

**Proposed Rebuilding Plan for the American Samoa Bottomfish Fishery  
Including a Draft Environmental Assessment and Regulatory Impact Review**

(RTID 0648-XXXX)

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## Abstract

The National Marine Fisheries Service (NMFS) proposes to implement a rebuilding plan for the bottomfish multi-species stock complex in American Samoa with an annual catch limit (ACL), accountability measure (AM), and performance standard, or fishery closure, for the bottomfish fishery. The Western Pacific Regional Fishery Management Council (Council) developed the rebuilding plan in coordination with NMFS, the American Samoa Department of Marine and Wildlife Resources (DMWR), fishermen, and other interested and affected parties. The Council initiated development of the rebuilding plan due to new information about the American Samoa bottomfish fishery from the 2019 benchmark stock assessment (Langseth et al. 2019) that found the bottomfish stock complex is overfished and experiencing overfishing. NMFS adopted the findings of the assessment and notified the Council of the change in stock status in February 2020 (85 FR 26940, May 6, 2020).

When NMFS determines that a fishery is overfished or experiencing overfishing, Section 304(e) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and implementing regulations at 50 CFR 600.310(j) require the Council to develop a long-term plan to end overfishing and rebuild the stock. This rebuilding plan must be implemented within two years of the notification that a fishery is in an overfished condition or experiencing overfishing. Also, the rebuilding plan must be developed by the Council and should be submitted to NMFS within 15 months of the notification of overfishing or an overfished designation to allow sufficient time for NMFS to implement the plan. The rebuilding plan must specify a time for rebuilding that is as short as possible, considering the status of the biology of the affected stock(s), the needs of the fishing communities, and the interaction of the stock with the marine ecosystem, and generally may not exceed 10 years.

On February 10, 2020, NMFS notified the Council of its determination that the American Samoa bottomfish fishery, which is managed under the American Samoa Archipelago Fishery Ecosystem Plan (FEP), had a change in status based on the results of the most recent benchmark stock assessment for the fishery (Langseth et al. 2019). The stock assessment was produced by NMFS Pacific Islands Fisheries Science Center (PIFSC) using data through 2017 and showed that the American Samoa multi-species bottomfish complex, which includes 11 species of bottomfish management unit species (BMUS), is both overfished and experiencing overfishing. The Council began the process of developing a rebuilding plan immediately upon notification of the change in the stock status. On November 1, 2019, the Council requested that NMFS develop an interim management measure for the American Samoa bottomfish fishery while the Council works to develop the rebuilding plan. The Council requested the interim management measure due to concerns about the economic, social, and cultural impacts of immediately implementing a catch limit much lower than recent catch levels. NMFS implemented an interim catch limit (ICL) of 13,000 lb for 2020 and 2021 to reduce overfishing in the fishery while minimizing socio-economic impacts to American Samoa fishing communities. The ICL under the interim measure was specified by NMFS on November 16, 2020 (85 FR 73003) and was in place for 180 days until May 17, 2021. On June 21, 2021 (86 FR 32361), the ICL was extended until an additional 185 days, pursuant to Magnuson-Stevens Act section 305(c), while the rebuilding plan is finalized, and the rebuilding plan would be implemented to immediately replace the interim measure on November 18, 2021.

The BMUS stock complex around American Samoa occurs in both territorial waters (generally from the shoreline to three nautical miles offshore) and Federal waters (the Exclusive Economic Zone, generally from three to 200 nautical miles offshore). The benchmark stock assessment (Langseth et al. 2019) considered catch from both territorial and Federal waters in its finding that the American Samoa bottomfish stock complex is both overfished and experiencing overfishing, but, assuming that the distribution of bottomfish habitat is consistent with the amount of BMUS catch around the territory, catch in Federal waters likely accounts for only 15 percent of total catch of BMUS around American Samoa. The Council and NMFS only have the authority to implement fishery management regulations in Federal waters, and the American Samoa Government has discretion to implement management complementary to Federal action in its territorial waters.

Biomass projections from PIFSC indicate that 5,000 lb of annual bottomfish catch would allow the American Samoa bottomfish stock complex to have a greater than 50 percent chance of rebuilding its biomass at maximum sustainable yield ( $B_{MSY}$ ) in 10 years, which is the maximum amount of time allowed for rebuilding to occur for an overfished stock according to the Magnuson-Stevens Act. The projections also show that 1,500 lb of annual bottomfish catch, which is the highest amount of catch that would allow the American Samoa bottomfish stock complex to rebuild in the same time frame as in the absence of fishing mortality, would result in greater than a 50 percent probability that the stock complex rebuilds to its  $B_{MSY}$  in eight years. Thus, in the complete absence of fishing mortality (i.e., 0 lb of annual catch), the stock complex would have a greater than 50 percent probability of rebuilding to its  $B_{MSY}$  also in eight years. The Council and NMFS only have the authority to manage fishing in Federal waters, so a scenario where harvest is completely restricted to adhere any of these catch levels would require additional territorial action to prohibit fishing for BMUS in territorial waters. If the American Samoa Government chooses not to implement complementary management with the Federal action, a no-harvest scenario for the bottomfish stock complex is not realistically achievable. With the lack of parallel management by the territory, 10,784 lb would be the expected level of annual catch in the event of a closure of the fishery in Federal waters for a full fishing year due to continued fishing in territorial waters, and, under this level of annual harvest, the stock complex would not be likely to rebuild in 10 years. Consistent with this information, the Council is considering three action alternatives:

- implementation of a 1,500 lb ACL with an in-season AM and performance standard,
- implementation of a 5,000 lb ACL with an in-season AM and performance standard, or
- a temporary moratorium on bottomfish fishing in Federal waters around American Samoa during the rebuilding plan. There would be no AM associated with fishery closure because catch would not need to be tracked towards a catch limit in-season, but a reopening mechanism would be implemented such that the closure would be ended if a coordinated management approach that would limit fishing mortality to allow rebuilding within statutory requirements is implemented. NMFS and the Council would continue to monitor annual catch to evaluate rebuilding progress during the closure.

Whether rebuilding can be achieved under the different alternatives depends on the American Samoa Government implementing management in its waters to complement this Federal action due to the likelihood of fishing effort being displaced from Federal waters to territorial waters if

restrictions in territorial waters do not occur. NMFS does not currently have information to determine the level of displacement that may occur under this scenario.

This rebuilding plan would be in effect starting November 18, 2021 until such time that overfishing is no longer occurring and the stock complex is determined to have rebuilt to its  $B_{MSY}$ . Under existing management in accordance with the FEP, the fishing year for bottomfish in American Samoa begins January 1 and ends December 31, and catch projections from PIFSC coincide with this cycle. Bottomfish catches from both territorial and Federal waters around American Samoa would be counted towards a catch limit (if implemented) and continue to be monitored in the event of a complete Federal fishery closure. NMFS will provide the public an opportunity to provide input and comment on this draft environmental assessment (EA) and the proposed rule when the proposed rule is published in the *Federal Register*.

This draft EA was prepared to evaluate the potential environmental effects of alternative management measures, and it includes a description of the information and methods used by NMFS and the Council to develop the proposed management measures. The analysis in the draft EA indicates that each proposed alternative may result significant impacts to the American Samoa fishing community if complementary management with this Federal action is implemented by the American Samoa Government. However, the included analysis also indicates that the proposed alternatives would not be likely to result in large beneficial or adverse effects on target, non-target, or bycatch species, protected species, marine habitats, or fishing communities relative to the environmental baseline if complementary management is not implemented. Additionally, whether rebuilding can be achieved under the various alternatives depends on whether American Samoa implements management in its waters to complement Federal management. If it does, rebuilding under the action alternatives is expected to be achieved within 10 years as required by National Standard 1 of the Magnuson-Stevens Act. If the territory does not implement complementary management, there is likely no action NMFS can take to rebuild the stock within statutory requirements. The likelihood of short-term economic and social impacts to local fishing communities is also dependent on the territory's decision to implement complementary management.

This EA is being prepared using the 2020 Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) Regulations. The effective date of the 2020 CEQ NEPA Regulations was September 14, 2020, and reviews begun after this date are required to apply the 2020 regulations unless there is a clear and fundamental conflict with an applicable statute. 85 Fed. Reg. at 43372-73 (§§ 1506.13, 1507.3(a)). The development of this EA began after September 14, 2020, and accordingly proceeds under the 2020 regulations.

### **How to Comment**

NMFS is seeking public comment on the draft EA for the rebuilding plan and Regulatory Impact Review. The reader may find instructions on how to comment and obtain a copy of this draft EA and proposed temporary rule by searching on RIN 0648-xxxx at [www.regulations.gov](http://www.regulations.gov), or by contacting the responsible officials at one of the above addresses.

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## ABBREVIATIONS

ABC – Acceptable Biological Catch  
ACL – Annual Catch Limit  
ACT – Annual Catch Target  
AM – Accountability Measure  
ASAC – American Samoa Administrative Code  
B – Biomass  
 $B_{MSY}$  – Biomass at Maximum Sustainable Yield  
BMUS – Bottomfish Management Unit Species  
BSIA – Best Scientific Information Available  
CFR – Code of Federal Regulations  
CNMI – Commonwealth of the Northern Mariana Islands  
DMWR – American Samoa Department of Marine and Wildlife Resources  
DPS – Distinct Population Segment  
EA – Environmental Assessment  
ECS – Ecosystem Component Species  
EEZ – Exclusive Economic Zone  
EFH – Essential Fish Habitat  
ESA – Endangered Species Act  
F – Fishing Mortality  
 $F_{MSY}$  – Fishing Mortality at Maximum Sustainable Yield  
 $F_{rebuild}$  – the Fishing Mortality associated with achieving  $T_{target}$   
FEP – Fishery Ecosystem Plan  
fm – Fathoms  
FMP – Fishery Management Plan  
FONSI – Finding of No Significant Impact  
FQ – FONSI Question  
FR – Federal Register  
GCA – Guam Code Annotated  
GPS – Global Positioning System  
H – Harvest Rate  
 $H_{CR}$  – Harvest Rate associated with overfishing as determined by the Harvest Control Rule  
HAPC – Habitats of Particular Concern  
lb – Pounds  
LOF – List of Fisheries  
M – Natural Mortality  
MFMT – Maximum Fishing Mortality Threshold  
MMPA – Marine Mammal Protection Act  
MPA – Marine Protected Area  
Magnuson-Stevens Act – Magnuson-Stevens Fishery Conservation and Management Act  
MSST – Minimum Stock Size Threshold  
MSY – Maximum Sustainable Yield  
MUS – Management Unit Species  
NA – Not Applicable  
NEPA – National Environmental Policy Act



nm – Nautical Miles  
NMFS – National Marine Fisheries Service  
NOAA – National Oceanic and Atmospheric Administration  
OFL – Overfishing Limit  
OLE – Office of Law Enforcement  
P\* – Probability or Risk of Overfishing  
PIFSC – NMFS Pacific Islands Fisheries Science Center  
PIRO – NMFS Pacific Islands Regional Office  
RIN – Regulatory Identification Number  
RIR – Regulatory Impact Review  
SAFE report - Stock Assessment and Fishery Evaluation report  
SDC – Status Determination Criteria  
SEEM – Social, Economic, and Ecological Considerations, or Management Uncertainty  
SSC – Scientific and Statistical Committee  
 $T_{\max}$  – the maximum Time for rebuilding a stock to its MSY biomass level  
 $T_{\min}$  – the amount of Time a stock is expected to take to rebuild to its MSY biomass level in the absence of fishing mortality  
 $T_{\text{target}}$  – the specified Time period for rebuilding a stock  
USCG – U.S. Coast Guard  
USFWS – U.S. Fish and Wildlife Service  
WPacFIN – Western Pacific Fisheries Information Network  
WPRFMC (or Council) – Western Pacific Regional Fishery Management Council  
WPSAR – Western Pacific Stock Assessment Review

