. In fishing years 2014-15 and 2015-16, total reported catch is expected to be similar to 2013-14 catch, and would be sustainable.

Under this alternative, catch of non-target, non-Deep 7 bottomfish is expected to continue at levels similar levels in 2013-14 fishing year (Table 7) and would be sustainable. Bycatch of non-target stocks are expected to continue at low levels and consists of primarily bycatch of non-Deep 7 bottomfish that are known to be ciguatoxic, and have little or no market value (i.e. kahala, butaguchi and white ulua), and sharks which are released alive. Ongoing fisheries monitoring by the Council's FEP plan team will help fishery scientists and managers to detect any increase in non-target or bycatch and, address them in future management measures, as needed. For these reasons, even without ACL or AM management, the expected impacts to target and non-target stocks would be similar to the impacts described in Alternatives 2 and 3.

Alternative 2: Specify an ACL of 346,000 lb (Status Quo/ NEPA Baseline/Preferred)

Under Alternative 2, NMFS would specify an ACL of 346,000 lb of MHI Deep 7 bottomfish in fishing year 2014-15 and 2015-16, and a fishery closure as the AM to prevent the fishery from exceeding the ACL. Based on probability of overfishing projections contained in the 2011 stock assessment (Table 19.1 in Brodziak et al. 2011 and shown in Appendix A), an ACL of 346,000 lb is associated with a 41 percent probability of overfishing the MHI Deep 7 bottomfish stock complex should the entire ACL be caught. This ACL and AM is identical the ACL NMFS specified for the fishery in fishing year 2012-13 (77 FR 56791, September 9, 2012, and 2013-14 (78 FR 59626, September 27, 2013).

Under this alternative, NMFS and the Council would continue to monitor catches based on all available sources of information. Based on past fishery performance shown in Table 6, MHI Deep 7 bottomfish catch in 2014-15 and 2015-16 is expected to be similar to 2013-14 catch (i.e., 309,485 lb), and remain below the ACL of 346,000 lb. Catch of non-Deep 7 bottomfish is also expected to continue at around 2013 levels (158,235 lb) and remain below the OFL of 259,200 lb. Similarly, bycatch of non-target stocks are expected to continue at low levels and consists of primarily bycatch of non-Deep 7 bottomfish that are known to be ciguatoxic, and have little or no market value (i.e. kahala, butaguchi and white ulua), and sharks which are released alive. Like Alternative 1, Alternative 2 is not likely to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch, or have large adverse effects on target or non-target stocks. Therefore, under this alternative, harvest of Deep 7 bottomfish in the MHI would continue to be sustainable and the stock complex is not expected to become subject to overfishing or overfished.

Alternative 3: Specify an ACL of 319,000 lb (Lower than Preferred)

Under Alternative 3, NMFS would specify an ACL of 319,000 lb of MHI Deep 7 bottomfish in fishing year 2014-15 and 2015-16, and a fishery closure as the AM to prevent the fishery from exceeding the ACL. Based on probability of overfishing projections contained in the 2011 stock assessment (Table 19.1 in Brodziak et al. 2011 and shown in Appendix A), an ACL of 319,000 lb is associated with a 35 percent probability of overfishing the MHI Deep 7 bottomfish stock complex should the entire ACL be caught.

Under this alternative, NMFS and the Council would continue to monitor catches based on all available sources of information. Based on past fishery performance shown in Table 6, MHI Deep 7 bottomfish catch in 2014-15 and 2015-16 is expected to be similar to 2013-14 catch (i.e., 309,485 lb), and remain below an ACL of 319,000 lb. However, if the fishery were to attain the ACL of 319,000 lb in 2014-15 or 2015-16, NMFS would implement a fishery closure of the commercial and non-commercial fisheries for MHI Deep 7 bottomfish in federal waters. When this occurs, the State of Hawaii is expected to implement a complementary fishery closure in state waters.

The prohibition on fishing for MHI Deep 7 bottomfish is expected to result in beneficial impacts to the Deep 7 bottomfish stock complex as fishing mortality would effectively cease through the end of the year. Additionally, because non-Deep 7 bottomfish are usually caught on Deep 7 bottomfish trips, annual catch of non-Deep 7 bottomfish stock would be less than under Alternatives 1 (No action) and 2 (Status Quo/Preferred Alternative). Although fishermen may legally continue to catch non-Deep 7 bottomfish during a closure for Deep 7 bottomfish, catches of non-Deep 7 bottomfish in 2014-15 and 2015-16 would not likely to exceed the OFL proxy of 259,200 lb. Therefore, fishermen would be able to fish throughout the fishing year in the same manner as under Alternative 1 and Alternative 2. For these reasons, this alternative is not expected to result in large adverse effects on target or non-target stocks.

Alternative 4: Specify an ACL of 299,000 lb (Lower than Preferred)

Under Alternative 4, NMFS would specify an ACL of 299,000 lb of MHI Deep 7 bottomfish in fishing year 2014-15 and 2015-16, and a fishery closure as the AM to prevent the fishery from exceeding the ACL. Based on probability of overfishing projections contained in the 2011 stock assessment (Table 19.1 in Brodziak et al. 2011 and shown in Appendix A), an ACL of 299,000 lb is associated with a 30 percent probability of overfishing the MHI Deep 7 bottomfish stock complex. Under this alternative, NMFS and the Council would continue to monitor catches based on all available sources of information.

Under Alternative 4, the fishery would likely reach the ACL of 299,000 lb before the end of the fishing year, thus triggering the in-season closure of the commercial and non-commercial fisheries for MHI Deep 7 bottomfish in federal waters and the complementary closure in State waters. However, based on fishery performance shown in Table 6, the fishery is not likely to reach 299,000 lb until later in the fishing year. For example, in 2013-14 fishing year, the fishery did not reach 299,000 lb until August, the last month of the fishing year (HDAR unpublished data).

Compared to Alternatives 2 and 3, Alternative 4 would likely result in greater beneficial impacts to the Deep 7 bottomfish stock complex as the lower ACL means the fishery would reach the limit sooner than under the other two action alternatives resulting in a fishery closure. However, this could cause fishermen to shift effort to non-Deep 7 bottomfish, such as uku (*Aprion virscens*) to fill market demand. While it is possible that catch of non-Deep 7 bottomfish could surpass 2013 levels when 158,235 lb was caught, it is unlikely that catches of non-Deep 7 bottomfish in 2014-15 and 2015-16 fishing year under Alternative 4 would reach the OFL of 259,200 lb. Additionally, NMFS will propose an ACL and AM for the non-Deep 7 bottomfish stock complex through a separate action and NMFS and the Council would monitor catches after the end of the year and consider the need to adjust an ACL for any non-Deep 7 bottomfish in the future. For these reasons, even should MHI Deep 7 bottomfish fishery participants switch to fishing for uku, Alternative 4 is not likely to result large adverse effects on target or non-target stocks.

4.2 Potential Impacts to MHI Bottomfish Habitats, including EFH

To prevent and minimize adverse bottomfish fishing impacts to EFH, the Hawaii FEP prohibits the use of explosives, poisons, bottom trawl and other non-selective and destructive fishing gear. Weighted lines or baited hooks may come into contact with bottom substrates during bottomfish fishing operations, and may affect EFH and HAPC. However, research studies to date indicate that bottomfish fishing operations, including gear deployment and a low level of anchor loss are not known to have adverse impacts to EFH (Kelley and Moffitt, 2004; Kelley and Ikehara, 2006).

None of the alternatives, including the preferred alternative (Alternative 2) is expected to change the way in which fisheries are conducted. For this reasons, none of the alternatives considered are expected to lead to substantial physical, chemical, or biological alterations to ocean, corals or coastal habitats, or result in loss of, or injury to managed species or their prey or adverse impacts to the marine habitat, including areas designated as EFH, HAPC, or unique areas such as marine protected areas, marine sanctuaries or marine monuments.

4.3 Potential Impacts to Fishery Participants and Fishing Communities

In the 2013-14 fishing year, 419 commercial fishermen reported catching 309,485 lb of Deep 7 bottomfish. However, State of Hawaii records report 343 of the 419 fishermen sold catch. These 343 individuals sold a combined total of 269,571 lb at a value of \$1,798,713. Thus, in 2013-14, commercial fishermen sold approximately 87 percent their MHI Deep 7 bottomfish catch.

NMFS does not have individual catch and revenue data for individual CML holders. Therefore, based on a strict averaging approach, each of the 343 commercial fishermen would have sold 785.92 lb of MHI Deep 7 bottomfish in 2013-14 valued at \$5,244.06 per individual. Based on these revenues, the average price for MHI Deep 7 bottomfish in 2013-14 was approximately \$6.67/lb. However, there are approximately a dozen individuals who are full-time commercial bottomfish fishermen and whose primary income is provided through fishing.

Alternative 1: No ACL and AM Management (No Action)

Under the no action alternative, NMFS would not specify an ACL for Deep 7 bottomfish in the MHI and AMs would not be necessary. Therefore, fishing would be unconstrained in 2014-15 and 2015-16, and could continue throughout the duration of each fishing year. As shown in Table 6, the fishery remained open throughout the fishing year and fishermen caught 309,485 lb of MHI Deep 7 bottomfish in 2013-14. This is the highest level of catch since NMFS implemented a system of catch limits in the 2007-08 fishing year. If there were no ACL, catches could reach or surpass the 2014-15 catch levels. Assuming total catch in 2014-15 and 2015-16 will be similar to the 2013-14 record high catch of catch of 309,485 lb, and that fishermen will sell 87 percent of the catch (i.e., 269,571 lb), the expected fleet-wide revenue during 2014-15 and 2015-16 under Alternative 1 would be \$1,798,713 using the 2013-14 average price of \$6.67/lb. If 343 commercial fishermen sell catch in 2014-15 and 2015-16 as done in 2013-14, each fishermen could expect sell an average of 785.92 lb of MHI Deep 7 bottomfish valued at \$5,244.06 per individual.

The MHI Deep 7 bottomfish fishery provides bottomfish for sustenance, and other gifts, and allows some fish to enter local markets. This provides positive social and economic benefits to fishermen, buyers and fishing communities in Hawaii. Bottomfish fishing activities and consuming bottomfish is not know to result in public health issues. Additionally, because Alternative 1 would not result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch or effort, this alternative would not result in safety issue for fishermen at sea.

Alternative 2: Specify an ACL of 346,000 lb (Status Quo/NEPA Baseline/Preferred)

Under Alternative 2, NMFS would specify an ACL of 346,000 lb of MHI Deep 7 bottomfish in fishing year 2014-15 and 2015-16, and a fishery closure as the AM to prevent the fishery from exceeding the ACL. Assuming the fishery attains the ACL of 346,000 and 87 percent of the catch is sold (301,020 lb), the potential fleet wide revenue during 2014-15 and 2015-16 is expected to be \$2,007,803 using the 2013-14 average price of \$6.67. If the same number of fishermen sell catch in 2014-15 and 2015-16 as in 2013-14, each of these 343 commercial fishermen could expect to sell an average of 878.61 lb of MHI Deep 7 bottomfish valued at \$5,860.33 per individual.

However, based on past fishery performance shown in Table 6, MHI Deep 7 bottomfish catch in 2014-15 and 2015-16 is not expected to reach the ACL and would likely be similar to 2013-14 catch of 309,485 lb. with 87 percent of this catch sold at \$6.67/lb. Therefore, under Alternative 2, the impacts to fishery participants and the fishing communities of Hawaii is expect to be the same as the impacts under Alternative 1 (no action).

Alternative 3: Specify an ACL of 319,000 lb (Lower than Preferred)

Under Alternative 3, NMFS would specify an ACL of 319,000 lb of MHI Deep 7 bottomfish in fishing year 2014-15 and 2015-16, and a fishery closure as the AM to prevent the fishery from exceeding the ACL. Assuming the fishery attains the ACL of 319,000 and 87 percent of the

catch is sold (277,530 lb), the potential fleet wide revenue during 2014-15 and 2015-16 is expected to be \$1,851,125 using the 2013-14 average price of \$6.67. If the same number of fishermen sell catch in 2014-15 and 2015-16 as in 2013-14, each of these 343 commercial fishermen could expect to sell an average of 809.13 lb of MHI Deep 7 bottomfish valued at \$5,396.90 per individual.