# 1 INTRODUCTION

## 1.1 Background Information

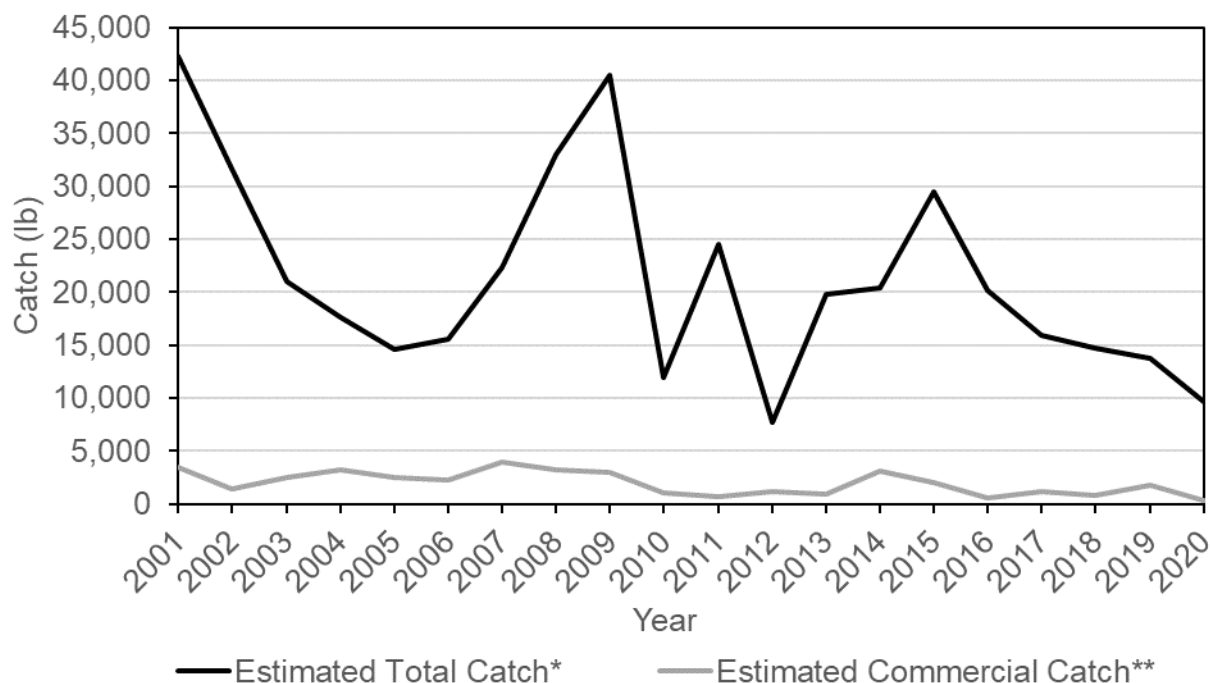
The Fishery Ecosystem Plan for the American Samoa Archipelago (American Samoa FEP) specifies the management measures for the bottomfish complex within Federal waters of American Samoa (WPRFMC 2009). The bottomfish fishery primarily harvests bottomfish management unit species (BMUS), an assemblage or complex of 11 species that include emperors, snappers, groupers, and jacks (Table 1). The BMUS complex occurs in waters subject to either territorial or Federal jurisdiction. The Western Pacific Fishery Management Council (Council) and the National Marine Fisheries Service (NMFS) manage the BMUS fishery in Federal waters (i.e., the U.S. Exclusive Economic Zone, or EEZ, 3 to 200 nm from shore) around American Samoa in accordance with the American Samoa FEP, the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and implementing regulations at Title 50 Code of Federal Regulations, Part 665 (50 CFR 665). The territory of American Samoa manages the BMUS fishery in territorial waters (i.e., 0 to 3 nm from shore) and has discretion to implement management in its waters that complements management in Federal waters. The American Samoa bottomfish stock complex was determined to be overfished and experiencing overfishing in 2020 accounting for catch from both territorial and Federal waters. NMFS proposes to implement a rebuilding plan for the bottomfish stock complex.

**Table 1. List of BMUS in American Samoa.**

Scientific Name	Common Name(s)	Family
<i>Aphareus rutilans</i>	Red snapper, silvermouth, lehi	Lutjanidae
<i>Aprion virescens</i>	Gray snapper, jobfish	Lutjanidae
<i>Caranx lugubris</i>	Black trevally, jack	Carangidae
<i>Etelis carbunculus</i>	Red snapper, ehū	Lutjanidae
<i>Etelis coruscans</i>	Red snapper, onaga	Lutjanidae
<i>Lethrinus rubrioperculatus</i>	Redgill emperor	Lethrinidae
<i>Lutjanus kasmira</i>	Blueline snapper	Lutjanidae
<i>Pristipomoides filamentosus</i>	Pink snapper, paka	Lutjanidae
<i>Pristipomoides flavipinnis</i>	Yelloweye snapper	Lutjanidae
<i>Pristipomoides zonatus</i>	Flower snapper, gindai	Lutjanidae
<i>Variola louti</i>	Lunartail grouper, lyretail grouper	Serranidae

In the mid-1980s, the American Samoa bottomfish fishery included a maximum of 50 vessels that landed over 100,000 lb of bottomfish annually and accounted for nearly half of total catch of the territory's commercial fisheries (Levine and Allen 2009; WPRFMC 2021). By 1988, bottomfish fishing in American Samoa began to decline as skilled commercial fishermen shifted focus from bottomfish fishing to trolling and small-scale longlining for pelagic species like albacore (WPRFMC 2021). Currently, the American Samoa bottomfish fishery is relatively small and primarily non-commercial, but it is still of importance to the local economy as well as from socio-cultural and food security standpoints (WPRFMC 2009; WPRFMC 2021). In 2020, the most recent year for which catch data are available, the total estimated annual catch of American Samoa BMUS was 9,592 lb while the estimated commercial catch from the American

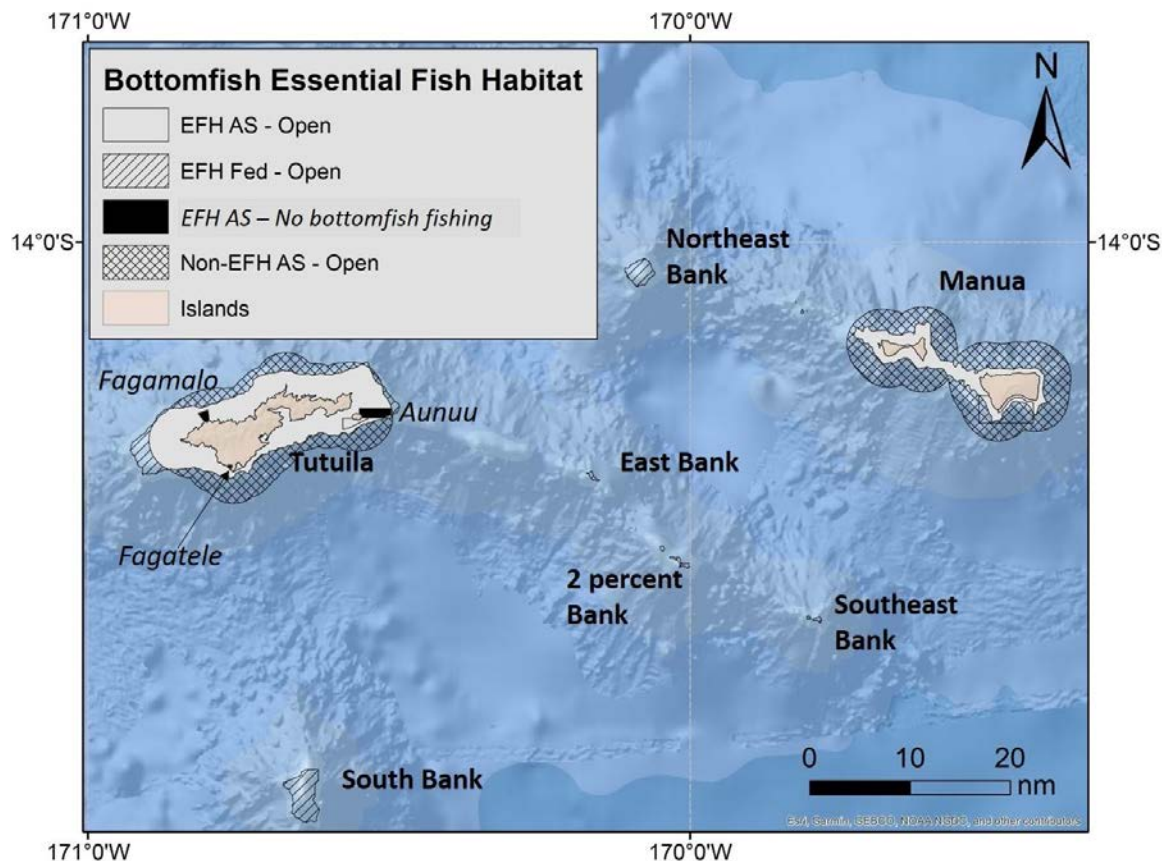
Samoa Department of Marine and Wildlife Resources (DMWR) commercial receipt book system was just 307 lb (Fig. 1). The difference between the total estimated catch and estimated commercial catch is assumed to be the non-commercial component of the fishery.



**Figure 1. Total annual catch of BMUS estimated by the Pacific Islands Fisheries Science Center (PIFSC) Stock Assessment Program (SAP) using creel survey data and estimated commercial catch of BMUS from the DMWR commercial receipt book program for 2001-2020.**

(Source: \*[Reference PIFSC SAP memo] and \*\*WPRFMC 2021)

Since 2012, the Council and NMFS have managed the American Samoa bottomfish fishery in Federal waters with annual catch limits (ACL) and accountability measures (AM) for the BMUS stock complex. The ACLs and AMs were designed to prevent overfishing and ensure the fishery was sustainably managed (see WPRFMC 2011). Bottomfish habitat is found in both Federal and territorial waters (0 to 3 nm from shore; Fig. 2) and catches from both territorial waters and Federal waters are counted towards the ACL. Existing data reporting systems do not provide quantitative estimates of how much bottomfish catch comes from territorial versus Federal waters, and it is not possible to estimate catch of individual species from specific offshore banks or fishing grounds. In no prior year has the American Samoa bottomfish fishery attained or exceeded the implemented ACL, and up until the most recent stock assessment in 2019, the fishery was considered to be harvesting BMUS sustainably (Yau et al. 2016; NMFS 2017). The territory of American Samoa manages its bottomfish fishery with mandatory commercial licenses and invoice reports, gear restrictions, voluntary non-commercial catch reporting, and no separate catch limit from the Federally-implemented ACL. The American Samoa DMWR is currently developing a territorial fishery management plan (FMP) that may include provisions to better control fishing mortality for BMUS within 0 to 3 nm from shore.



**Figure 2. Map of Essential Fish Habitat (EFH) for bottomfish around American Samoa in Federal (Fed) and territorial (AS) waters.**

## 1.2 Proposed Action

Under the proposed action, the Council would submit and NMFS would implement a rebuilding plan for the American Samoa bottomfish fishery consistent with Magnuson-Stevens Act section 304(e) and implementing regulations at 50 CFR 600.310(j). The proposed rebuilding plan would either close the fishery in Federal waters or set a Federal ACL for American Samoa BMUS of 1,500 lb or 5,000 lb at the stock complex level in late 2021 until such time that the stock complex is determined to be rebuilt (i.e., when the stock complex biomass is above the biomass necessary to maintain the Maximum Sustainable Yield,  $B_{MSY}$ ). While NMFS would account for catch in both territorial and Federal waters when assessing catch against the ACL, the Federal catch limit would not limit catch in territorial waters. As an in-season AM, if NMFS projects that the ACL will be attained, Federal waters would be closed to bottomfish fishing for the rest of the fishing year, as NMFS can only implement the AM in Federal waters if the ACL is attained. As a higher performance standard, if the ACL is exceeded during any fishing year over the course of the rebuilding plan, NMFS would close the fishery in Federal waters until a coordinated management approach is developed that ensures catch in both Federal and territorial waters can be maintained at levels that allow the stock to rebuild, which would act as an additional reopening mechanism. NMFS and the Council would review and amend the rebuilding plan as necessary using the best scientific information available to allow the reopening of the fishery in Federal waters consistent with rebuilding requirements specified under National Standard 1 of

the Magnuson-Stevens Act such that a reasonable method of restricting fishing mortality at the level needed to rebuild in the target timeframe is implemented. This reopening mechanism would also apply in the event of a complete fishery closure.

### **1.3 Purpose and Need**

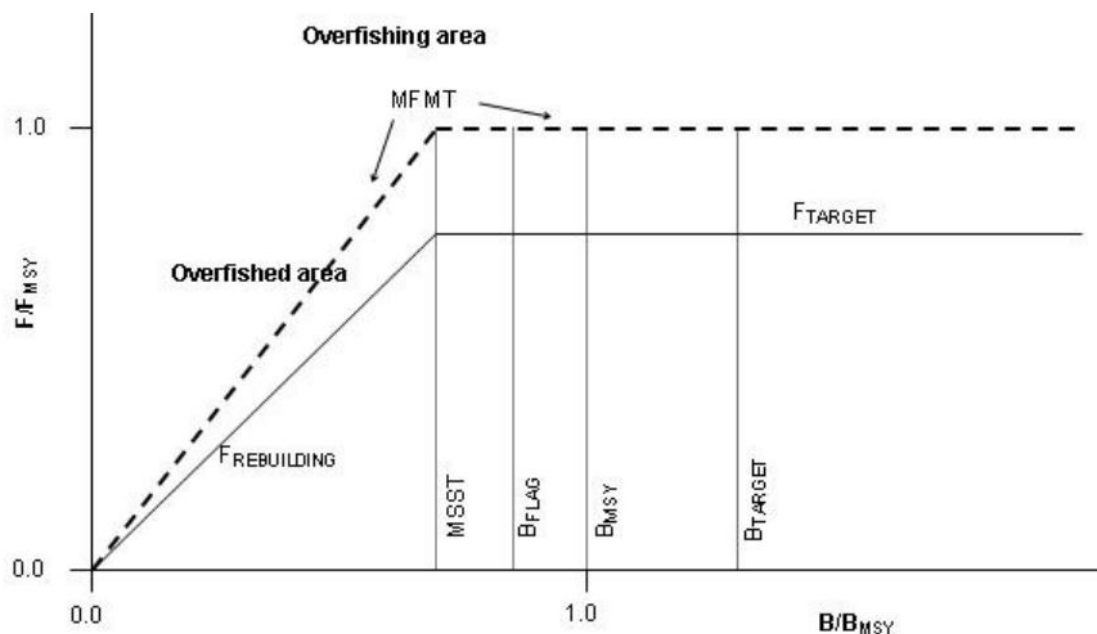
The purpose of this action is to establish a rebuilding plan for American Samoa BMUS, as required by the Magnuson-Stevens Act section 304(e) and implementing regulations at 50 CFR 600.310(j). The need for this action is to end overfishing and rebuild the bottomfish stock complex. NMFS notified the Council that the stock is overfished and that overfishing is occurring on February 10, 2020. In order to comply with provisions of the Magnuson-Stevens Act, a rebuilding plan must be implemented within two years (i.e., by February 10, 2022) and, if approved, remain in effect until such time that the stock complex is determined to be at  $B_{MSY}$ .

### **1.4 Action Area**

The fishery management area for the American Samoa FEP bottomfish fishery includes the EEZ around American Samoa. However, the action area also encompasses those areas in which fishing for BMUS occurs in territorial waters of American Samoa (Fig. 2). Bottomfish fishing primarily occurs in waters from the surface to 230 m depth around the islands and offshore banks of American Samoa, including Tutuila, Aunu'u, and the Manu'a Islands (i.e., Ta'ū and Ofu-Olosega) approximately 54 nm east of Tutuila. As of June 3, 2013, commercial fishing is prohibited in Rose Atoll Marine National Monument (78 FR 32996), which is approximately 80 nm east of Ta'ū. The fishery does not fish in areas closed to fishing around the islands of Tutuila and Aunu'u, which include several community and territorial marine protected areas (MPAs), including at Fagamalo and several National Marine Sanctuary Management Areas (Fig. 2). Considering areas designated by the American Samoa Community-Based Management Program (pursuant to the American Samoa Administrative Code, or ASAC, § 24.1001 through 24.1029), MPAs occupy approximately 35,203 km<sup>2</sup> of across 27 sites in the territory (Raynal et al. 2016), though many of them are nearshore.

### **1.5 Benchmark Stock Assessment and Status of the Stock**

Under the Council's FEP for American Samoa (WPRFMC 2009), overfishing of bottomfish occurs when the fishing mortality rate ( $F$ ) is greater than the fishing mortality rate for maximum sustainable yield ( $F_{MSY}$ ) for one year or more; this is the Maximum Fishing Mortality Threshold (MFMT) and is expressed as a ratio,  $F/F_{MSY} = 1.0$  (Fig. 3). Thus, if the  $F/F_{MSY}$  ratio exceeds 1.0 for one year or more, overfishing is occurring. A stock is considered to be overfished when its biomass ( $B$ ) declines below the level necessary to produce MSY on a continuing basis and can be expressed as the ratio  $B/B_{MSY} < 1-M$ , where  $M$  is the natural mortality of the stock. Table 2 presents definitions of these commonly used terms alongside several others.



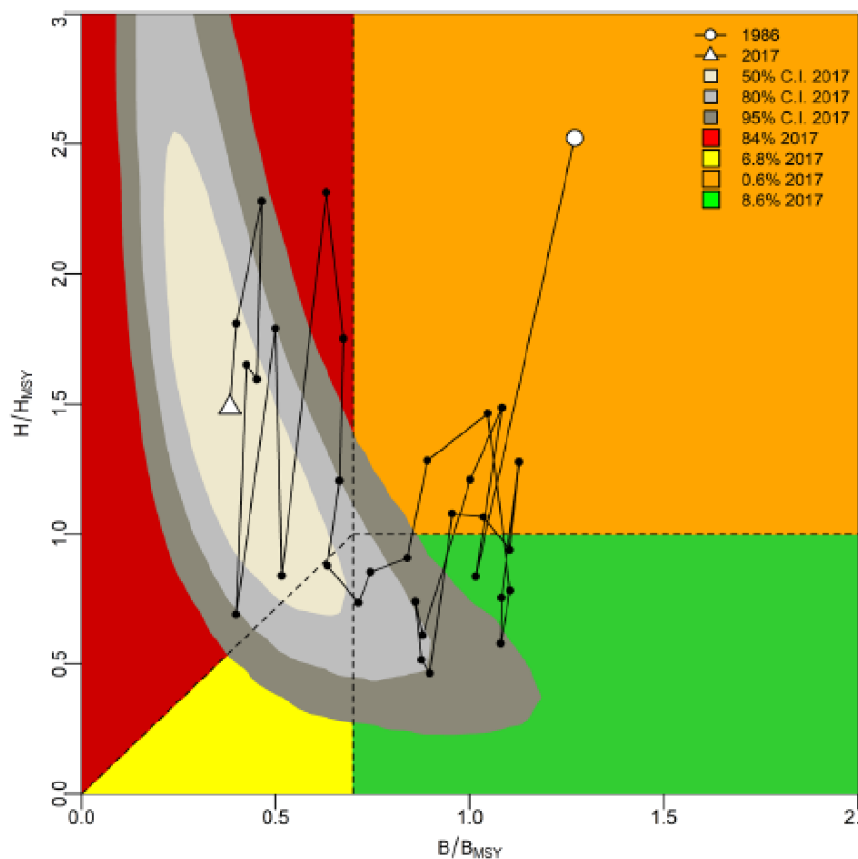
**Figure 3. Example MSY, target, and rebuilding control rules.**