However, based on past fishery performance shown in Table 6, MHI Deep 7 bottomfish catch in 2014-15 and 2015-16 is not expected to reach the ACL and would likely be similar to 2013-14 catch of 309,485 lb. with 87 percent of this catch sold at \$6.67/lb. Therefore, under Alternative 3, the impacts to fishery participants and the fishing communities of Hawaii is expected to be the same as the impacts under Alternative 2 (status quo/preferred), and Alternative 1 (no action).

Alternative 4: Specify an ACL of 299,000 lb (Lower than Preferred)

Under Alternative 4, NMFS would specify an ACL of 299,000 lb of MHI Deep 7 bottomfish in fishing year 2014-15 and 2015-16, and a fishery closure as the AM to prevent the fishery from exceeding the ACL. This is lower than the amount caught in the 2013-14 fishing year.

Assuming 87 percent of this catch is sold (260,130 lb), the expected fleet wide revenue during 2014-15 and 2015-16 could be \$1,735,067 using the 2013-14 average price of \$6.67. If the same number of fishermen sell catch in 2014-15 and 2015-16 as in 2013-14, each of these 343 commercial fishermen could expect sell an average of 758.40 lb of MHI Deep 7 bottomfish valued at \$5,058.53 per individual.

Under Alternative 4, the expected fleet-wide revenue (\$1,735,067) is slightly less than the fleet-wide revenue expected under Alternatives 1 and 2 (\$1,798,713). Similarly, the expected individual revenue (\$5,058.53) is slightly less than the individual revenue expected under Alternatives 1 and 2 (\$5,244.06). While the MHI Deep 7 bottomfish fleet as a whole and individual fishermen would likely experience a drop in revenue of nearly \$64,000 and \$200, respectively compared to Alternative 2, this alternative is not expected to result in large beneficial or adverse impacts to fishery participants or the fishing communities of Hawaii.

None of the alternatives considered are expected to result in changes to the conduct of the fishery that could affect the safety of fishermen at sea.

4.4 Potential Impacts to Fishery Administration and Enforcement

Under all alternatives considered, NMFS and the Council would continue to monitor catches of MHI Deep 7 bottomfish based on all available sources of information, and the Council-appointed FEP plan team would continue to prepare an annual report on the performance of the MHI bottomfish fisheries, including the commercial and non-commercial fishing sector by June 30 of each year. Additionally, all other regulations implemented by other federal agencies and the State of Hawaii would continue to apply to bottomfish fishing vessels operating in the U.S. EEZ. Therefore, none of the alternatives would result in commitment of additional resources or increased need for fishery enforcement as monitoring of catch is required under all alternatives, including the no action alternative.

4.5 Potential Impacts to Protected Species

To date, there have been no observed or reported interactions between MHI bottomfish fisheries and protected species described in Section 3.6. In a 2008 BiOp prepared for the fishery, NMFS determined that except for the Hawaiian green sea turtle, bottomfish fishing activities are not likely to adversely affect any other ESA-listed marine species that may be found in federal waters of the MHI, or result in the destruction or adverse modification of critical habitat. For green sea turtles, NMFS determined that there is a potential for them to be killed by vessel transiting State waters enroute to and from federal waters around the MHI and authorized an incidental take of up to two green sea turtles per year. However, this analysis was based on an estimated 71,800 bottomfish fishing trips per year.

As shown in Tables 6 and 7, the total annual number of commercial and non-commercial bottomfish fishing trips since the 2008 has been less than 3,500 per year. Therefore, the potential for collisions with bottomfish vessels is substantially lower than estimated in the 2008 BiOp and is unlikely to occur.

In 2013, NMFS re-initiated consultation under ESA in response to listing of MHI insular false killer whale distinct population segment under the ESA. In its biological opinion dated August 7, 2013, NMFS determined that commercial and non-commercial bottomfish fisheries in the MHI are not likely to adversely affect MHI insular false killer whale because of the spatial separation between the species and bottomfish fishing activities, the low likelihood of collisions, and the lack of observed or reported fishery interactions among other reasons.

None of the alternatives considered in this EA, would modify operations of the Hawaii bottomfish fisheries in any way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA consultations or MMPA determinations. Therefore, none of the alternatives, including the preferred alternative (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources described in Section 3.6.

4.6 Potential Impacts to Biodiversity/Ecosystem Function

When compared against recent fishing harvests, the proposed ACL of 346,000 lb of MHI Deep 7 bottomfish is higher than recent harvest (Table 6), but lower than current MSY (417,000 lb) and OFL (383,000 lb). The ACL and AM specifications were developed using the best available scientific information, in a manner that accords with the fishery regulations, and after considering catches, participation trends, and estimates of the status of the fishery resources. The ACL and AMs are also not likely to cause large adverse impacts to resources because the conduct of bottomfish fishing would not change as a result of the ACL and AM. Additionally, bottomfish fishing is not known to be a potential vector for spreading alien species as none of vessels fish outside of Hawaiian waters. For this reason, none of the alternatives are expected to increase the potential for the spread of alien species into or within Hawaiian waters.

To date, there have been no identified impacts to marine biodiversity and/or ecosystem function from the MHI bottomfish fisheries and none of the alternatives is expected to result in impacts to

these environmental features. The proposed ACLs and AMs would not result in changes to the MHI bottomfish fishery and would not have large adverse impacts to marine biodiversity and/or ecosystem function.

4.7 Potential Impacts to Scientific, Historic, Archeological or Cultural Resources

There are no known districts, sites, highways, structures or objects that are listed in or eligible for listing in the National Register of Historic Places within federal waters of the MHI where bottomfish fishing activities are conducted. Shipwrecks and other objects from the December 7, 1941 attack at Pearl Harbor could possibly occur in federal waters around Oahu. However, bottomfish fishing in the MHI is not known to result in adverse impacts to scientific, historic, archeological or cultural resources because fishermen fish for bottomfish on high-relief, deep slopes where such objects would not be found or come to rest. Because the proposed ACL and AM would not result in changes to MHI bottomfish fisheries, none of the alternatives is expected to result in large adverse impacts to resources of scientific, historic, cultural, or ecological importance. Bottomfish fishing in marine protected areas would continue to be restricted by State laws, and fishing in general will continue to be subject to state commercial license and/or federal non-commercial permit and reporting, and joint state/federal monitoring to help to ensure the marine resources of these special areas are sustainable.

4.8 Cumulative Effects of the Proposed Action

Cumulative effects refer to the impact on the environment, which results from the incremental effects of a proposed action when added to other past, present, or reasonably foreseeable future actions within the geographic area of the proposed action. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

4.8.1 Multi-Year ACL and AM for MHI Deep 7 Bottomfish

The specification of an ACL of 346,000 lb and AMs for MHI Deep 7 bottomfish fisheries in fishing year 2014-15 and again in fishing year 2015-16, is not expected to result in cumulative effects to the health of MHI Deep 7 bottomfish. This is because the proposed action would set the ACL (346,000 lb) lower than the stock's estimated MSY (417,000 lb) OFL (383,000 lb), and annual catches in each of the two years are expected to remain below the proposed ACLs. Furthermore, the proposed action would require NMFS to close the fishery to prevent the ACL from being exceeded. Together, the specification of and ACL and AM over the course of two-consecutive years is intended to prevent overfishing from occurring and ensure a sustainable fishery.

4.8.2 ACL and AM Specification for MHI non-Deep 7 Bottomfish

As noted in Section 1.3 (Proposed Action), NMFS plans to specify a multi-year ACL and AM for the MHI non-Deep 7 bottomfish stock complex through a separate action. This is because the fishing year for this stock complex is on a calendar year, and not in synch with the fishing year for the Deep 7 bottomfish stock complex, which begins September 1 and ends August 31, annually.

The specification of an ACL of 346,000 lb and AMs for MHI Deep 7 bottomfish fisheries in fishing year 2014-15 and again in fishing year 2015-16, is not expected to result in cumulative effects to MHI non-Deep 7 bottomfish. This is because the fishery is not expected to reach the ACL and an in-season fishery closure would not be triggered, thus allowing fishermen to fish for Deep 7 bottomfish throughout the fishing year. The lack of an in-season closure for Deep 7 bottomfish means that fishermen would not need to switch to non-Deep 7 bottomfish stock complex to fill market demand for Deep 7 bottomfish.

In fishing years 2012-13 and 2013-14, the Deep 7 bottomfish fishery remained open throughout the both fishing years (Table 6). In the 2013 fishing year for non-Deep 7 bottomfish (which spans the second half of the 2012-13 Deep 7 bottomfish fishing year and the first half of the Deep 7 2013-14 fishing year), total catch of non-Deep 7 bottomfish was 158,235 lb. This level of catch is well below the MSY of 265,000 lb and the OFL proxy of 259,200 lb. Under the proposed action, catch of non-Deep 7 bottomfish is expected to continue at around 2013 levels (158,235 lb). Therefore, under this proposed action and NMFS separate action to specify a multi-year ACL and AM for the MHI non-Deep 7 bottomfish fishery, harvest of non-Deep 7 bottomfish in 2015 are expected to continue to be below the stock's MSY and OFL and remain sustainable.

4.8.3 ACL and AM Specifications for other Hawaii FEP Fisheries

In addition to the ACLs and AMs for MHI Deep 7 bottomfish and MHI non-Deep 7 bottomfish, NMFS will propose to implement the Council's ACL and AM recommendations for all other MHI fisheries, including crustacean fisheries (spiny lobster, slipper lobster, Kona crab and deepwater shrimp), precious coral fisheries (black coral, pink coral, and bamboo coral), and coral reef fisheries. These fisheries have been managed using ACLs and AMs since 2012; and these specifications which will apply in calendar years 2015 through 2018 do not have unknown or uncertain impacts, and do not interact with the MHI Deep 7 bottomfish fishery in any way.

Information on the proposed ACLs and AMs for these fisheries can be obtained from NMFS or the Council by request, or at www.regulations.gov using the regulatory identification number (RIN) 0648-XD558.

The MHI Deep 7 bottomfish fishery does not overlap with these other fisheries to a large extent such that ACLs and AMs in the Deep 7 bottomfish fishery would result in more fishing in these other fisheries or in the pelagic fisheries. For this reason, the impacts of the proposed MHI Deep 7 bottomfish ACL and AM can be considered separately from the ACL and AM specifications for Hawaii crustacean, precious coral, and coral reef fisheries.

4.8.4 Foreseeable Management Actions Related to Hawaii FEP Fisheries

In the foreseeable future, the Council may re-evaluate the need for conservation and management for all Hawaii FEP MUS and may recommend NMFS remove certain MUS that are not harvested in EEZ waters from the Hawaii FEP and/or re-classify such species as "ecosystem component" (EC) species. To be considered for possible classification as an EC species, the species should be: 1) a non-target species; 2) a stock that is not determined to be subject to

overfishing, approaching overfished, or overfished; 3) not likely to become subject to overfishing or overfished; and 4) generally not retained for sale or personal use. Various methods for categorizing species and EC components have been preliminarily discussed at Council meetings. These include, but are not limited to, species caught exclusively or predominately in state/territorial waters, species that occur infrequently in the available time series, species that are non-native to an FEP area, and species associated with ciguatera poisoning and are generally discarded.

In accordance with National Standard 1 guidelines found in 50 CFR §600.310(d), EC species are not considered to be “in the fishery” and thus, do not require specification of an ACL. EC species may, but are not required to remain in the FEP for data collection purposes, for ecosystem considerations related to the specification of optimum yield for associated MUS, for consideration in the development of conservation and management measures for a fishery; and/or to address other ecosystem issues (e.g., such as management of bycatch). However, until such time a particular MUS is classified as an EC species, it will remain in the fishery and be subject to the ACL and AM requirements.