(Source: Restrepo et al. 1998 and WPRFMC 2009)

**Table 2. Commonly used fishery stock assessment terms.**

Term	Definition
B	Biomass or the amount of fish estimated in the stock.
F	The rate at which a fish stock is caught, which includes targeted harvest and non-targeted (bycatch) harvest.
MSY	The largest long-term average catch, or yield, that can be taken from a stock year after year under prevailing conditions.
$F_{MSY}$	The rate of fishing mortality that, if applied over the long term, would result in catching the MSY.
$B_{MSY}$	The long-term average size of the stock that would be achieved by fishing at a constant fishing mortality rate equal to $F_{MSY}$ .
OFL	A catch level that corresponds to the stock's MSY. Fishing above the overfishing limit would likely result in overfishing and jeopardize the stock's capacity to produce MSY.
$T_{min}$	The minimum amount of time the stock is expected to take to rebuild to its $B_{MSY}$ in the absence of any fishing mortality, where "expected" refers to a 50 percent chance of attaining $B_{MSY}$ .
$T_{max}$	The maximum amount of time needed to rebuild a stock to its $B_{MSY}$ .
$T_{target}$	The time period for rebuilding the stock that is considered to be as short a time as possible. $T_{target}$ cannot exceed $T_{max}$ or 10 years.
MFMT	The rate of fishing mortality above which a stock is declared to be experiencing overfishing (i.e., fish are being removed at too rapid a rate). MFMT may not exceed $F_{MSY}$ .
MSST	The biomass level that a stock can decline to before being declared overfished (stock abundance is too low) and requiring a rebuilding plan. It can be no lower than 50% of the $B_{MSY}$ .
Frebuild	The fishing mortality rate that is required to rebuild the stock.

In August 2019, NMFS Pacific Islands Fisheries Science Center (PIFSC) completed a new benchmark stock assessment for the bottomfish fisheries of Guam, the Commonwealth of the Northern Mariana Islands (CNMI), and American Samoa (Langseth et al. 2019). The assessment was conducted as a benchmark, indicating that all components of the assessment analyses were re-evaluated by PIFSC and several changes were made relative to previous assessments of the bottomfish fisheries. The assessment results revealed that the bottomfish stock complex harvested in Federal waters off of American Samoa and in American Samoa territorial waters is subject to overfishing and is overfished based on the stock status determination criteria (SDC) specified in the American Samoa FEP (WPRFMC 2009). This is the first assessment that indicated the stock is overfished or subject to overfishing (Fig. 4).



**Figure 4. Kobe plot of relative biomass and relative exploitation rate from the best fitting production model for American Samoa bottomfish from 1982 to 2017.**

(Source: Figure 39 in Langseth et al. 2019)

The new benchmark stock assessment differs from previous assessments in several ways. The assessment included additional years of fishing and catch data, used new species lists<sup>1</sup>, filtered catch data based on gear, standardized the catch per unit effort (CPUE) for covariates that could

<sup>1</sup> On February 8, 2019, NMFS implemented the Council's recommendation to modify the lists of species in American Samoa, the CNMI, Guam, and Hawaii that are included as BMUS (84 FR 2767). Some species were reclassified as ecosystem component species (ECS) because they were not targeted, were a minor component of the fishery, and were not in need of management. The 2019 stock assessment analyzed the revised stock complexes. In American Samoa, this reduced the number of species in the stock complex from 17 to 11 (Table 1).

affect the catch rate, and applied a Bayesian state space surplus production model<sup>2</sup> (Langseth et al. 2019). Based on information contained in the 2019 assessment, the average catch of American Samoa BMUS combined from both territorial and Federal waters from 2013 to 2017 was 21,139 lb. These numbers included catch of BMUS reported at the species level, plus an estimate of BMUS catch reported under more general categories (e.g., snapper, emperor, deep bottomfish). Estimated total catch data for 2018 through 2020 are available in the Council's annual Stock Assessment and Fishery Evaluation (SAFE) Report for the American Samoa Archipelago (WPRFMC 2021) but are not directly comparable.

The assessment information estimated the long-term maximum sustainable yield (MSY) in the fishery at an annual catch of 28,800 lb (Table 3), which is lower than the estimate of MSY in the previous stock assessment update for American Samoa bottomfish (Yau et al. 2016). Results of projected probabilities of overfishing for American Samoa bottomfish are presented within the assessment, which assumed that a six-year ACL set for the stock would be harvested in its entirety for its duration. The projections indicate that total catch of no more than 8,000 lb per year would result in a 50 percent probability of overfishing in 2020 through 2025 (Table 4). Therefore, to end overfishing in the fishery, the total catch of BMUS in American Samoa, in both Federal and territorial waters, must be limited to no more than 8,000 lb in each calendar year. This overfishing limit (OFL) of 8,000 lb is much lower than the MSY because the most recent biomass (B) estimates are substantially lower than  $B_{MSY}$ , the biomass needed to produce MSY (i.e.,  $B_{2017}/B_{MSY} = 0.38$ ; see Table 23 in Langseth et al. 2019).

**Table 3. Stock assessment parameters for the American Samoa BMUS complex.**

Parameter	Value	Notes	Status
MSY	28.8 (16.4-55.9)	Expressed in 1,000 lb (with 95% confidence interval)	
$H_{2017}$	0.15	Expressed in percentage	
$H_{CR}$	0.107 (0.044-0.228)	Expressed in percentage (with 95% confidence interval)	
$H_{2017}/H_{CR}$	2.75		Overfishing occurring
$B_{2017}$	102.6	Expressed in 1,000 lb	
$B_{MSY}$	272.8 (120.8-687.4)	Expressed in 1,000 lb (with 95% confidence interval)	
$B_{2017}/B_{MSY}$	0.38		Overfished

(Source: Langseth et al. 2019)

<sup>2</sup> This type of fishery production model is used to assess the biomass and exploitation level of marine populations in situations where age and size information are unavailable. It assumes that population growth, which translates to yield or production, is greatest at an intermediate level of biomass. The excess production at this point is the maximum sustainable yield.



**Table 4. Probability of overfishing corresponding to bottomfish catch (in 1000 lb) by year. The highlighted number indicates the catch amount (8,000 lb) that would result in a 50 percent probability of overfishing in 2020 through 2025. Catch values for a given probability of overfishing in a given year assume equal catch in all previous years.**

Probability of overfishing ( $H/H_{CR}>1$ ) in terminal year	2020	2021	2022	2023	2024	2025	Probability of overfishing ( $H/H_{CR}>1$ ) in terminal year	2020	2021	2022	2023	2024	2025
0.01	0	0	0	0	0	0	0.26	1	1	1	1	2	2
0.02	0	0	0	0	0	0	0.27	1	1	1	1	2	2
0.03	0	0	0	0	0	0	0.28	1	1	1	2	2	2
0.04	0	0	0	0	0	0	0.29	1	1	1	2	2	2
0.05	0	0	0	0	0	0	0.30	1	1	2	2	2	3
0.06	0	0	0	0	0	0	0.31	1	1	2	2	2	3
0.07	0	0	0	0	0	0	0.32	1	1	2	2	3	3
0.08	0	0	0	0	0	0	0.33	1	2	2	2	3	3
0.09	0	0	0	0	0	0	0.34	1	2	2	3	3	3
0.10	0	0	0	0	0	0	0.35	1	2	2	3	3	4
0.11	0	0	0	0	0	0	0.36	1	2	2	3	3	4
0.12	0	0	0	0	0	0	0.37	2	2	3	3	4	4
0.13	0	0	0	0	0	0	0.38	2	2	3	3	4	4
0.14	0	0	0	0	0	0	0.39	2	2	3	3	4	4
0.15	0	0	0	0	0	0	0.40	2	3	3	4	4	5
0.16	0	0	0	0	0	0	0.41	2	3	3	4	4	5
0.17	0	0	0	0	0	1	0.42	2	3	3	4	5	5
0.18	0	0	0	0	1	1	0.43	2	3	4	4	5	6
0.19	0	0	0	0	1	1	0.44	3	3	4	5	5	6
0.20	0	0	0	1	1	1	0.45	3	3	4	5	6	6
0.21	0	0	1	1	1	1	0.46	3	4	4	5	6	6
0.22	0	0	1	1	1	1	0.47	3	4	5	5	6	7
0.23	0	0	1	1	1	1	0.48	3	4	5	6	6	7
0.24	0	1	1	1	1	2	0.49	3	4	5	6	7	7
0.25	0	1	1	1	1	2	0.50	4	5	5	6	7	8

(Source: Table 20 in Langseth et al. 2019)

The average catch of American Samoa BMUS from 2018 to 2020 was 12,687 lb (Table 5), which exceeds the OFL by nearly 59 percent. There has been one year (i.e., 2012) since ACLs were implemented in 2012 that annual catch did not exceed the OFL of 8,000 lb. The standing stock biomass in 2025 associated with this OFL is 122,400 lb with a harvest rate of 6 percent in 2025, and the probability that the stock would be overfished in that year is 64 percent (see Table 19 in Langseth et al. 2019).

**Table 5. Annual estimated BMUS catch (lb) in American Samoa from 2001-2020.**

Year	Estimated Total Catch (lb)*	Estimated Commercial Catch (lb)**
2001	42,301	3,447
2002	31,657	1,448
2003	21,039	2,511
2004	17,622	3,233
2005	14,541	2,490
2006	15,569	2,203
2007	22,359	4,001

<b>Year</b>	<b>Estimated Total Catch (lb)*</b>	<b>Estimated Commercial Catch (lb)**</b>
2008	32,965	3,171
2009	40,446	3,035
2010	11,978	1,084
2011	24,569	711
2012	7,688	1,161
2013	19,740	882
2014	20,352	3,140
2015	29,511	2,047
2016	20,181	566
2017	15,913	1,131
2018	14,756	838
2019	13,714	1,749
2020	9,592	307
<b>Three Year Average (2018-2020)</b>	<b>12,687</b>	<b>965</b>

(Source: \*\*[Reference PIFSC SAP memo] and \*\*\*WPRFMC 2021)

The stock assessment findings were presented by PIFSC to the Council at its 180<sup>th</sup> meeting on October 22-24, 2019 in Pago Pago, American Samoa (84 FR 53685, October 8, 2019), and showed that BMUS in American Samoa are overfished and undergoing overfishing. As required under National Standard 2 of the Magnuson-Stevens Act (50 CFR 600.315), the 2019 assessment was subjected to an independent review by a panel of independent fishery science experts (i.e., a Western Pacific Stock Assessment Review, or WPSAR), who concurred that the changes to the assessment process were appropriate, improved on the previous assessments, and provided scientifically sound management advice (Martell et al. 2019). The WPSAR panel reports and the peer-reviewed benchmark stock assessment were received by the Council's Scientific and Statistical Committee (SSC) at its 134<sup>th</sup> meeting on October 15-17, 2019 in Honolulu, Hawaii. Though the SSC expressed its concerns regarding the impacts of the data used for the stock assessment on its results, it endorsed the stock assessment for management purposes.

On January 10, 2020, PIFSC sent a memorandum to the Council stating that NMFS determined the 2019 benchmark stock assessment to be the best scientific information available (BSIA) consistent with National Standard 2. On February 6, 2020, NMFS determined that the American Samoa bottomfish stock is overfished and subject to overfishing. On February 10, 2020, the NMFS Pacific Islands Regional Office (PIRO) issued a notification informing the Council of this determination, which included the basis for the change in stock status and outlined the obligations of the Council to take immediate action to end overfishing and to implement a plan to rebuild the stock within two years as stipulated by the Magnuson-Stevens Act.

## 1.6 Current Management

In response to the assessment results and notification from NMFS, at its 180<sup>th</sup> meeting in Pago Pago, American Samoa, the Council requested that NMFS implement an interim measure to reduce overfishing consistent with provisions of section 304(e)(6) and section 305(c) of the

Magnuson-Stevens Act. The Council noted that immediately ending overfishing (i.e., limiting total BMUS catch to 8,000 lb) is expected to result in severe economic and cultural impacts to community members who use bottomfish resources for commercial, subsistence, religious, and cultural purposes. Therefore, the Council requested that the interim measure include a Federal catch limit that reduces overfishing while increasing biomass in 2020. NMFS published a final rule for the interim measure on November 16, 2020 (85 FR 73003), implementing a 13,000 lb interim catch limit (ICL) and an in-season AM to close the fishery in Federal waters if this ICL was exceeded (NMFS 2020a); on June 21, 2021 (86 FR 32361), this interim measure was extended until November 18, 2021. The level of 13,000 lb for the ICL was selected by PIFSC using estimates of the maximum level of catch that would allow BMUS biomass to increase in calendar years 2020 and 2021 from the surplus production model in the 2019 benchmark stock assessment. Once finalized, this action to implement a rebuilding plan for the American Samoa bottomfish fishery would replace these interim measures.

### **1.7 Magnuson-Stevens Act Rebuilding Process and Requirements**

Pursuant to section 304(e) of the Magnuson-Stevens Act and implementing regulations at 50 CFR 600.310(j), if the Secretary of Commerce (Secretary) determines at any time that a fishery is overfished, overfishing is occurring, or a stock is approaching an overfished condition, the Secretary shall immediately notify the Council and request that action be taken to end overfishing in the fishery and to implement conservation and management measures to rebuild the impacted fish stocks. Upon notification of a stock undergoing overfishing, the Council should immediately begin working with its SSC to ensure that the Acceptable Biological Catch (ABC) is set appropriately to end overfishing. The Council must prepare and NMFS must implement a FMP, plan amendment, or proposed regulations for the fishery within two years to end overfishing and rebuild affected stocks, and Council actions should be submitted to NMFS within 15 months of the initial notification to ensure there is sufficient time to enact the measures. If the Council does not submit one of these items to the Secretary within two years, the Secretary will prepare an FMP or plan amendment and any accompanying regulations to stop overfishing and rebuild affected stocks of fish within nine months.

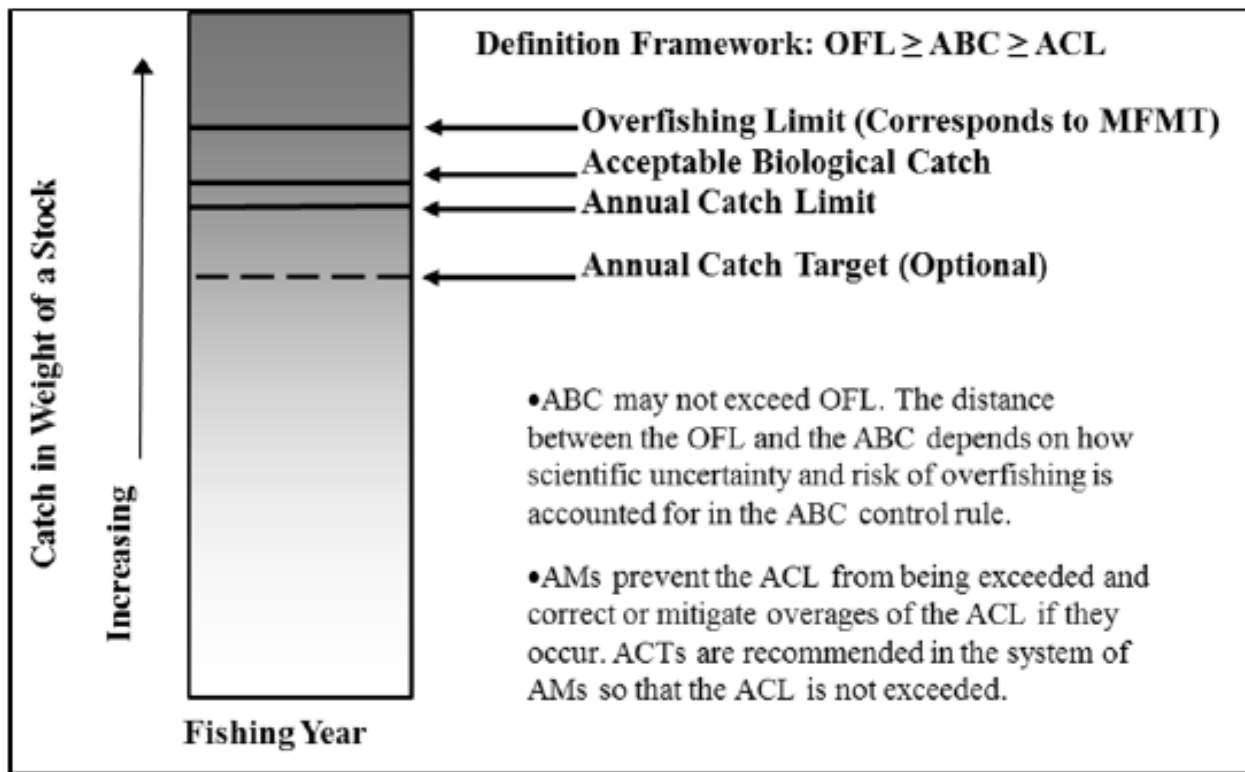
A rebuilding plan must specify a time period for rebuilding the fishery that is as short as possible and does not exceed 10 years, taking into account the status and biology of the overfished stocks, the needs of the fishing communities, and the interaction of the stock with the marine ecosystem. The minimum time for rebuilding a stock ( $T_{\min}$ ) is the amount of time the stock is expected to take to rebuild to its  $B_{\text{MSY}}$  in the absence of any fishing mortality, where “expected” refers to a 50 percent chance of attaining  $B_{\text{MSY}}$  and  $T_{\min}$  is calculated from the first year the rebuilding plan is likely to be implemented. If  $T_{\min}$  is less than 10 years, then the maximum time for rebuilding a stock to its  $B_{\text{MSY}}$  ( $T_{\max}$ ) is 10 years. The target time to rebuild a stock ( $T_{\text{target}}$ ) is the specified time period for rebuilding the stock that is considered to be as short a time as possible and cannot exceed  $T_{\max}$ , and the fishing mortality associated with achieving  $T_{\text{target}}$  is known as  $F_{\text{rebuild}}$ . According to projections provided by PIFSC (see Table 8)  $T_{\min}$  is eight years for the fishery, so  $T_{\max}$  is 10 years and therefore,  $T_{\text{target}}$  cannot exceed 10 years. However, this  $T_{\min}$  value assumes no harvest of the stock complex in both Federal and territorial waters, and this scenario is not realistically achievable if the American Samoa Government does not take action to restrict fishing mortality in its waters. Thus, the feasible  $T_{\min}$  and  $T_{\max}$  are likely greater than eight and 10 years, respectively, if the territory does not implement complementary management with this

Federal action. Additionally, the action prepared to end overfishing and rebuild a stock must allocate both overfishing restrictions and recovery benefits fairly and equitably among sectors of the fishery and, for a fishery managed under an international agreement, reflect traditional participation in the fishery, relative to other nations, by fishermen of the United States.

The Secretary will review rebuilding plans at least every two years to determine whether the plan has resulted in adequate progress towards ending overfishing and rebuilding the affected fish stock. The Secretary may find that adequate progress is not being made if  $F_{\text{rebuild}}$  or the associated ACL is exceeded and AMs are not correcting the operational issue that caused the overage nor addressing any biological consequences to the stock resulting from the overage. A lack of adequate progress may also be found when the rebuilding expectations of a stock are significantly changed due to new and unexpected information about stock status, which will cause the Secretary to notify the Council to develop and implement a new or revised rebuilding plan within two years. Revising rebuilding timeframes is not necessary unless the Secretary determines adequate progress is not being made. If a stock is not rebuilt by  $T_{\text{max}}$ , then the fishing mortality rate should be maintained at its current  $F_{\text{rebuild}}$  or 75 percent of the MFMT, whichever is less, until the stock is rebuilt or the fishing mortality rate is changed as a result of the Secretary finding that adequate progress is not being made.

### **1.8 Overview of ACL and AM Development Process**

Federal regulations at 50 CFR 665.4 (76 FR 37285, June 27, 2011) require NMFS to implement an ACL and AM(s) for all BMUS, as recommended by the Council, based on the best scientific, commercial, and other information available for the fishery. While harvest occurring in both Federal and territorial waters is counted against an ACL, the ACL can only restrict catch in Federal waters unless the territory adopts complementary management to restrict catch in its waters. In accordance with the Magnuson-Stevens Act and the FEP, there are three required elements in the development of an ACL as shown in Figure 5: calculating the ABC, determining an ACL that may not exceed the ABC, and developing AMs. In the first step, the Council's SSC calculates an ABC that is set at or below the stocks OFL. The OFL is an estimate of the catch level above which overfishing is occurring and corresponds with the MFMT. In accordance with Federal regulations at 50 CFR 600.310 implementing National Standard 1 of the Magnuson-Stevens Act, the probability of overfishing ( $P^*$ , pronounced P-star) cannot exceed 50% and should be a lower value. Thus, the ABC is the maximum amount the fishery can catch that provides at least a 50% chance, or better, of not overfishing the stock.