4.8.5 Other Foreseeable NOAA/NMFS Management Actions

On June 2, 1011 (76 FR 32026) published a proposed rule to designate areas in the main Hawaiian Islands (MHI) as monk seal critical habitat. Specific areas proposed include terrestrial and marine habitats from 5 m inland from the shoreline extending seaward to the 500 m depth contour around Kaula Island, Niihau, Kauai, Oahu, Maui Nui (including Kahoolawe, Lanai, Maui and Molokai) and Hawaii Island. The final determinations on whether designate monk seal critical habitat in the MHI have not been made.

At this time, there is insufficient information in the proposal to allow NMFS to evaluate the potential impact of a designation of critical habitat on the MHI bottomfish fisheries. However, a designation of critical habitat for monk seals in the MHI would not affect the NMFS requirement to specify ACLs and AMs for Hawaii FEP fisheries.

While the results of quantitative analyses of fatty acid signatures in monk seal diets indicated that monk seals consume a wide range of species including certain species of bottomfish (Iverson et al. 2011), under current levels of fishing pressure in the MHI, the monk seal population is growing, adult females are successfully giving birth to and rearing young (pups), and the pups appear to be foraging successfully. In contrast, the Hawaiian monk seal subpopulation continues to decline in the NWHI where fishing has been prohibited.

Considering that monk seal foraging success appears to be higher in the MHI than in the NWHI despite higher fishing pressure in the MHI, competition for forage with the MHI bottomfish fishery does not appear to be adversely impacting monk seals in the MHI. Therefore, the proposed ACL specifications and AMs is not considered to be affecting monk seals through competition for prey and is not expected to affect the quality of habitat being considered for designation as monk seal critical habitat because no change to the conduct of the existing MHI bottomfish fisheries is likely to occur under the proposed action.

Specifying ACLs will not have an environmental outcome that would affect the agency's decision of whether or not to revise designated critical habitat. The specification would not change the likelihood of interactions, or affect the survival, distribution or behavior of the species in any way. However, if the pending Hawaiian monk seal action is approved, NMFS will initiate consultation in accordance with Section 7 of the ESA to ensure that Hawaii's fisheries are not likely to jeopardize the continued existence of the species, or result in the destruction or adverse modification of critical habitat.

4.8.6 Other Foreseeable NOAA Actions

On March 26, 2015, NOAA's Office of National Marine Sanctuaries (ONMS) published a proposed rule to expand the boundaries of the Humpback Whale National Marine Sanctuary in the main Hawaiian Islands (80 FR 16224). The purpose of this action is to transition the sanctuary from a single species management approach to an ecosystem-based management approach. The proposal would also change the name of the sanctuary to Na Kai Ewalu National Marine Sanctuary. The phrase means "the eight seas" in Hawaiian language and refers to the channels between the MHI and a poetic reference to the islands themselves.

Because the proposed ACLs and AMs are identical to those NMFS specified in the 2013-14 fishing year, the ways in which Hawaii's coral reef fisheries are conducted is not expected to change and, therefore, the proposed action would not have an environmental effect that would affect future decisions about possible changes to the sanctuary management plan nor would the proposed action affect sanctuary resources to an extent that comprehensive effective management of the Sanctuary would not be possible.

4.8.7 Climate Change

Changes in the environment from global climate change have the potential to affect MHI bottomfish fisheries. Effects of climate change may include: sea level rise; increased intensity or frequency of coastal storms and storm surges; changes in rainfall (more or less) that can affect salinity nearshore or increase storm runoff and pollutant discharges into the marine environment; increased temperatures resulting in coral bleaching, and hypothermic responses in some marine species (IPCC 2007). Increased carbon dioxide uptake can increase ocean acidity, which can disrupt calcium uptake processes in corals, crustaceans, mollusk, reef-building algae, and plankton, among other organisms (Houghton et al. 2001; The Royal Society 2005; Caldeira and Wickett 2005; Doney 2006; Kleypas et al. 2006). Climate change can also lead to changes in ocean circulation patterns, which can affect the availability of prey, migration, survival, and dispersal (Buddenmeier et al. 2004). Damage to coastal areas due to storm surge or sea level rises as well as changes to catch rates, migratory patterns, or visible changes to habitats are among the most likely changes that would be noted first. Climate change has the potential to adversely affect some organisms, while others could benefit from changes in the environment to ensure that the MHI bottomfish catches are sustainable, regardless of environmental conditions.

The impacts to MHI bottomfish from climate change may be difficult to discern from other impacts; however monitoring of physical conditions and biological resources by a number of

agencies will continue to occur and will allow fishery managers to continually make adjustments in fishery management regimes in response to changes in the environment for any alternative.

The efficacy of the proposed ACL and AM specifications in providing for sustainable levels of fishing for bottomfish is not expected to be adversely affected by climate change. Recent catches relative to MSY and OFL estimates helped to inform the development of the ACLs and AMs. Monitoring would continue, and, if monitoring shows overfishing is occurring, ACLs and other fishery management provisions could be adjusted in the future. The proposed specifications are not expected to result in a change to the manner in which any of the affected fisheries are conducted, so no change in greenhouse gas emissions is expected.

For these reasons, climate change, considered in addition to all other factors affecting MHI non-Deep 7 bottomfish stocks (including fishing), is not expected to result in a large and adverse a cumulative impact on MHI non-Deep 7 bottomfish stocks. The proposed action under each alternative is not expected to change the fishery and therefore, none of the action alternatives would result in changes in climate change-promoting gas emissions.

5 Consistency with Other Applicable Laws

5.1 National Environmental Policy Act

NOAA Administrative Order (NAO) 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act, in accordance with NEPA, requires the consideration of effects of proposed agency actions and alternatives on the human environment and allows for involvement of interested and affected members of the public before a decision is made. The NMFS Regional Administrator will use the analysis in this draft EA to consider a range of alternatives, allow for public involvement in the agency's decision, and to determine whether the proposed action would have a significant environmental impact, which, if so, would require the preparation of an environmental impact statement.

5.2 Preparers and Reviewers

Jarad Makaiau, Resource Management Specialist, PIRO, SFD (preparer)

Phyllis Ha, Resource Management Specialist, PIRO, SFD (reviewer)

Michelle McGregor, Economist, PIRO, SFD (reviewer)

5.3 Agencies and Persons Consulted

The proposed action described in this EA was developed in coordination with various federal and local government agencies that are represented on the Western Pacific Fishery Management Council. Specifically, agencies that participated in the deliberations and development of the proposed management measures include:

- American Samoa Department of Marine and Wildlife Resources
- Guam Department of Agriculture, Division of Aquatic and Wildlife Resources
- Hawaii Department of Land and Natural Resources, Division of Aquatic Resources

- Hawaii Department of Business, Tourism and Development, Coastal Zone Management Program
- Northern Mariana Island Department of Land and Natural Resources, Division of Fish and Wildlife
- U.S. Coast Guard
- U.S. Fish and Wildlife Service
- U.S. Department of State

5.4 Public Coordination

The development of the proposed ACL and AM specifications for Hawaii non-Deep 7 bottomfish has taken place in public meetings of the SSC and the Council. The Council advertised its intention to focus on the development of recommendations for federal annual catch limits in media releases, newsletter articles, and on the Council’s website at <http://www.wpcouncil.org>.

On April 21, 2015, NMFS published the proposed ACL and AM specifications and a draft EA, and requested public comments (80 FR 22158). The comment period for the proposed specifications ended on May 6, 2015. NMFS received three public comments, all in support of the proposed action. In addition to support for the proposed specifications, two commenters provided suggestions for improving future bottomfish stock assessments. The suggestions included more fishermen involvement in the development of stock assessment models, incorporating the potential effects of bottomfish restricted fishing areas in estimating exploitable biomass, and refining catch per unit of effort methodologies by better accounting for differences in catchability of bottomfish between fishermen of the various Hawaiian Islands due differences in available fishing areas, fishing strategies, and environmental factors. While these comments were beyond the immediate scope of the proposed specifications, NMFS agrees with the commenters and has begun some of the suggested work, including conversations with fishermen to ensure that their input is considered at certain points in the bottomfish stock assessment process. Additionally, NMFS continues to explore fishery-independent methods and technologies for assessing bottomfish resources. As information becomes available, NMFS will accommodate such data in future stock assessments to improve our understanding of the condition of bottomfish resources.

5.5 Endangered Species Act

The Endangered Species Act (ESA) provides for the protection and conservation of threatened and endangered species. Section 7(a)(2) of the ESA requires federal agencies to ensure that any action authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

Pursuant to Section 7 of the ESA, NMFS has evaluated the MHI bottomfish fisheries managed under the Hawaii FEP for potential impacts on ESA-listed species under the jurisdiction of NMFS. Table 11 summarizes ESA Section 7 consultations for Hawaii bottomfish fisheries managed under the Hawaii FEP.

Table 11. ESA Section 7 consultations for Hawaii bottomfish fisheries.

| Fishery | Consultation | NMFS Determination |
|------------------------|---|--|
| MHI bottomfish fishery | March 18, 2008, Biological Opinion as modified on August 7, 2013. | Likely to adversely affect green sea turtles only; but not likely to jeopardize the continued existence of any ESA-listed species or adversely modify critical habitat |

Because the proposed action is not expected to modify vessel operations or other aspects of any fishery, NMFS does not expect the bottomfish fisheries in Hawaii as conducted under the proposed action, to have an effect on ESA listed species or any designated critical habitats that was not considered in prior consultations.

5.6 Marine Mammal Protection Act

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries (LOF) that classifies U.S. commercial fisheries into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery. A Category 1 fishery is one with frequent incidental mortality and serious injury of marine mammals. A Category 2 fishery is one with occasional incidental mortality and serious injury of marine mammals. A Category 3 fishery is one with a remote likelihood or no known incidental mortality and serious injury of marine mammals.

On December 29, 2014, (79 FR 77919), NMFS published the final LOF for 2015 which classified the Hawaii bottomfish handline fishery as a Category III fishery under Section 118 of the MMPA. Category 3 fisheries are not required to register with the MMAP in order to engage in commercial fishing. Because the proposed action would not modify vessel operations or other aspects of any fishery, NMFS does not anticipate that the commercial and non-commercial fishery for MHI non-Deep 7 bottomfish, as conducted under the proposed action, is not expected to affect marine mammals in any manner not previously considered, or authorized under the MMPA.

5.7 Coastal Zone Management Act

The Coastal Zone Management (CZM) Act requires a determination that a recommended management measure has no effect on the land, water uses, or natural resources of the coastal zone or is consistent to the maximum extent practicable with an affected state’s enforceable coastal zone management program. On July 27, 2014, NMFS sent a letter to the Hawaii CZM Program informing them of its determination that the proposed action is consistent, to the maximum extent practicable, with their respective coastal zone management programs. On July 31, 2014, the State of Hawaii responded that it considers the proposed action to be an implementing measure of the Hawaii FEP, which the Hawaii CZM Program previously reviewed

and issued a consistency determination and, therefore, is not subject to the federal consistency review by the Hawaii CZM Program.

5.8 National Historic Preservation Act

The National Historic Preservation Act (NHPA) requires federal agencies undergo a review process for all federally funded and permitted projects that will impact sites listed on, or eligible for listing on, the National Register of Historic Places. Currently, there are no known sites or historic properties in EEZ waters 3 to 200 nm offshore the MHI that are listed on or eligible for listing on the National Register of Historic Places. Bottomfish fishing is not known to have a damaging impact on the marine environment, including any man-made resources or structures. None of the alternatives would change the manner in which any bottomfish fishery is conducted. Therefore, the proposed action would have no potential to effect historic places protected by the NHPA.

5.9 Paperwork Reduction Act

The purpose of the Paperwork Reduction Act is to minimize the paperwork burden on the public resulting from the collection of information by or for the Federal government. It is intended to ensure the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501(1)). The proposed action would not establish any new permitting or reporting requirements and therefore it is not subject to the provisions of the Paperwork Reduction Act.

5.10 Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*) requires government agencies to assess and present the impact of their regulatory actions on small entities including small businesses, small organizations, and small governmental jurisdictions; and to determine ways to minimize adverse impacts. The assessment is done via the preparation of an Initial Regulatory Flexibility Analyses (IRFA) and Final Regulatory Flexibility Analysis (FRFA) for each proposed and final rule, respectively. Under the RFA, an agency does not need to conduct an IRFA or FRFA if a certification can be made that the proposed rule, if adopted, will not have a significant adverse economic impact on a substantial number of small entities.