**Figure 5. General relationship between OFL, ABC, and ACL.**

Second, the Council must recommend an ACL that does not exceed the ABC recommended by the SSC. An ACL set below the ABC further reduces the probability that actual catch will exceed the ABC or OFL and result in overfishing. The SSC may reduce the ABC below the OFL considering factors evaluated in a P\* analysis. The Council may then reduce the ACL below the ABC in consideration of social, economic, ecological, and management (SEEM) factors in a SEEM analysis (see [Hospital et al. 2019](#) for SEEM considerations.). While the P\* analysis considers management uncertainty arising from underreporting and misreporting of catch, the SEEM analysis is more forward-looking and considers uncertainty arising from concerns about compliance and/or management capacity.

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 closing the fishery, closing specific areas, changing bag limits, setting an ACT, or other methods to reduce catch. Post-season AMs reduce the ACL and/or annual catch target (ACT) in subsequent years if the ACL is exceeded in order to mitigate potential impacts to fish stocks. Additionally, if any fishery exceeds an ACL more than once in a four-year period, the Council is required to re-evaluate the ACL process for that fishery and adjust the system as necessary to improve its performance and effectiveness in ensuring sustainability of the fishery.

## **1.9 Public Review Process and Involvement**

The Council convenes several meetings per year, including meetings for its SSC, all of which are open to the public. The Council notifies and invites the public to these meetings through notices

published in the *Federal Register* and on its website. Public comment, including both oral and written statements, are accepted by the Council and SSC on its agenda items for the meeting.

At the Council's 134<sup>th</sup> SSC meeting on October 15-17, 2019 in Honolulu, Hawaii and the 180<sup>th</sup> Council meeting on October 22-24, 2019 in Pago Pago, American Samoa, NMFS presented the results of the most recent benchmark stock assessment for the American Samoa bottomfish multi-species complex (Langseth et al. 2019). Both meetings were open to the public, which was notified through the *Federal Register* (84 FR 53685, October 8, 2019) and the Council's website. At the 180<sup>th</sup> Council meeting where the Council discussed issues associated with ACLs and AMs for American Samoa BMUS, public discussion focused on the implications of the findings of the 2019 benchmark stock assessment and their validity. Bottomfish fishermen from American Samoa expressed concerns that the data from creel surveys and the commercial receipt book system collected by the American Samoa DMWR in collaboration with NMFS and used for the stock assessment are not representative of the fishery despite these being the only data available to use in stock assessments. Fishermen also noted that there are only a small number of fishermen active in the fishery (fewer than 20 according to the 2021 List of Fisheries, or LOF, 86 FR 3028, January 14, 2021).

In addition to concerns about available catch data, bottomfish fishermen and Council members from American Samoa expressed concerns about the economic, social, and cultural effects of a implementing a catch limit much lower than recent catch levels and of a closure of the bottomfish fishery in Federal waters. Those concerns were reflected in the Council's request for an interim action, which was sent to NMFS on November 1, 2019. NMFS published a final rule for the interim measure on November 16, 2020 (85 FR 73003). This rule implemented the preferred alternative from the EA (i.e., an ICL of 13,000 lb and an in-season AM) to provide balance between the regulatory requirements to reduce overfishing and the needs of the fishery and associated communities for continued access to bottomfish to the degree allowed by BSIA and Federal regulations regarding interim actions (NMFS 2020a). In a letter to NMFS dated June 15, 2020, DMWR indicated that they opposed the proposed ICL and AM and that they would not implement complementary management measures in territorial waters.

At the Council's 182<sup>nd</sup> meeting held virtually via web conference on June 23-25, 2020, there was a preliminary presentation on the development of the bottomfish rebuilding plan for American Samoa. The meeting was open to the public, which was notified through the *Federal Register* (85 FR 34420, June 4, 2020) and the Council's website. Discussion between PIFSC staff and the Council on this agenda item during the public comment period focused on addressing concerns from Council members regarding the improvement of American Samoa's bottomfish data and stock assessment prior to the next benchmark stock assessment scheduled for 2023.

At the Council's 138<sup>th</sup> SSC meeting on November 30-December 1, 2020 and the 184<sup>th</sup> Council meeting on December 2-4, 2020, both of which were held virtually via web conference, Council staff presented preliminary alternatives for parameters to be recommended for implementation in the rebuilding plan for the American Samoa bottomfish fishery. Both meetings were open to the public, which was notified through the *Federal Register* (85 FR 73029, November 16, 2020) and the Council's website. At the 138<sup>th</sup> SSC meeting where the SSC deliberated alternatives for the rebuilding plan, discussion between PIFSC staff and the SSC during the public comment period was centered on efforts by the PIFSC Stock Assessment Program (SAP) to enhance the

utilization of available data, refine assessment methodologies, and potentially split the single BMUS stock complex into multiple stocks. At the 184<sup>th</sup> Council meeting where the Council discussed the potential alternatives for implementing a rebuilding plan for the American Samoa bottomfish fishery, discussion between PIFSC staff and the Council during the public comment period similarly focused on efforts to improve the next benchmark stock assessment, and Council members were encouraged to discern between these efforts and the current action to implement a rebuilding plan. The Council deferred action on recommending rebuilding plan parameters for the American Samoa bottomfish fishery to allow for the American Samoa Government to have sufficient time to develop its own territory bottomfish FMP.

At the Council's 139<sup>th</sup> SSC meeting on March 16-18, 2021 and the 185<sup>th</sup> Council meeting on March 23-25, 2021, both of which were held virtually via web conference, Council staff presented a review of the ongoing progress of the American Samoa bottomfish rebuilding plan. Both meetings were open to the public, which was notified through the *Federal Register* (86 FR 11505, February 25, 2021) and the Council's website. At the 139<sup>th</sup> SSC meeting where the SSC was presented the preliminary impact analysis for the alternatives under consideration, the SSC commented that the Council's support of a Community Development Plan in American Samoa under the Magnuson-Stevens Act could maintain access of American Samoa fishing community to culturally-important deep water snappers in Federal waters in the event of a Federal fishery closure by allowing harvest related to cultural practices. **At the 185<sup>th</sup> Council meeting** where the Council was presented an update on management options for the American Samoa bottomfish fishery associated with the rebuilding plan, Council members reiterated that the poor stock status is reflective of the data-poor situation that has compounded over the years, and that restrictions to the fishery may deter fishermen from participating in data collection improvement efforts. A public comment at this meeting suggested that there have been many good-sized bottomfish landed in the past few weeks, which may be indicative that the fishery is healthy.

At the Council's 186<sup>th</sup> meeting held virtually via web conference on June 22-24, 2021, Council staff presented updates to the development of the American Samoa bottomfish rebuilding plan, including the potential for adding an alternative with an ACL of 5,000 lb to the action. The meeting was open to the public, which was notified through the *Federal Register* (86 FR 29251, June 1, 2021) and the Council's website, and the public was allowed to submit oral or written comments on the provisions of the rebuilding plan. During the meeting, Council members generally supported the addition of the new alternative with a 5,000 lb ACL, and commented that characteristics of the fishery, such as the use of hand crank reels and mixing bottomfish fishing trips with trolling for bait, may impact the calculation of CPUE for the fishery during the stock assessment. During the public comment portion of the agenda, PIFSC staff noted that CPUE standardization is an essential part of the stock assessment process, that a goal moving forward is to work with fishermen to provide the best possible data, and that all management agencies will need to work together to better understand the available data for use in stock assessments. The Council ultimately deferred taking action on the American Samoa bottomfish rebuilding plan to allow time for the new alternative to be added to the document. The Council will take final action on the American Samoa bottomfish rebuilding plan at its 187<sup>th</sup> meeting in September 2021, during which the public will be allowed to submit comments on the Federal action to implement a rebuilding plan for the fishery.

NMFS and the Council will also seek public comment on the draft EA, Regulatory Impact Review (RIR), and proposed rebuilding plan. The reader may find instructions on how to comment and obtain a copy of this EA, RIR and proposed rule by searching for RIN 0648-xxxx at [www.regulations.gov](http://www.regulations.gov), or by contacting the responsible official or Council at the above address. NMFS will solicit comments on the action for a 60-day period when the proposed rule is published. Specific dates will be defined in the published rule. NMFS will consider comments received by the deadline listed in the rule when developing the final rule for the proposed rebuilding plan.

#### **1.10 List of Preparers**

*Western Pacific Regional Fishery Management Council*

Thomas Remington, Contractor, *Preparer*

Marlowe Sabater, Island Fisheries Ecosystem Scientist, *Preparer*

*NMFS PIRO Sustainable Fisheries Division*

Kate Taylor, Fishery Management Specialist, *Preparer*

Brett Schumacher, Fishery Management Specialist, *Preparer*



## **2 DESCRIPTION OF ALTERNATIVES CONSIDERED**

The alternatives considered in this document were developed by the Council, pursuant to Magnuson-Stevens Act requirements, in response to the notification by NMFS that the American Samoa bottomfish stock complex is overfished and experiencing overfishing. Alternative 1 maintains the status quo. Alternative 2 would implement an ACL of 1,500 lb, an in-season AM that would close the fishery in Federal waters when the ACL is reached, and a performance standard where NMFS would close the fishery in Federal waters if the ACL is exceeded during any fishing year over the course of the rebuilding plan until a coordinated management approach is developed that ensures catch in both Federal and territorial waters can be maintained at levels that allow the stock to rebuild. Alternative 3 would implement a closure of Federal waters to the American Samoa bottomfish fishery with a reopening mechanism comparable to the performance standard under Alternative 2. Alternative 4 would implement an ACL of 5,000 lb and the same in-season AM and performance standard as Alternative 2. Under Alternatives 2 through 4, overfishing would be prevented and the stock complex would be expected to rebuild in eight to 10 years assuming catches in both territorial and Federal waters are limited to the amount authorized by the proposed management provisions (i.e., 1,500 lb, 0 lb, and 5,000 lb for Alternatives 2, 3, and 4, respectively). If the territory does not implement complementary management with this Federal action to limit catch in its waters to the authorized catch levels, there is likely no action NMFS can take to ensure that rebuilding would occur within 10 years.

### **2.1 Development of the Alternatives**

The process of developing ACL alternatives, generating rebuilding timelines, and analyzing potential impacts incorporates multiple sources of catch data: the time series of catch presented in the stock assessment (Langseth et al. 2019) and the time series of catch included in the Council's annual SAFE report (WPRFMC 2021). Generally, the catch estimates in a stock assessment are considered to be more complete than the data in an annual SAFE report due to the consideration of combined information from creel surveys and commercial receipts. The catch estimates in the 2019 stock assessment are also considered to be BSIA. However, the use of catch estimates from the Council's 2020 SAFE report was also considered because it provides estimates through 2020, whereas the stock assessment time series ends in 2017. Additionally, the data presented in the SAFE report are the main source of information used for fishery monitoring under normal circumstances. In order to combine the key desirable qualities of the data sets (i.e., BSIA from the stock assessment and more recent catch estimates from the SAFE report), it was necessary to merge them for 2018 through 2020. To do this, the PIFSC SAP compared catch estimates in the stock assessment to those in the SAFE report. In general, catch estimates in the stock assessment were greater than the SAFE report, which means the numbers would not be directly comparable without a correction factor. Over the most recent four years of data from the stock assessment, the catch estimates in the stock assessment were 1.24 times greater than catch in the SAFE report (Reference PIFSC SAP Memo to the Record). This correction factor was applied to catch estimates for 2018 through 2020 from the SAFE report, which provided estimates that were properly scaled to those from the stock assessment, and these estimates were appended to the time series from the stock assessment (see Table 5). When management measures were identified and analyzed in early 2021, the most recent year for which catch estimates were available was 2020, so any subsequent information on catch will not be considered.

At the Council's 138<sup>th</sup> SSC meeting from November 30-December 1, 2020, the SSC recommended to the Council a 1,500 lb annual catch limit with in-season and post-season AMs for the rebuilding plan for the American Samoa bottomfish fishery, stating that a complete restriction of access to deepwater snappers at the offshore banks would result in cultural impacts to the local communities. Additionally, the SSC noted concerns that the substantially lower ACL associated with this rebuilding plan could discourage fishers to report their catch, as data collection systems in American Samoa for the non-commercial sector of its bottomfish fishery are currently voluntary. At the 184<sup>th</sup> Council meeting on December 2-4, 2020, the Council deferred taking action to identify a preferred alternative for the rebuilding plan to allow the American Samoa Government to have additional time to complete its own territory bottomfish fishery management plan. Council members remarked on issues with data collection and its role in the rebuilding plan as well as future stock assessments, and they noted that data collection could be further hampered by the implementation of stricter regulations. The Council's American Samoa Advisory Panel also recommended a 1,500 lb annual catch limit with in-season and post-season AMs for the rebuilding plan. Since the 138<sup>th</sup> SSC and 184<sup>th</sup> Council meetings, the post-season AM was removed from the alternative (see Section 2.7.3) and replaced with the higher performance standard.

At the 186<sup>th</sup> Council meeting on June 22-24, 2020, the Council again deferred taking action on the American Samoa bottomfish rebuilding plan to allow for the incorporation of an alternative with a 5,000 lb ACL into the draft document. Council staff had determined that an annual catch of 5,000 lb would be the highest level of harvest that would allow for rebuilding of the BMUS stock complex to occur within 10 years, as required by the Magnuson-Stevens Act.

## **2.2 Features Common among Alternatives**

Each of the alternatives considered assumes that all existing Federal and local resource management regulations would continue alongside non-regulatory monitoring of catch through the creel survey expansions by NMFS and the DMWR commercial receipt system. While the Council has two years to prepare and implement an FMP, FMP amendment, or proposed regulations to rebuild an overfished stock, if overfishing is still occurring for that stock, the Council should immediately take appropriate steps to end overfishing (see Magnuson-Stevens Act section 304(e)(6) and 50 C.F.R. § 600.310(j)(2)(i)). NMFS finalized an interim measure to reduce overfishing for the fishery while the Council continued the development of this rebuilding plan. If approved, the Council's rebuilding plan would replace the interim measure.

There is no Federal permit or reporting required to fish for BMUS in American Samoa, however, a commercial fishing license is required for all fishermen engaged in commercial fishing in American Samoa waters by the territorial government (ASCA § 24.0981). Additionally, the territory requires all entities that sell seafood products to report sales monthly to the American Samoa DMWR (ASAC § 24.0906), who reports commercial fishery sales information to NMFS. Under each of the alternatives, NMFS would work with DMWR to encourage timely processing of data to track catches toward the applicable catch limit as necessary, and the fishery would continue to be monitored in the event of a Federal closure.

Each action alternative assumes that only Federal waters could be closed as the result of the in-season AM and performance standard when NMFS projects that the catch has exceeded the implemented ACL (Alternatives 2 and 4) or due to the temporary moratorium (Alternative 3).

The ability to coordinate a closure of both Federal and territorial waters would improve the effectiveness of management measures associated with a designated catch limit or moratorium; however, American Samoa does not have regulations in place to close bottomfish fishing in territorial waters if a Federal catch limit is reached and there has been no indication that a complementary closure would be implemented alongside a Federal closure. For this reason, the following outcome analyses for each proposed alternative account only for actions that NMFS can take within its regulatory authority. If the American Samoa Government implements complementary management with this Federal action, it would be likely that rebuilding could occur within 10 years. However, if the territory does not implement complementary management, NMFS expects that fishing would continue in territorial waters and the level of authorized catch would be exceeded, which would delay the rebuilding of the fishery. The following descriptions and analyses account for both possibilities of the territory implementing or not implementing complementary management with this Federal action.

In the American Samoa bottomfish fishery, the fishing year begins January 1 and ends on December 31. Although the rebuilding plan would be implemented on November 18, 2021, the analyses are based on an effective date of January 1, 2022 to provide a baseline for comparison if the measures were enacted at the beginning of the fishing year. Fishery catches for the end of 2021 are considered negligible with respect to impacting the rebuilding plan projections and are not considered when establishing rebuilding timelines.

Under all alternatives, the cultural significance of bottomfish in American Samoa would remain unchanged. An important aspect of American Samoa is perpetuating *fa'a Samoa* (i.e., “The Samoan Way”, custom and practice), which governs local social norms and practices. The foundation of *fa'a Samoa* is the title system at the village and higher levels, which is sustained and signified by the production and presentation of food and other goods, including deep and shallow water bottomfish at a variety of important cultural ceremonies. A letter from the American Samoa DMWR to NMFS on June 15, 2020 noted that deep water snappers are important for cultural ceremonies and *fa'a lavelave* (i.e., funerals, weddings, births, special birthdays). This importance for subsistence and cultural use is evident during important community events, and demand for bottomfish varies depending on the need for fish at government and cultural events (WPRFMC 2021). Reducing access to bottomfish resources may harm the cultural practice of *fa'a Samoa* and its role in maintaining community stability.

The Council requested PIFSC to produce biomass projections for the American Samoa bottomfish fishery to help determine  $T_{min}$ ,  $T_{target}$ , and  $T_{max}$  for Alternatives 2 through 4 for the rebuilding plan (see Fig. 6; Table 8), as the specification of a rebuilding time is required per Magnuson-Stevens Act section 304(e)(4) for any overfished fishery. The projections utilize the  $B_{MSY}$  of 272,800 lb for the American Samoa bottomfish multi-species stock complex estimated by the stock assessment (Langseth et al. 2019; see Table 3) and extend for a total of 40 years from the initial year of 2022. Utilizing the biomass projections from PIFSC SAP,  $T_{min}$  for the American Samoa bottomfish fishery would equal eight years in the absence of fishing in both Federal and territorial waters (see Table 8); this scenario could only realistically occur if the American Samoa Government implements complementary management in territorial waters with this Federal action. Because  $T_{min}$  would be less than 10 years,  $T_{max}$  for the fishery would be 10 years. If complementary management is not implemented by the American Samoan government, then the minimum amount of time it would take to rebuild the bottomfish stock complex would

be likely to notably increase. The biomass projections assume that the specified level of annual catch would be caught in its entirety for each year. Because the estimated biomass in the projections changes over time, the estimated F values at a given catch level decrease as biomass increases.

### **2.2.1 In-Season Monitoring Plan**

Under Alternatives 2 and 4, the in-season AM would require that NMFS close Federal waters around American Samoa to bottomfish fishing at such time as NMFS projects that the fishery would attain the ACL or immediately if it is determined that the fishery has exceeded the ACL. Whether territorial waters are also closed if the in-season AM is applied depends on whether the territory decides to implement complementary management with this Federal action. Although NMFS would not be able to track catches for the fishery in near-real time, under Alternatives 2 and 4, NMFS would review in-season progress of the catches relative to the implemented ACL based on data reports from DMWR, which monitors the bottomfish fishery through its creel survey program. The alternatives would use a predetermined method to allow for in-season monitoring of the fishery over the course of each fishing year for the duration of the rebuilding plan. The in-season monitoring plan would rely on the use of expanded estimates from the creel survey program in American Samoa and is further described below. Though these data are expected to be associated with high scientific uncertainties when expanded during the fishing year, the creel survey data represent the best scientific information available to NMFS for the purposes of in-season monitoring under this action. Previously, the Council and NMFS were not satisfied with the amount of scientific uncertainty in the data when used for in-season monitoring and did not feel that accepting the scientific uncertainties for in-season monitoring was prudent given the previously healthy status of the fishery. More recently, the fishery being identified as overfished and experiencing overfishing has prompted the Council and NMFS to reconsider the use of creel survey data for in-season monitoring despite the associated uncertainties because tracking the fishery throughout the fishing year is necessary to ensure that the fishery is adhering to the proposed timelines of the rebuilding plan. However, because the ACL is expected to be reached within the first half of the first fishing year of the rebuilding plan and subsequent years are expected to be subject to a Federal fishery closure implemented until a new management approach is developed due to the performance standard (see Sections 2.4.1 and 2.6.1), this level of ACL review may not be necessary.

NMFS has two methods to conduct in-season catch estimation. Under the first method, NMFS would tally the number of available catch interviews conducted by DMWR at least once per month, and when there is a sufficient number of interviews that would allow for expansion of the available data, the total catch for the fishing year up to that point would be estimated. The first expansion is expected to take place roughly halfway through the year; however, since fewer interviews increases the uncertainty in the catch estimates for the expansion time period, it is also expected that this semi-annual expansion would have high uncertainties associated with the data. If needed, NMFS could perform expansions of total catch for the fishery for each additional month. However, we expect that the ACL would be attained before the halfway point in the fishing year and, therefore, the fishery could likely exceed the ACL. Alternatively, NMFS may use expected monthly catches based on the average catch data from previous years to determine when the fishery might attain 1,500 lb (under Alternative 2) or 5,000 lb (under Alternative 4) of

catch and close the fishery in Federal waters at that point in the fishing year. Under this monitoring scenario, we expect the fishery could close within the first few months of the year.