On June 12, 2014, the Small Business Administration issued an interim final rule revising small business size standards, effective July 14, 2014 (79 FR 33647). The rule increased the size standard for finfish fishing from 19.0 to \$20.5 million, for shellfish fishing from \$5.0 million to \$5.5 million, and for other marine fishing from \$7.0 million to \$7.5 million.

In general, the relative importance of MHI bottomfish to commercial participants as a percentage of overall fishing or household income is unknown, as the total suite of fishing and other income-generating activities by individual operations across the year has not been examined. However, based on available information presented in this EA, NMFS has determined that all vessels participating in the MHI bottomfish fishery are small entities under the Small Business Administration's definition of a small entity. That is, they are engaged in the business of fish

harvesting, are independently owned or operated, are not dominant in their field of operation, and have annual gross receipts not in excess of \$20.5 million, the small business size standard for finfish fishing.

Even though this proposed ACL and AM would apply to a substantial number of vessels, i.e., 100 percent of the bottomfish fleet, NMFS does not expect the rule will have a significant adverse economic impact to individual vessels. This is because the catch limit does not favor any fisherman or disproportionately adversely affect a certain type of participant. Furthermore, catches in the three-previous fishing years when NMFS specified same ACL and AMs indicate that Deep 7 bottomfish landings are not likely to exceed the ACL proposed for 2014-15 and 2015-16. Therefore, there are no disproportionate economic impacts between large and small entities and the proposed action, if implemented, would not have a significant economic impact on small entities. NMFS may request that the Department of Commerce Chief Counsel for Regulation certify to the Small Business Administration that the proposed rule and specifications would not have a significant economic impact on a substantial number of small entities.

5.11 Administrative Procedure Act

All federal rulemaking is governed under the provisions of the Administrative Procedures Act (APA) (5 U.S.C. Subchapter II) which establishes a “notice and comment” procedure to enable public participation in the rulemaking process. Under the APA, NMFS is required to publish notification of proposed rules in the Federal Register and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day wait period from the time a final rule is published until it becomes effective, with rare exceptions.

The specification of ACLs for MHI-Deep 7 bottomfish complies with the provisions of the APA through the Council’s extensive use of public meetings, requests for comments, and consideration of comments in developing ACL and AM recommendations. Additionally, NMFS will publish a proposed rule announcing the proposed ACL and AM specifications described in this document, which will include requests for public comments. After considering public comments, NMFS expects to publish a final rule that would then become effective 30 days after publication unless there is good cause to waive the 30-day delay of effectiveness period.

5.12 Executive Order 12898: Environmental Justice

NMFS considered the effect of the proposed ACL specifications and AMs on Environmental Justice communities that include members of minority and low-income groups. The ACLs would apply to everyone that catches Deep 7 bottomfish in the MHI and no new monitoring is required for the ACL specification or the AM to be implemented. The environmental review in this EA indicates the proposed action is not expected to result in a change to the way MHI bottomfish fisheries are conducted.

The proposed specifications are intended to provide for long-term sustainability of MHI Deep 7 bottomfish, expected to benefit the bottomfish resources and, therefore, the human communities that rely on their harvest. The proposed specifications are also not likely to result in a large

adverse impact to the environment that could have disproportionately large or adverse effects on members of Environmental Justice communities in Hawaii.

5.13 Executive Order 12866: Regulatory Impact Review

A “significant regulatory action” means any regulatory action that is likely to result in a rule that may –

- 1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal government or communities;
- 2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- 3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- 4) Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in the Executive Order.

The specification of an ACL and AM for MHI Deep 7 bottomfish fisheries is exempt from the procedures of E.O. 12866 because this action contains no implementing regulations.

5.14 Information Quality Act

The Information Quality Act requires federal agencies to ensure and maximize the quality, objectivity, utility, and integrity of information disseminated by federal agencies. To the extent feasible, the information in this document is current. Much of the information was made available to the public during the deliberative phases of developing the proposed specifications during meetings of the Council and its SSC. The information was also improved based on the guidance and comments from the Council’s advisory groups.

NMFS staffs prepared the documents based on information provided to the Council by NMFS PIFSC and NMFS PIRO and after providing opportunities for members of the public to comment at Council meetings. Additionally, this EA will be made available to the public during the comment period for the proposed specification. The process of public review of this document provides an opportunity for comments on the information contained in this document, as well as for the provision of additional information regarding the proposed specifications and potential environmental effects.

6 References

Buddemeier, R.W., J.A. Kleypas, and R.B. Aronson. 2004. Coral Reefs and Global Climate Change: Potential Contributions of Climate Change to Stresses on Coral Reef Ecosystems. Pew Center on Global Climate Change, Arlington, VA. 56 pp.

- Brodziak, J.R., A. Yau, J. O'Malley, A. Andrews, R. Humphreys, E. DeMartini, M. Pan, M. Parke, and E. Fletcher. 2014. Stock assessment update of the main Hawaiian Islands deep 7 bottomfish complex through 2013 with projected annual catch limits through 2016. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-PIFSC-43, 61 p.
- Brodziak, J., D. Courtney, L. Wagatsuma, J. O'Malley, H.H Lee, W. Walsh, A. Andrews, R. Humphreys, and G. DiNardo. (2011). Stock assessment update of the main Hawaiian Islands Deep 7 bottomfish complex through 2010. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-PIFSC-29, 176 p. + Appendix.
- Brodziak, J., R. Moffitt, and G. DiNardo. 2009. Hawaiian bottomfish assessment update for 2008. Pacific Islands Fish. Sci. Cent., Natl. Mar. Fish. Serv., NOAA, Honolulu, HI 96822-2396. Pacific Islands Fish. Sci. Cent. Admin. Rep. H-09- 02, 93 p.
- Caldeira, K. and M.E. Wickett. 2005: Ocean model predictions of chemistry changes from carbon dioxide emissions to the atmosphere and ocean. *Journal of Geophysical Research*, 110 (C09S04).
- Doney, S.C., 2006: The dangers of ocean acidification. *Scientific American*, 294(3): 58-65.
- Hospital J. and C. Beavers. 2012. Economic and social characteristics of bottomfish fishing in the main Hawaiian Islands. Pacific Islands Fish. Sci. Cent., Natl. Mar. Fish. Serv., NOAA, Honolulu, HI 96822-2396. Pacific Islands Fish. Sci. Cent. Admin. Rep. H-12-01, 44 p. + Appendix.
- Houghton, J.T., Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden, and D. Xiaosu (Eds.) 2001. IPCC Third Assessment Report: Climate Change 2001: The Scientific Basis. Cambridge University Press, Cambridge, UK, 944 pp. [http://www.grida.no/climate/ipcc_tar/wg1/index.htm] [Also see: Summary for Policymakers and Technical Summary, 98 pp.]
- IPCC, 2007: Summary for Policymakers. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor and H.L. Miller (Eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- Kawamoto, K. and D. Gonzales. 2005. Summary of Reported Main Hawaiian Island Catch Disposition in the Bottomfish Fishery, 2003-2004. Pacific Islands Fisheries Science Center Internal Report IR-05-023. 9 pp.
- Kawamoto, K. and K. Sender (2015). Assessment of fishing activities by non-longline federal permit holders in the U.S. Exclusive Economic Zone around the U.S. Pacific Islands. Fisheries Research and Monitoring Division, NOAA Pacific Islands Fisheries Science Center. PIFSC Internal Report IR-15-012. Issued February 13, 2015.

- Kelley, C. and R. Moffit. 2004. The impacts of bottomfishing on the Raita and West St. Rogatien Reserve Preservation Areas in the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve. Unpublished report, Hawaii Undersea Research Laboratory, 49 pp.
- Kelley, C. and W. Ikehara. 2006. The impacts of bottomfishing on Raita and West St. Rogatien Banks in the Northwestern Hawaiian Islands. *Atoll Research Bulletin* 543: 305-317.
- Kikkawa, B.S. 1980. Preliminary study on the spawning season of the opakapaka, *Pristipomoides filamentosus*. Proceedings of the Symposium on Resource Investigations in the Northwestern Hawaiian Islands. Sea Grant Misc. Report 80-04(2): 226-232.
- Kleypas, J.A., R.A. Feely, V.J. Fabry, C. Langdon, C.L. Sabine, and L.L. Robbins. 2006. Impacts of Ocean Acidification on Coral Reefs and Other Marine Calcifiers: a Guide for Future Research. Workshop Report, National Science Foundation, National Oceanic and Atmospheric Administration, and the U.S. Geological Survey.
- Martinez-Andrade, F. 2003. A comparison of life histories and ecological aspects among snappers (Pisces: Lutjanidae). PhD Dissertation, Louisiana State University.
- NMFS (National Marine Fisheries Service). 2013. Environmental Assessment for Annual Catch Limit Specifications and Accountability Measures for Pacific Islands Bottomfish Fisheries in 2013 and 2014, including a Regulatory Impact Review. National Marine Fisheries Service, Pacific Islands Regional Office. January 14, 2013. 132 pp.
- Parke, M. 2007. Linking fishermen reported system commercial bottomfish catch data to habitat and proposed restricted fishing areas using GIS and spatial analysis. U.S. Dept. of Commerce. NOAA Tech. Mem., NOAA-TM-NMFS-PIFSC-11. Pacific Islands Fisheries Science Center. Honolulu, HI.
- The Royal Society, 2005: Ocean Acidification Due to Increasing Atmospheric Carbon Dioxide. The Royal Society, London, 60 pp.
- Sabater M. and P. Kleiber. 2014. Improving specification of acceptable biological catches of data-poor reef fish stocks using a biomass-augmented catch-MSY approach. Western Pacific Fishery Management Council. Honolulu, HI.
- Stokes, K. 2009. Report on the Western Pacific stock assessment review 1 Hawaii deep slope bottomfish. Center for Independent Experts, stokes.net.nz Ltd., Wellington 6035, New Zealand, 27 pp.
- Williams, I. 2010. U.S. Pacific reef fish biomass estimates based on visual survey data. NOAA, National Marine Fishery Service, Pacific Island Fishery Science Center (PIFSC). PIFSC Internal Report: IR-10-024. 18 pp.

WPFMC (Western Pacific Fishery Management Council). 2009. Fishery Ecosystem Plan for the Hawaii Archipelago. Honolulu, Hawaii. September 24, 2009.

WPFMC and NMFS. 2011. Omnibus amendment for the western Pacific region to establish a process for specifying annual catch limits and accountability measures, including an environmental assessment. Amendment 1 to the PRIA FEP, Amendment 2 to the American Samoa Archipelago FEP, Amendment 2 to the Mariana FEP, Amendment 3 to the Hawaii Archipelago FEP. Western Pacific Regional Fishery Management Council and NMFS, Honolulu, HI.

WPFMC and NMFS. 2007. Amendment 14 to the Fishery Management Plan for Bottomfish and Seamount Groundfish Fisheries of the Western Pacific Region, including a final supplemental environmental impact statement, regulatory impact review and an initial regulatory flexibility analysis. Western Pacific Regional Fishery Management Council. Honolulu, HI.

Appendix A Range of Catches and the Associated Probabilities of Overfishing

Table 19.1 Stock assessment projection results showing the total allowable commercial catches (1000 pounds) of Deep 7 bottomfish in fishing years 2012 and 2013 that would produce probabilities of overfishing in 2012 of 0%, 5%, 10% ..., 50% and greater under baseline catch Scenario II and CPUE Scenario I.

| Catch Scenario II and CPUE Scenario I | | | | |
|--|--|--|---|--|
| Probability of Overfishing Deep7 Bottomfish in the Main Hawaiian Islands in Fishing Year 2012 | Total Allowable Commercial Catch (1000 pounds) of Deep7 Bottomfish in Fishing Years 2012 and 2013 | Probability of Overfishing Deep7 Bottomfish in the Main Hawaiian Islands in Fishing Year 2013 | Median Ratio of Deep7 Bottomfish Exploitable Biomass in 2013 to BMSY | Probability That Deep7 Bottomfish Biomass in 2013 Is Greater Than the Minimum Stock Size Threshold (0.7*BMSY) |
| 0 | 11 | 0 | 1.05 | 0.92 |
| 0.05 | 147 | 0.02 | 1.03 | 0.91 |
| 0.10 | 197 | 0.09 | 1.02 | 0.90 |
| 0.15 | 229 | 0.14 | 1.02 | 0.90 |
| 0.20 | 255 | 0.19 | 1.01 | 0.89 |
| 0.25 | 277 | 0.24 | 1.01 | 0.89 |
| 0.30 | 299 | 0.29 | 1.01 | 0.89 |
| 0.35 | 319 | 0.34 | 1.00 | 0.88 |
| 0.40 | 341 | 0.39 | 1.00 | 0.88 |
| 0.45 | 361 | 0.45 | 1.00 | 0.88 |
| 0.50 | 383 | 0.50 | 0.99 | 0.88 |
| 0.55 | 407 | 0.56 | 0.99 | 0.87 |
| 0.60 | 429 | 0.60 | 0.99 | 0.87 |
| 0.65 | 455 | 0.66 | 0.98 | 0.87 |
| 0.70 | 481 | 0.71 | 0.98 | 0.86 |
| 0.75 | 513 | 0.76 | 0.97 | 0.86 |
| 0.80 | 549 | 0.81 | 0.97 | 0.85 |
| 0.85 | 597 | 0.86 | 0.96 | 0.84 |
| 0.90 | 665 | 0.91 | 0.95 | 0.83 |
| 0.95 | 783 | 0.96 | 0.93 | 0.81 |
| 0.99 | 1001 | 0.99 | 0.90 | 0.77 |

Source: Table 19.1 in Brodziak et al. (2011)

Appendix B Final Report of the P* and SEEM Working Groups



Final Report of the P* and SEEM Working Groups: Deliberations for the Main Hawaiian Island Deep 7 Bottomfish Complex ACL

**151st Council Meeting
Honolulu, HI**

The Council, at its 150th Council meeting, recommended the creation of the P* Working Group and SEEM Working Group (WG) to address the ACL determination for the Main Hawaiian Island Deep 7 Bottomfish stock complex. The P* Working Group was to develop a methodology to determine Council's acceptable risk of overfishing, or P*, to use in the ABC determination, and the SEEM Working Group was to develop a methodology for quantifying social, economic, ecological, and management uncertainty factors for the ACL specification. Both groups met twice since the 150th Council meeting and successfully responded to the Council's request.

Determination of the Risk of Overfishing, P*

The P* WG utilized the dimensions presented previously in the amendment document:

1. Assessment information,
2. Assessment uncertainty,
3. Stock status, and
4. Productivity and susceptibility.

The WG developed a scoring system as well as established the categories within each dimension. The P* WG chose to use scores for each dimension as high as 10, such that the dimensions added up to a maximum of 40. The summed score is subtracted from the P*_{MAX} of 50% OFL, or a maximum of 50% risk of overfishing, to determine the P*. The justification was that the group thought the results of its deliberations should never result in a P* of zero, or no fishing, thus the lowest P* is equivalent to a 10% risk of overfishing.

For the first dimension, the P* WG created 6 levels starting from perfect assessment information in which the quantitative assessment provides estimates of exploitation and biomass, to poor assessment information for which there are no benchmark values and scarce or unreliable catch records (Table 1a). The P* WG scored various assessment aspects (Table 1b), which were then summed and scaled to fit within a scale of 0-2 (between the first two levels of the dimension). The resulting score was 1.3.

Table 1a. Dimension 1: Assessment Information

| Assessment Information Description | Score |
|--|--------------|
| Perfect. Quantitative assessment provides estimates of exploitation and B; includes MSY-derived benchmarks | 0.0 |
| Quantitative assessment provides estimates of exploitation and B; includes MSY-derived benchmarks; no spatially-explicit information | 2.0 |
| Good. Measures of exploitation or B, proxy reference points, no MSY benchmarks; some sources of mortality accounted for | 4.0 |
| Relative measures of exploitation or B, proxy reference points, absolute measures of stock unavailable | 6.0 |
| No benchmark values, but reliable catch history | 8.0 |
| Poor. No benchmark values, and scarce or unreliable catch records | 10.0 |

Table 1b. Assessment aspects used in determining the score for the first dimension

| Assessment Aspects | Score |
|--|--------------|
| Reliable catch history | 0 |
| Standardized CPUE | 0 |
| Species-specific data | 1 |
| All sources of mortality accounted for | 0.5 |
| Fishery independent survey | 1 |
| Tagging data | 1 |
| Spatial analysis | 1 |

(1 = not captured in the stock assessment, 0 = captured in the stock assessment)

The second dimension that addresses characterization of uncertainty had five levels ranging from complete uncertainty characterization to no uncertainty characterization (Table 2). The P* WG determined that the MHI Deep 7 stock assessment was well characterized, thus attributed a score of 0 to the uncertainty characterization description.

Table 2: Dimension 2: Uncertainty Characterization

| Uncertainty Characterization Description | Score |
|--|--------------|
| Complete. Key determinant – uncertainty in both assessment inputs and environmental conditions included | 0.0 |
| High. Key determinant – reflects more than just uncertainty in future recruitment | 2.5 |
| Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections | 5.0 |
| Low. Distributions of Fmsy and MSY are lacking | 7.5 |
| None. Only single point estimates; no sensitivities or uncertainty evaluations | 10.0 |

The third dimension assesses the stock status by looking at biomass and fishing levels compared to reference points, including minimum stock size threshold (MSST), biomass at MSY (BMSY), fishing mortality (F), and maximum fishing mortality threshold (MFMT) (Table 3). The table of Biomass against Fishing Mortality (Table 3) was developed to create more reflective scores for the available scenarios of biomass level and fishing mortality level.

Table 3. Dimension 3: Stock Status

| Stock Status Description | Biomass level and Fishing level | Score |
|---|---|-------|
| Neither overfished nor overfishing. | Stock > MSST and B_{MSY} , $F < MFMT$ | 0.0 |
| Neither overfished nor overfishing. | Stock > MSST, $F < MFMT$ | 2.0 |
| Neither overfished nor overfishing. | Stock \geq MSST, $F \leq MFMT$ | 4.0 |
| Stock is not overfished, overfishing is occurring | Stock > MSST, $F > MFMT$ | 6.0 |
| Stock is overfished, overfishing is not occurring | Stock < MSST, $F \leq MFMT$ | 8.0 |
| Stock is overfished, overfishing is occurring | Stock < MSST, $F > MFMT$ | 10.0 |

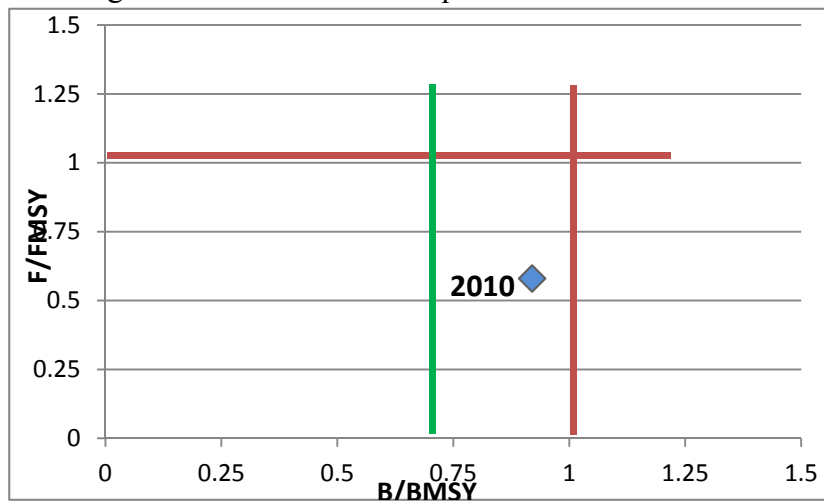
Table 4. Scores associated with different levels of biomass and fishing mortality.

| | | Biomass | | | |
|-------------------|------------|-----------------|------------|------------|------------|
| | | Above B_{MSY} | Above MSST | Near* MSST | Below MSST |
| Fishing Mortality | Below MFMT | 0 | 2.0 | 5.0 | 8.0 |
| | Near* MFMT | 1.0 | 3.0 | 6.0 | 9.0 |
| | Above MFMT | 2.0 | 4.0 | 7.0 | 10.0 |

*The definition of “near” for the purposes of the working group was “equal to or on the good side of,” thus “near” for $F/MFMT$ is equal to 1.0 or less, and “near” for $B/MSST$ is 0.7 and above.

The P* Working Group discussed that, because the MHI Deep 7 Bottomfish stock complex has a B/B_{MSY} of 0.92 and $F/MFMT$ of 0.58, the stock is neither overfished nor is overfishing occurring, and it is well beyond its overfishing benchmark (Figure 1). However, the Stock Status score was raised from 2 to 3 because of concern about the stock assessment being conducted on a stock complex as opposed to individual stocks.

Figure 1. B/B_{MSY} to F/F_{MSY} plot for 2010 stock status.



The fourth dimension assesses the stock or stock complex’s biological productivity and susceptibility to fishing. The P* WG defined 5 levels within the dimension (Table 5). The P* Working Group sought outside input from individuals with more expertise in bottomfish biology and ecology, namely Dr. Robert Humphreys and Dr. Robert Moffitt. The P* WG accepted the average of their scores to define the productivity and susceptibility for each fish within the MHI Deep 7 bottomfish complex (Table 6). This resulted in an overall score for this dimension of 4.9.

Table 5. Dimension 4: Productivity and Susceptibility

| Productivity and Susceptibility Description | Score |
|--|--------------|
| Low risk. High productivity, susceptibility low. | 0.0 |
| Low/Medium | 2.5 |
| Medium risk. Moderate productivity, and susceptibility | 5.0 |
| Medium/High | 7.5 |
| High risk. Low productivity, high susceptibility | 10 |

Productivity and Susceptibility were scored separately based on the scoring system below, and then the overall average is used as the final score for this dimension. Biological productivity was scored 0 if the fish has high productivity because its productivity directly impacts its ability to recover from any sort of depletion event, thus a fish with high productivity should impact the acceptable biological catch (ABC) less than a fish with low productivity. The more susceptible a fish is to fishing, i.e. the ease with which it is caught, the higher its susceptibility score, which will result in a greater impact on the ABC.

| Productivity | Score | Susceptibility | Score |
|--------------|-------|----------------|-------|
| High | 0 | High | 10 |
| High/medium | 2.5 | High/medium | 7.5 |
| Medium | 5 | Medium | 5 |
| Medium/low | 7.5 | Medium/low | 2.5 |
| Low | 10 | Low | 0 |

Table 6. Averages of biological productivity and susceptibility to fishing for each of the MHI Deep 7 bottomfish species from expert opinion

| Species | Productivity | Susceptibility | Total | Average |
|-------------------|--------------|----------------|-------|---------|
| Opakapaka | 5 | 6.25 | 11.25 | 5.625 |
| Onaga | 5 | 5 | 10 | 5 |
| Ehu | 2.5 | 7.5 | 10 | 5 |
| Hapuupuu | 5 | 8.75 | 13.75 | 6.875 |
| Gindai | 3.75 | 5 | 8.75 | 4.375 |
| Kalekale | 2.5 | 3.75 | 6.25 | 3.125 |
| Lehi | 5 | 3.75 | 8.75 | 4.375 |
| Overall Average = | | | | 4.9 |

The final P* is the sum of the four dimensions subtracted from the P*_{MAX} of 50 (or 50% OFL).

| Dimension | Score |
|---------------------------------|--------------|
| Assessment Information | 1.3 |
| Uncertainty Characterization | 0 |
| Stock Status | 3 |
| Productivity and Susceptibility | 4.9 |
| Final Score | 9.2 |

The final P* is 40.8 (50-9.2), which corresponds to an ABC of 345,522 lb.

Determination of the SEEM Score

The social, economic, ecological, and management uncertainty (SEEM) analysis is used to reduce the ACL from the ABC, as well as determine the reduction to ACT if one is required. The analysis consists of four dimensions (social, ecological, economic, and management uncertainty) with factors that are ranked. The SEEM Working Group (WG) first considered factors that could be used in the four dimensions. Many of the considered factors were then consolidated with straw man factors to create overarching, applicable factor statements. Others, if viewed irrelevant to affecting the ACL, were dropped from consideration.

For the social dimension, many factors were considered that included food source, food security, preservation of a way of life, and historical dependence. The SEEM WG determined that the relevant factors for the social dimension included:

1. Perpetuates cultural and traditional values,
2. Provides symbolically-valued and culturally-important fish,
3. Bottomfish fishing is a unique, highly-skilled occupation that is waning and should be maintained, and
4. Contributes to Hawaii's food security.

The group felt it was important to capture the cultural and traditional values and practices associated with bottomfish in Hawaii. It was also important to emphasize that bottomfish fishing is very difficult and requires many years of experience to be successful. Additionally, fewer individuals are learning this occupation.

Many factors were considered for the economic dimension, including markets for the fishery, capitalization, price for fish, and tourism. The factors selected by the SEEM WG for scoring included:

1. There is economic reliance of other industries on the fishery,
2. Financial security of the fishery and its participants is readily compromised by Management decisions, and
3. Provides a unique product.

There was much discussion about the impacts of bottomfish fishing on other industries and multiplier effects. Bottomfish from Hawaii are a unique product that are never frozen, have a low carbon footprint (not flown in and fishing grounds are close to landing sites), and are a signature fish in regional cuisine. Lastly, the financial security of the fishery as well as its participants is

readily compromised by management decisions, whether that be decisions for closed areas, TACs, or other measures that restrict the fishery. However, focus was drawn away from overall importance to the local economy because it was pointed out that all fishing in Hawaii contributes relatively little to the local economy. Also, while the group discussed including capitalization as a factor within the economic dimension, it was best suited for discussion purposes. Capitalization is not an issue in the MHI Deep 7 bottomfish fishery as in other regions. Thus it would be unfair to consider capitalization an important topic in the determination of the ACL. Lastly, carbon footprint was included under “unique product” because although it was initially discussed for inclusion as a stand-alone factor, it would be better used as a marketing tool than a factor upon which to base an ACL.

Many factors were considered for the ecological dimension, including key indicator species, depth range overlaps of bottomfish species, impacts of the fishery, impacts of population booms of particular species, and the loss of a fish species due to kahala. The factors that were ultimately selected for use in scoring were:

1. Uncertainty of ecosystem dynamics, and
2. Shift of fishing pressure onto species outside Deep 7 upon closure of Deep 7 fishery.

The group chose to lump many considered factors into uncertainty of ecosystem dynamics, capturing the fact we do not know what happens with a reduction on one or more species within the bottomfish complex. Similarly, it is unknown if there are distinct niches that one or more of the species fill or if any are indicators of ecosystem function. It was determined that CPUE and catchability being influenced by weather was more appropriate for the management uncertainty dimension.

The last dimension is management uncertainty. The WG brainstormed factors such as quantification of catch, high-grading issues, complicated reporting, and risk of exceeding the limit. However, the group determined that many of the items could be encompassed in 5 major overarching factors:

1. Unreported recreational landings,
2. Commercial catch reporting, including misreporting,
3. Weather influences ability to fish and productivity of fishing,
4. Monitoring, including ability to forecast, and
5. Recreational discard mortality associated with high-grading.

The group concluded that monitoring and reporting should be considered separately, and that recreational and commercial reporting should be divided to avoid the “double barrel” problem where one item should receive one score, but another item should receive a lower or higher score. In this case, the group felt that commercial data is significantly better and greater than recreational data (there is no mandatory recreational reporting, only catch estimates from surveys). There were also concerns voiced about discard mortality associated with recreational fishing – if one can only catch five fish, the goal may be to catch the biggest fish. Lastly, the group decided weather should be included in management uncertainty. If the weather is calm and the fishermen are close to reaching the limit, then arguably they will reach it faster and perhaps faster than current monitoring accounting. On the other hand, if weather is bad and the closure date is set, the fishery may not come close to the predicted target. There were suggestions during

this conversation to make the information about the various fishermen more precise, which included more questions on the bottomfish fishing vessel registration pertaining to the type and frequency of fishing that will be taking place. Currently, there are no details about primary fishing activity captured on the registration.

The group created a scoring system that is currently based on a -2 to 2 scale. First, the individuals within the group selected scores for each factor within the dimensions. Next, the scores were summed for each dimension. The average of the group was then calculated for each dimension. Upon assessing the results, all had selected primarily positive scores for the social, economic, and ecological dimensions, and primarily negative scores for the management uncertainty dimension. The end result was a net positive score, which would mean the ACL would be greater than the ABC recommended by the Council. As a result, the group decided to utilize the first three dimensions as justification for maintaining the ACL equal to ABC, and then utilizing the management uncertainty to reduce the limit to the ACT. The group concluded that using an ACT would buffer against the risk of exceeding the ACL, thus removing the need for the fishery to pay back any overages or for the system to be revised. Past experience shows that the fishery typically goes over their TAC, but by only a small percentage. Penalizing the fishermen because the system is unable to work perfectly is inequitable. Below are the tables used for scoring, as well as a table with averages.

SOCIAL DIMENSION

| Selected Factors | Score | | | | |
|---|--------------|----|---|---|---|
| Perpetuates cultural and traditional values | -2 | -1 | 0 | 1 | 2 |
| Provides symbolically-valued and culturally-important fish | -2 | -1 | 0 | 1 | 2 |
| Bottomfish fishing is a unique, highly-skilled occupation that is waning and should be maintained | -2 | -1 | 0 | 1 | 2 |
| Contributes to Hawaii's food security | -2 | -1 | 0 | 1 | 2 |

ECONOMIC DIMENSION

| Selected Factors | Score | | | | |
|---|--------------|----|---|---|---|
| There is economic reliance of other industries on the fishery (multiplier effect) | -2 | -1 | 0 | 1 | 2 |
| Financial security of the fishery and its participants is readily compromised by management decisions | -2 | -1 | 0 | 1 | 2 |
| Provides a unique product (never frozen, fresh, low carbon footprint, signature fish in regional cuisine) | -2 | -1 | 0 | 1 | 2 |

ECOLOGICAL DIMENSION

| Selected Factors | Score | | | | |
|--|--------------|----|---|---|---|
| Uncertainty of ecosystem dynamics | -2 | -1 | 0 | 1 | 2 |
| Shift of fishing pressure onto species outside Deep 7 upon closure of Deep 7 fishery | -2 | -1 | 0 | 1 | 2 |

MANAGEMENT UNCERTAINTY DIMENSION

| Selected Factors | Score | | | | |
|--|-------|----|---|---|---|
| Unreported recreational landings | -2 | -1 | 0 | 1 | 2 |
| Commercial catch reporting, including misreporting | -2 | -1 | 0 | 1 | 2 |
| Weather influences ability to fish and productivity of fishing | -2 | -1 | 0 | 1 | 2 |
| Monitoring, including ability to forecast | -2 | -1 | 0 | 1 | 2 |
| Recreational discard mortality associated with high-grading | -2 | -1 | 0 | 1 | 2 |

TABLE of AVERAGES

| Dimension | Person 1 | Person 2 | Person 3 | Person 4 | Person 5 | Person 6 | Person 7 | Person 8 | Person 9 | Person 10 | Average |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|---------|
| Social | 5 | 7 | 6 | 5 | 6 | 7 | 5 | 2 | 6 | 7 | 5.6 |
| Economic | 6 | 5 | 6 | 5 | 6 | 6 | 4 | 1 | 5 | 5 | 4.9 |
| Ecological | -1 | -1 | 2 | -1 | 0 | 1 | 0 | 2 | 0 | -1 | 0.1 |
| Management Uncertainty | -7 | -5 | -5 | -7 | -5 | -10 | -6 | -3 | -8 | -4 | -6 |

Based on the tables above, the SEEM WG determined that the ACL should be equal to the ABC, but the ACT should be reduced from the ACL by 6 percent to account for management uncertainty. The working group is comprised of 12 individuals, which includes Council staff. Council staff did not participate in the scoring exercise, thus the average represents the input from the commercial bottomfish fishery, State of Hawaii, and representatives with social, economic, and biological expertise.

The results of this working group are captured by the following statement:

There was a consensus in the SEEM Working group that, for the Main Hawaiian Islands bottomfish Deep 7 fishery, the annual catch limit (ACL) be set equal to the acceptable biological catch (ABC), and that the score of 6 percent from the management uncertainty dimension be used to set the annual catch target (ACT) as a reduction from the ACL. The social, economic, and ecological dimensions demonstrate the importance of the Deep 7 bottomfish fishery to the State of Hawaii.

Conclusions for the MHI Deep 7 Bottomfish Fishery

Based on the analyses by the P* WG, the P* WG determined that the P* should be 40.8, which corresponds to an ABC of 345,522 lb. The SEEM WG analyses resulted in the consensus statement that the ABC should equal ACL, and an ACT should be used that is 6 percent less than the ACL, which equals 324,790 lb.



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1845 Wasp Blvd. Bldg. 176
Honolulu, Hawaii 96818
(808) 725-5000 • Fax (808) 725-5215

FINDING OF NO SIGNIFICANT IMPACT

Specification of Annual Catch Limits and Accountability Measures for Deep 7 Bottomfish in the Main Hawaiian Islands in 2014-15 and 2015-16 (RIN 0648-XD082)

May 14, 2015

The National Marine Fisheries Service (NMFS) prepared this Finding of No Significant Impact (FONSI) according to the guidelines for a FONSI for fisheries management actions in NMFS Instruction 30-124-1 (July 22, 2005), and the requirements in National Oceanic and Atmospheric Administration (NOAA) Administrative Order 216-6 ((NAO-216-6, May 20, 1999), concerning compliance with the National Environmental Policy Act (NEPA). The NEPA environmental impact analysis in the attached environmental assessment (EA) supports this FONSI.

Background

NMFS and the Western Pacific Fishery Management Council (Council) manage fishing for bottomfish management unit species (BMUS) in federal waters of the Exclusive Economic Zone (EEZ; generally 3-200 nm from shore) around Hawaii through the Fishery Ecosystem Plan for the Hawaii Archipelago (Hawaii FEP) authorized by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Bottomfish fishing now occurs only in waters around the main Hawaiian Islands (MHI); there is no commercial fishing in the Northwestern Hawaiian Islands management area (see EA, section 1).

The MHI bottomfish fishery harvests an assemblage of 14 different BMUS. NMFS and the Council manage BMUS as two separate stock complexes: the Deep 7 and non-Deep 7 bottomfish stock complexes.¹ Deep 7 bottomfish include onaga (*Etelis coruscans*), ehu (*E. carbunculus*), gindai (*Pristipomoides zonatus*), kalekale (*P. sieboldii*), opakapaka (*P. filamentosus*), lehi (*Aphareus rutilans*), and hapuupuu (*Hyporthodus quernus*, formerly *Epinephelus quernus*). Deep 7 bottomfish are generally found along high-relief slopes, at depths ranging from 80-400 m. Several non-Deep 7 bottomfish are caught during fishing for Deep 7 bottomfish, including uku (*Aprion virescens*), white ulua (*Caranx ignobilis*), black ulua (*C. lugubris*), taape (*Lutjanus kasmira*), yellowtail kalekale (*Pristipomoides auricilla*), butaguchi (*Pseudocaranx dentex*) and kahala (*Seriola dumerili*). Fishermen usually catch the non-Deep 7 bottomfish at shallower depths.

¹ The Magnuson-Stevens Act defines “stock of fish” to mean a species, subspecies, geographic grouping, or other category of fish capable of management as a unit. Federal regulations at 50 CFR 660.310(c) define “stock complex” as a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar.



The Magnuson-Stevens Act and federal regulations implementing the Hawaii FEP require NMFS to specify annual catch limits (ACL) and accountability measures (AM) to help prevent the fishery from exceeding the ACL for each stock or stock complex of MUS identified in an FEP (50 CFR 665.4). The Council recommended the ACL and AM, considering the best available scientific, commercial, and other information about the fishery for that stock or stock complex.

Federal Action

NMFS will implement EA Alternative 2 and specify an ACL of 346,000 lb of Deep 7 bottomfish in the EEZ around the MHI. As an AM to prevent the fishery from exceeding the ACL, if NMFS projects that the fishery will reach the ACL, the agency will close the commercial and non-commercial fisheries for MHI Deep 7 bottomfish in federal waters through the end of the fishing year. In addition, if NMFS and the Council determine that the final 2014-15 Deep 7 bottomfish catch exceeded the ACL, NMFS would reduce the Deep 7 bottomfish ACL for the 2015-16 fishing year by the amount of the overage. (NMFS will specify an ACL and AM for the non-Deep 7 bottomfish stock complex through a separate action.). Based on a 2011 NMFS stock assessment for MHI Deep 7 bottomfish, the ACL is associated with a 41 percent probability of overfishing. Although not part of the action, during a federal fishery closure, the State of Hawaii implements a complementary closure in State waters and prohibits any person from fishing for, possessing, or selling MHI Deep 7 bottomfish after the closure date. The fishing year for Deep 7 bottomfish begins September 1 and ends on August 31 the following year. Unless modified by NMFS, the ACL and AM would be applicable in the fishing year 2014-15. The ACL and AM are identical to the ACL and AM that NMFS specified in 2013-14 (78 FR 59626, September 27, 2013).

Coordination and Public Involvement

The Council recommended the ACL and AM at its 160th and 161st meetings in 2014. Alternative 2 was developed in accordance with the approved ACL mechanism described in the Hawaii FEP and implementing federal regulations at 50 CFR 665.4, and in consideration of the best available scientific, commercial, and other information. Additionally, as a performance measure which is specified in Hawaii FEPs, if the ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness. At its 160th and 161st meetings held on June 25-27, 2014, and October 21-23, 2014, respectively, the Council considered and discussed issues relevant to the MHI Deep 7 bottomfish ACL and AM. At those meetings, the Council considered the fishing level recommendations from its SSC, made during the SSC 116th and 117th meetings, held June 14-16, 2014, and October 14-16, 2014, respectively. All four meetings were open to the public. The meetings were advertised in Hawaii media, announced in the *Federal Register* (79 FR 57887, September 26, 2014; 79 FR 59742, October 3, 2014), and on the Council's website. MHI Deep 7 bottomfish fishermen present at the SSC and Council meetings supported the proposed ACL and AM. There were no other public comments made questioning or opposing the proposed ACL and AM. Reports of the 160th and 161st Council meetings and the 116th and 117th SSC meetings can be obtained from the Council. The EA summarizes outcomes related to the MHI Deep 7 bottomfish annual specifications.

On April 21, 2015, NMFS published in the *Federal Register* the proposed specification and solicited public comments on the action and on the draft EA (80 FR 22158). NMFS received several public comments generally supporting the action, and offering suggestions on improving future stock assessments. NMFS has responded to these comments in the EA, section 5.4.

Significance Analysis

NAO 216-6 contains criteria for determining the significance of the impacts of a proposed action. The Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 state that the significance of an action should be analyzed in terms of both “context” and “intensity.” The criteria listed below are relevant in making a finding of no significant impact and have been considered individually and collectively. We analyzed the significance of this action based on the NAO 216-6 criteria and the CEQ context and intensity criteria. NAO 216-6, Section 6.01b, 1-11 provides eleven criteria, including the same ten as in the CEQ regulations and one additional criterion for determining whether the impacts of a proposed action are significant. The following questions and answers apply to the analysis in the attached EA for the selected alternative (Alternative 2). The questions are consistent with NAO 216-6, CEQ criteria, and guidelines for a FONSI for fishery management actions found at NMFS Instruction 30-124-1 and form the basis for our finding of no significant impact.

1) Can the proposed action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?

No. Harvests of the MHI Deep 7 bottomfish stock complex are sustainable—the stock complex is not subject to overfishing and is not overfished based on the best available scientific and commercial information (see stock status for MHI Deep 7 Bottomfish, EA, section 3.1.1). The Council and NMFS developed the ACL to prevent overfishing and in consideration of the best available scientific information regarding stock status, historical and recent fishing and estimates of potential impacts of fishing on the stock (see EA, sections 2.1.1, 2.1.3, 2.1.4, 2.1.5, and 2.1.6).

The ACL is lower than the stock’s estimated overfishing limit (OFL) of 383,000 lb (i.e., the estimated level of catch that would result in overfishing), and, based on recent catches, catches of Deep 7 bottomfish in 2014-15 and 2015-16 are expected to continue to be well below the ACL. Table 3 of the EA shows reported MHI Deep7 bottomfish catch in pounds by year through 2013. Recent years show the total of all Deep 7 bottomfish in lb was less than 275,000 lb, and generally less than 235,000 lb (EA, section 3.1.1).

NMFS does not anticipate the action will result in changes in the conduct of MHI commercial or non-commercial bottomfish fisheries in terms of gear types used, areas fished, level of catch or effort as compared to baseline conditions (EA, section 2.2.2.1). Under the action, if the commercial fishery were to catch the entire ACL of 346,000 lb, the catch would be associated with a 41 percent probability of overfishing (EA, section 4.1: Alternative 2). The fishery is unlikely to exceed the ACL because of the in-season AM in which the fishery would be closed by NMFS should NMFS predict the fishery will attain the ACL. The Council and NMFS intend the ACL and AM to prevent overfishing from occurring and together with other management

measures (such as permits, reporting, and monitoring) will help ensure the MHI Deep 7 bottomfish fishery is sustainable (EA, section 4.1).

Under Alternative 2, catches of Deep 7 will be closely monitored. Based on recent fishing under the same ACL, the MHI Deep 7 bottomfish catch in 2014-15 and 2015-16 (should the ACL be specified again) is expected to be similar to 2013-14 catch (i.e., 309,485 lb) and remain below the ACL (EA, section 4.1: Alternative 2). The EA concludes that harvests of Deep 7 bottomfish in the MHI will continue to be sustainable and the stock complex is not expected to become subject to overfishing or overfished (EA, section 4.1: Alternative 2). For these reasons, NMFS does not expect the action to have significant impacts on the sustainability of Deep 7 bottomfish.

2) Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?

No. The MHI Deep 7 bottomfish fishery is fairly target-specific, however the fishery also harvests four species of jacks and three snappers. Termed the non-Deep 7 bottomfish, catches of this group are dominated by uku, which comprises over 80% of the catches annually. In 2013, total non-Deep 7 catches were 158,245 lb in 2013, with uku comprising over 100,000 lb of the catch. Table 4 in section 3.1.2 of the EA provides a summary of non-Deep 7 bottomfish catches in the MHI from 2000-2013.

MSY for non-Deep 7 bottomfish has been calculated to be 265,000 lb, and catch associated with a 50 percent probability of exceeding MSY has been estimated to be 259,200 lb; therefore the Council recent established this as the overfishing limit (OFL) for MHI non-Deep 7 bottomfish (see Stock Status of MHI Non-Deep 7 Bottomfish, EA, section 3.1.2). In a separate action, the Council recommended an ACL of 178,000 lb of non-Deep 7 bottomfish for the 2015 fishing year. As can be seen in Table 4, annual catch of non-Deep 7 bottomfish have been well below the MSY of 265,000 lb, the OFL proxy of 259,200 lb and the proposed ACL.

The specification of Deep 7 ACL for the 2014-15 fishing year (and subsequently in 2015-16, if approved) is not expected to result in more fishing of non-Deep 7 bottomfish or greater catches of non-Deep 7 bottomfish than has occurred in recent years because the ACL remains the same as it was in 2012-13 and 2013-14. . In the 2012-13 and 2013-14 fishing years, the Deep 7 bottomfish fishery remained open throughout the both fishing years.

Under the action, the total annual catch of non-Deep 7 bottomfish is expected to continue at around 2013 levels (158,245 lb) and remain below the MSY and OFL (EA, section 4.1: Alternative 2).

Current levels of bycatch are described in the EA (section 3.13). Bycatch levels are expected to continue to remain low because the Deep-7 bottomfish fishery is fairly target specific and fish that are released or discarded are primarily non-Deep 7 bottomfish that are known to be ciguatoxic and have little or no market value (i.e., kahala, butaguchi, and white ulua). If sharks are caught on bottomfish hooks, because they don't suffer effects of barotrauma when brought up from depth, they are able to be released alive (EA, section 3.1.3). Fishermen tend to move to different areas if there is a problem with shark depredation on the target fish; this helps reduce

the amount of shark bycatch. The Hawaii FEP includes ongoing management measures including training and outreach to fishermen to reduce the mortality of released fish due to barotrauma. These methods will continue to be taught and applied by fishermen.

Ongoing fisheries monitoring by the Council's FEP plan team and others will help fishery scientists and managers to detect any increase in non-target or bycatch issues and address them through future management measures, as needed (EA, section 4.1).

For these reasons, the Deep 7 bottomfish ACL and AM are not expected to result in significant impacts on non-target and bycatch in the fishery and the action is not expected to jeopardize the sustainability of any non-target species (EA, section 4.1: Alternative 2).

3) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?

No. Bottomfish fishing methods are not known to cause substantial damage to the ocean, coastal habitats, corals, or marine habitats, including designated essential fish habitat (EFH) and habitat areas of particular concern (HAPC) for any species (EA, section 4.2). The action is not expected to change the way in which fisheries are conducted in terms of gear types used, areas fished, level of catch or effort as compared to baseline conditions. The Hawaii Coastal Zone Management Program did not find there would be changes to its previous consistency determination made on the Hawaii FEP (EA, section 5.7). For these reasons, NMFS concludes the action will not lead to substantial physical, chemical, or biological alterations to ocean and coastal habitats, including designated EFH and HAPC (EA, section 4.2).

4) Can the proposed action be reasonably expected to have a substantial adverse impact on public health or safety?

No. The action is not expected to adversely impact public health or safety because the operation of bottom fish fisheries are not known to impact public health or safety and are not expected to change because of the ACL and AM specifications. Current levels of catch of MHI bottomfish are below the ACL of 346,000 lb, as well as the estimated MSY and OFL reference points, NMFS does not anticipate the action would result in changes in the conduct of the fishery in terms of gear types used, areas fished, level of catch or effort as compared to baseline conditions. Therefore, there is no likelihood the ACL will result in a race for the fish, or cause fishermen to change the way they fish, or the areas they fish in, or to otherwise change the manner in which bottomfish fisheries are conducted (EA, section 4.3.1-Baseline; and section 4.3.2). Additionally, bottomfish fishing activities are not known to result in public health issues (EA, section 4.3.2). For these reasons, the action will not result in a substantial adverse impacts on public health or human safety at sea.

5) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

No. To date, there have been no observed or reported interactions between MHI bottomfish fisheries and ESA-listed species. The NMFS 2008 Biological Opinion (BiOp) concluded that, except for the Hawaiian green sea turtle, the fishery is not likely to adversely affect any other ESA-listed marine species or result in the destruction or adverse modification of critical habitat (EA, section 3.6.1). All sea-going vessels, generally, and bottomfish vessels, particularly, may impact green turtles while transiting State waters to and from federal fishing areas. Because the BiOp was based on an estimated number of bottomfish fishing trips (71,800 per year) and because the total annual number of trips is more likely around 3,500 per year, the EA estimates the fishery has a negligible impact on threatened green turtles (EA, section 3.6.1). A 2013 consultation concluded that bottomfish fisheries in the MHI are not likely to adversely affect MHI insular false killer whales because of spatial separation between the species and bottomfish fishing activities, the low likelihood of collisions, and the lack of observed or reported fishery interactions among other reasons (EA, section 3.6.1).

Section 3.6.2 of the EA describes that although several species of non-listed marine mammals occur in Hawaiian waters, there has been no observed or reported interaction between the MHI bottomfish fisheries and marine mammals. Additionally, seabirds are not known, and are unlikely, to interact with the MHI bottomfish fishery (EA, section 3.6.3).

Bottomfish fisheries in the MHI as authorized and managed under the Hawaii FEPs have been evaluated for impacts on protected species and are managed in compliance with the requirements of the Magnuson-Stevens Act, the Marine Mammal Protection Act, the Endangered Species Act, and other applicable laws. On December 29, 2014, (79 FR 77919), NMFS published the final LOF for 2015 which classified the Hawaii bottomfish handline fishery as a Category 3 fishery under Section 118 of the MMPA. A Category 3 fishery is one with a remote likelihood or no known incidental mortality and serious injury of marine mammals.

Because NMFS does not anticipate the action will result in changes in the conduct of the fishery in terms of gear types used, areas fished, level of catch or effort as compared to baseline conditions, the action will not have effects on endangered or threatened species, marine mammals, seabirds, or critical habitat that have not been previously considered or authorized in ESA consultations, MMPA determinations (EA, sections 4.5, 5.5, 5.6).

The EA also considered potential action by NMFS to designate areas in the MHI as monk seal critical habitat (76 FR 32026, June 2, 2011). There is insufficient information in the proposal to allow NMFS to evaluate the potential impact of a designation of monk seal critical habitat on the 2014-15 and 2015-16 bottomfish fisheries. However, a designation of critical habitat for monk seals in the MHI is not expected to result in a significant cumulative effects because under current levels of fishing pressure in the MHI, the monk seal population is growing, pupping is increasing, and the pups appear to be foraging successfully. Therefore, the MHI bottomfish fisheries do not appear to have an adverse impact on monk seals or potential critical habitat.

6) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

No. There have been no identified impacts to marine biodiversity and/or ecosystem function from the MHI bottomfish fisheries, and this action will not result in impacts to these environmental features. NMFS does not anticipate the action will result in changes in the conduct of the fishery in terms of gear types used, areas fished, level of catch or effort as compared to baseline conditions. Therefore, NMFS expects no substantial impacts on biodiversity or ecosystem function to occur (EA, section 4.6).

7) Are significant social or economic impacts interrelated with natural or physical environmental effects?

No. The analysis in the EA did not reveal any significant social or economic impacts interrelated with natural or physical environmental effects. The action is not expected to change fishing operations (EA, section 4.1: Alternative 2) and the fishery currently provides positive social and economic benefits to members of fishing communities (EA, section 4.3.1). The continuation of the recent ACL and AM are not expected to change income that is derived from bottomfish fishing or impacts on fishing communities (EA, section 4.3.2). Finally, overall, the action is intended to prevent overfishing of bottomfish stocks while providing positive social and economic benefits to fishermen, buyers and the fishing communities of Hawaii (EA, section 5.12). For these reasons, as well, no Environmental Justice concerns arose in the course of analyzing the potential impacts (EA, section 5.12).

8) Are the effects on the quality of the human environment likely to be highly controversial?

No. The Council developed the recommended ACL and AM in a public process in accordance with the provisions of the Magnuson-Stevens Act, the FEPs, applicable regulations, considering the best scientific and commercial information available, and in coordination with fishery scientists, managers, other resource managers, and other interested parties (EA, sections 1.5, 2.1.3, 5.3 and 5.4). NMFS solicited comments on the ACL specification and AM and on the draft EA (EA, section 5.4).

This public coordination revealed no controversy regarding effects on the quality of the human environment (EA, section 5.4). By providing for annual review of fishery performance, the action will help ensure long-term sustainability of MHI non-Deep 7 bottomfish, while allowing for optimal yield.

9) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?

No. NMFS does not expect the action to adversely affect such areas because no such areas are known to exist in the EEZ where the MHI bottomfish fishery is conducted, and because

bottomfish fishing activities are not known to result in substantial adverse impacts to the environment including to designated EFH and HAPC (EA, sections 4.2, 4.7, and 5.8). Bottomfish fishing in marine protected areas will continue to be restricted by State laws, and fishing will continue to be subject to State of Hawaii commercial licensing and/or federal non-commercial permits and reporting and joint State/federal monitoring to help ensure harvests of marine resources remain sustainable. NMFS does not anticipate the action will result in changes in the conduct of the fishery in terms of gear types used, areas fished, level of catch or effort as compared to baseline conditions, and therefore, there would be no substantial impacts of the fisheries on resources of scientific, historic, cultural or economic importance.

10) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

No. The effects on the human environment are not highly uncertain or unknown because the action will result in the specification of an ACL for MHI Deep 7 bottomfish that is well below the stock's estimated MSY and OFL reference points, and managers considered the risk of overfishing when setting each ACL. Additionally, the AM are intended to prevent the fishery from exceeding the ACL so that overfishing does not occur and correct and mitigate any overage of the ACL. Furthermore, the effects of bottomfish fishing, managed under the FEP and associated regulations on target and non-stocks, protected resources, marine habitats and fishing communities are not highly uncertain or associated with unknown risks (EA, section 4). This is because the fishery is closely monitored and managers can take necessary precautions to ensure fishing is sustainable. For these reasons, the action is not expected to result in a change to the conduct of MHI bottomfish fishery in terms of gear types used, areas fished, or level of catch or effort as compared to baseline conditions and the effects of the action is not expected to result in effects that are highly uncertain or involve unique or unknown risks.

11) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

No. As discussed in section 4.8 of the EA, cumulative effects of the action were considered in light of other past, present and reasonably foreseeable future actions, including the specification of the ACL and AM in fishing years 2014-15 and again in 2015-16, and the specification of a separate ACL and AM for the MHI Deep 7 bottomfish stock complex.

The analysis in section 4.8.1 indicates the action is not expected to result in cumulative effects to MHI Deep 7 bottomfish. This is because the action would set the ACL (346,000 lb) lower than the stock's estimated MSY (417,000 lb) OFL (383,000 lb), and annual catches in each of the two years are expected to remain below the ACL. Furthermore, the action requires NMFS to close the fishery to prevent the ACL from being exceeded. Together, the specification of an ACL and AM over the course of two-consecutive years is intended to prevent overfishing from occurring and ensure a sustainable fishery.

Similarly, the analysis in section 4.8.2 indicates the action is not expected to result in cumulative effects to MHI non-Deep 7 bottomfish. This is because under the action the fishery is not expected to reach the ACL of 346,000 lb and a fishery closure to prevent the fishery from

exceeding the ACL would not be triggered. Because a fishery closure is not expected, it is unlikely that fishermen would need to switch to catching non-Deep 7 bottomfish in order to fill market demand for bottomfish. If the fishery closure were to be triggered, because the ACL is 346,000 lb, the fishery is not expected to close long before the end of the fishing year, and catches of non-Deep 7 bottomfish are expected to be similar to the 2013 level of catch of 158,245 lb. This level of catch is well below the MSY for non-Deep 7 bottomfish of 265,000 lb and the OFL proxy of 259,200 lb. Under the action, catches of non-Deep 7 bottomfish are expected to remain sustainable.

The EA also considered the potential for cumulative effects resulting from the specification of ACLs and AMs for other crustacean, precious coral, and coral reef MUS managed under the Hawaii FEP (EA, section 4.8.3). None of the ongoing proposals are likely to result in significant environmental effects because those proposals are not expected to change conduct of any fishery in terms of gear types used, areas fished, level of catch or effort as compared to baseline conditions for those fisheries. The EA also includes the agency's consideration of the potential for interaction among these initiatives and none was found that would result in a significant cumulative effect because the ACL and AM apply to fishery-specific MUS, and do not overlap.

12) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

No. As described in the EA (sections 4.7 and 5.8) there are no known districts, sites, highways, structures or objects listed, or eligible for listing, in the National Register of Historic Places where NMFS authorizes bottomfish fishing. Although shipwrecks and other objects could possibly occur in federal waters around Oahu, bottomfish fishing is not known to result in adverse impacts to scientific, historical, cultural or historical resources because fishermen fish for bottomfish on high-relief deep slopes where such objects would not be found (EA, section 4.7). Also, bottomfish fishing is not known to have a damaging impact on the marine environment, including any man-made resources or structures (EA, section 5.8). The specification of ACL and AM will not change the way the MHI bottomfish fishery is conducted, including type of gear used, areas fished, or level of catch or effort as compared with baseline conditions and therefore, the fishery is not expected to cause loss or destruction of significant scientific, cultural or historic resources that may occur in the EEZ (EA, section 4.7).

13) Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?

No. Bottomfish fishing is not known to be a potential vector for spreading alien species as none of the vessels fish outside of Hawaiian waters. NMFS does not anticipate the action would result in changes in the conduct of the fishery in terms of gear types used, areas fished, level of catch or effort as compared to baseline conditions, so the action will not result in the introduction or spread of a non-indigenous species (EA, section 4.6).

14) Is the proposed action likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

No. The action is needed to comply with provisions of the Magnuson-Stevens Act and federal regulations implementing the FEP at 50 CFR 665.4, through which NMFS specifies ACL and AM. Since the 2011-12 fishing year, NMFS has specified the same ACL of 346,000 lb for MHI Deep 7 bottomfish and a fishery closure as the AM to prevent the fishery from exceeding the ACL. The fishery has never reached the specified ACL of 346,000 lb. The continuation of the same ACL in 2014-15 and in 2015-16 would not establish a precedent for the MHI bottomfish fisheries. The ACL and AM will not result in impacts to the environment that would change future decisions including about ACL because the ACL is derived in consideration of scientific information that led to estimates of long-term MSY and OFL for the Deep 7 bottomfish and because fishery scientists and managers have the ability and do review historical and recent harvests, and are continually refining bottomfish stock status estimates. For these reasons, the federal action will not establish a precedent for future actions with significant effects or represent a decision in principle about future decisions.

15) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

No. The Council developed the recommended ACL and AM in a public process in accordance with the provisions of the Magnuson-Stevens Act, the FEP, considering the best scientific and commercial information available, and in coordination with fishery scientists, managers, other resource managers, and other interested parties and no such violation of law was revealed (EA, sections 1.5, 2.1.3, 5.3 and 5.4). NMFS also provided additional opportunity for public review and comment on the specifications and draft EA and received no comments indicating the action threatened a violation of such laws. Additionally, NMFS evaluated the action for compliance with the Magnuson-Stevens Act, the Endangered Species Act, and the Marine Mammal Protection Act, and other applicable State and federal laws (EA, sections 4 and 5).

16) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

No. In section 4.8 of the EA, NMFS evaluated the potential for cumulative effects of the action on target and non-target stocks, considering the specification of a multi-year ACL and AM for MHI Deep 7 bottomfish, the related ACL and AM specifications for MHI non-Deep7 bottomfish and other Hawaii FEP fisheries, foreseeable future federal fishery management actions, other NOAA actions, climate change, and other considerations (EA, sections 4.8.5, 4.8.6 and 4.8.7). The analysis found that the federal action is not expected to result in cumulative impacts that could have a substantial effect on target and non-target species.

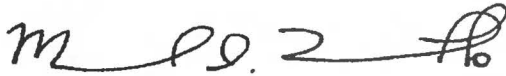
Please also see answers to questions #2, and #11 above.

Other Findings

NMFS considered the effects of this action on climate change, and climate change impacts on the feasibility of the proposed action (EA, section 4.8.7). We do not expect climate change to adversely affect the effectiveness of the ACL and AM specifications in providing for sustainable levels of fishing for BMUS. Recent catches relative to the current estimates of MSY and OFL informed the development of the ACL and AM (EA, section 2.1.4). Monitoring of the fishery will continue and, if stocks are being affected as a result of climate change, the ACL and other management measures can be adjusted to reduce fishing impacts on stocks. We do not expect the action to result in a change to the manner in which the fisheries are conducted, so no change in greenhouse gas emissions is expected.

Determination

Based on the information in this document and the EA, I have determined that the impact of implementing this action will not significantly impact the quality of the human environment. We have addressed all beneficial and adverse impacts of the action to reach the conclusion of no significant impact. Accordingly, the preparation of an Environmental Impact Statement for this action is not necessary.



Michael D. Tosatto
Regional Administrator

MAY 14 2015

Date