### 2.3 Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)

Alternative 1 would continue the same management actions currently in place in the American Samoa bottomfish fishery. On November 16, 2020 (85 FR 73003), an interim management measure for the fishery was implemented with an ICL of 13,000 lb in 2020, which is the largest catch that would allow biomass of the stock complex to increase, and an in-season AM. The measure was in place for 180 days, through May 17, 2021, and was extended to November 18, 2021 on June 21, 2021 (86 FR 32361). Thus, Alternative 1 would effectively implement an ACL of 13,000 lb with an in-season AM to prevent the catch limit from being exceeded but with no post-season AM to correct overages. Under the in-season AM, NMFS would track progress of catches in relation to the ACL based on reports of catches provided to NMFS by the American Samoa DMWR. NMFS would close Federal waters around American Samoa to bottomfish fishing at such time as the agency estimates the fishery would attain the ACL or immediately if the agency determines that the fishery has attained or exceeded the ACL. Because Alternative 1 would implement the same management for the fishery as seen in recent years, it serves as the status quo and environmental baseline alternative against which effects on the human environment of action alternatives can be compared. Alternative 1 would be in compliance with the Magnuson-Stevens Act, implementing Federal regulations, and the provisions of the Council's FEP that require ACLs and AMs be implemented for fisheries managed under an FMP.

The projections from PIFSC show that the American Samoa bottomfish fishery could rebuild to its  $B_{MSY}$  in 32 years under an annual catch of 13,000 lb (see Table 8), the  $T_{target}$  under this alternative would be 32 years. Thus, regardless of whether the American Samoa Government decides to implement complementary management or not, the expected annual catch would be 12,687 lb to 13,000 lb annually, which would realistically result in the stock complex rebuilding in 30 to 32 years (Section 2.3.1). Because the projected time to rebuild in the absence of fishing mortality would be eight years (see Table 8),  $T_{min}$  would be eight years and  $T_{max}$  would be 10 years, though the feasibility of a no-harvest scenario is dependent on whether the American Samoa Government decides to implement complementary management with this Federal action (see Section 1.7). The parameters required by Magnuson-Stevens Act for a rebuilding plan for an overfished fishery under Alternative 1 are presented in Table 6.

**Table 6. Rebuilding plan parameters under Alternative 1 as required by National Standard 1 for an overfished fishery.**

Parameter	Value
$T_{min}$	8 years
$T_{target}$	32 years
$T_{max}$	10 years
$F_{rebuild}$	0.048 – 0.119

### 2.3.1 Expected Fishery Outcome

ACLs were first implemented for the Federal fishery in 2012. From that time through 2017, the American Samoa bottomfish complex included 17 species. During this period, catches were less than 30 percent of the ACLs (Table 7). In 2019, the number of species in the complex was reduced to 11 by Amendment 5 to the FEP (84 FR 2767, February 8, 2019). Catches in 2018 and 2019 (when no ACL or AMs were implemented) were similar to or less than catches during previous years when ACLs were implemented (Table 7), indicating that fishery performance did not change dramatically whether or not ACLs and AMs are implemented. In 2020, when the ICL was implemented, catches were relatively lower than previous years in which ACLs were both implemented and not implemented. Because the status quo alternative would not change management for the fishery as it was under the interim measure, NMFS expects the fishery to remain consistent with respect to catch and effort. Thus, NMFS expects Alternative 1 to result in the conduct of the fishery being similar to how it operated under the interim measure.

Under Alternative 1, the American Samoa bottomfish fishery is expected to maintain levels of fishing activity observed under the interim measure and fish at slightly lower levels than years prior to the interim measure. This is because catches under the interim measure were below the implemented catch limit and were slightly lower than prior years in which the fishery was unrestricted by a catch limit and in-season AM. If the fishery does catch more than 13,000 lb, the impacts of implementing the in-season AM would depend on whether complementary management is applied by the American Samoa Government or not. Without complementary management, catch would be only slightly reduced because bottomfish habitat occurs predominantly in territorial waters (Fig. 2). Thus, when Federal waters are closed to bottomfish fishing in accordance with the in-season AM without complementary management by the territory, it is expected that the fishery would continue to harvest BMUS in territorial waters. With complementary management, the territory would also close its waters to the fishery and limit total catch to 13,000 lb. Alternative 1 is therefore expected to maintain the catch level observed under the interim measure and could reduce bottomfish fishing in years of high catch where the ACL is attained due to the application of the in-season AM. The extent of this reduction is dependent on the territory's decision to implement management consistent with this Federal action in its territorial waters. However, no change is expected in the conduct of the fishery through the implementation of the status quo because the same levels of fishing activity are anticipated to occur under an identical management regime.

**Table 7. Comparison of American Samoa bottomfish catches to the ACLs from 2012 to 2020. ACLs were not implemented in 2018 and 2019.**

Year	ACL (lb)*	Catch (lb)**	Percent of ACL
2012	99,200	7,688	7.75
2013	101,000	19,740	19.54
2014	101,000	20,352	20.15
2015	101,000	29,511	29.22
2016	106,000	20,181	19.04
2017	106,000	15,913	15.01
2018	NA	14,756	NA

2019	NA	13,714	NA
2020	13,000	9,592	78.44

(Source: \*the *Federal Register* at 77 FR 6019, February 2, 2012; 78 FR 15885, March 13, 2013; 79 FR 4276, January 27, 2014; 80 FR 52415, August 31, 2015; 82 FR 18716, April 21, 2017; 82 FR 58129, December 11, 2017; 85 FR 73003, November 16, 2020; and \*\*[Reference PIFSC SAP memo])

Currently, NMFS does not have detailed spatial information to determine the amount of BMUS caught in territorial waters and Federal waters, and no assumptions can be made on the spatial productivity of bottomfish EFH in Federal waters relative to territorial waters. Analysis of the spatial distribution of bottomfish EFH indicates that approximately 85 percent occurs in territorial waters under the management authority of American Samoa, while the remaining 15 percent occurs in Federal waters under NMFS jurisdiction (Fig. 2). If bottomfish catches are distributed equally across EFH, a simple calculation could be used to determine the reduction in catches stemming from the implementation of an in-season AM relative to years prior to the interim measure. However, given the recent average catch level of 12,687 lb, it is possible that the American Samoa bottomfish fishery could remain under the 13,000 lb catch limit. If this is the case, then no in-season AM would be implemented and the bottomfish stock complex would be allowed to rebuild in 30 to 32 years (Table 8); this time frame would not satisfy Magnuson-Stevens Act requirements to rebuild within 10 years. If catches during a fishing year attain the 13,000 lb catch limit, then the in-season AM would be applied to restrict bottomfish catches and limit the amount of overage. If complementary management is applied by the American Samoa government, then annual catches would be limited to 13,000 lb. If there is no complementary management, it is likely that there would continue to be fishing in territorial waters that could offset the potential conservation benefits of restricting bottomfish harvest Federal waters. No definitive estimate can be made regarding the amount of catch that would occur in territorial waters from displaced fishing that normally would have occurred in Federal waters in this scenario.

### 2.3.2 Estimated Conservation and Management Benefit to Bottomfish Stocks

Under Alternative 1, the fishery would be expected to perform similarly to how it did in while under the management of the interim measure with an annual catch of 12,687 lb based on the recent three-year average. Even without complementary management, overfishing would be slightly reduced from levels observed prior to the implementation of the interim measure (i.e., years prior to 2020) due to the implementation of a more restrictive Federal catch limit as well as the in-season AM being applied in Federal waters in years that would attain the ACL. If the territory does decide to implement complementary management with this Federal action, the annual catch would be limited to 13,000 lb even in years where fishery activity would otherwise cause catch to be higher. Thus, the status quo alternative would provide a small conservation and management benefit relative to an unconstrained fishery but is expected to be consistent with its performance under the interim measure. In years of high catch and in the absence of a complementary closure of territorial waters, it is expected that fishermen would continue to catch BMUS in territorial waters, which would remain open to fishing, and any fishing effort that is displaced from Federal waters to territorial waters could offset the reduction in catch from the closure of Federal waters. However, NMFS is not able to predict the amount of displacement that may occur or if complementary management will be implemented. However, under the status

quo, it is not expected that annual catches for the fishery would exceed 13,000 lb and result in the application of the in-season AM. This level of catch would exceed the OFL identified in the stock assessment (Langseth et al. 2019), meaning that overfishing would continue and rebuilding would not be allowed to occur for 30 to 32 years based on projections (Fig. 6; Table 8).

Therefore, Alternative 1 would provide some conservation and management benefit to the American Samoa bottomfish fishery relative to fishing activity prior to the interim measure and would result in the same level of fishing as the interim measure, but it would not be able to effectively eliminate overfishing or rebuild the fishery within statutory requirements.

### **2.3.3 Degree to which this Alternative Mitigates Cultural, Economic, and Social Effects**

This alternative would not have short-term cultural, economic, or social impacts to fishing communities in American Samoa compared to the action alternatives because the status quo would be maintained, but there may be a slight reduction in revenues than expected under an unconstrained fishery. Alternative 1 would not be expected restrict bottomfish fishing activity in American Samoa relative to the recent three-year average regardless of whether the American Samoa Government implements complementary management with this Federal action or not, but catch could be restricted if the fishery exceeds the ACL due to the implementation of in-season AM. In this scenario, complementary management by the territory would restrict bottomfish harvest more than the lack of complementary management, which could only limit bottomfish catch in Federal waters. However, NMFS expects revenues to be comparable to those realized in 2020 and 2021 under the interim measure. Alternative 1 would only slightly reduce overfishing of BMUS relative to previous years, similar to what was observed under the interim measure, but would not result in the rebuilding of the stock complex for at least 30 years. This could have longer-term cultural, economic, and social impacts for the American Samoa fishing community if the diminished health of the stock complex reduces available bottomfish resources and revenues in the future.

Since the fishery, and therefore, commercial sales are expected to remain consistent, the Council anticipates that an average of 7.2 percent of bottomfish catch would be sold in subsequent years (Table 9) regardless of whether the American Samoa Government implements complementary management with this Federal action or not. If there is 12,687 lb of catch on an annual basis, at the recent average price of \$3.99 per lb (Table 9), expected revenue would be \$3,645. Using the estimated number of 20 fishery participants from the 2021 LOF (86 FR 3028, January 14, 2021), each fisher would earn approximately \$182. The status quo would not constrain bottomfish fishing activity in American Samoa relative to the most recent management action, so it is not expected to adversely affect the commercial fishermen in American Samoa in the short-term. Non-commercial fishing (inclusive of recreational, sustenance, and cultural fishing) is expected to be similarly unaffected.



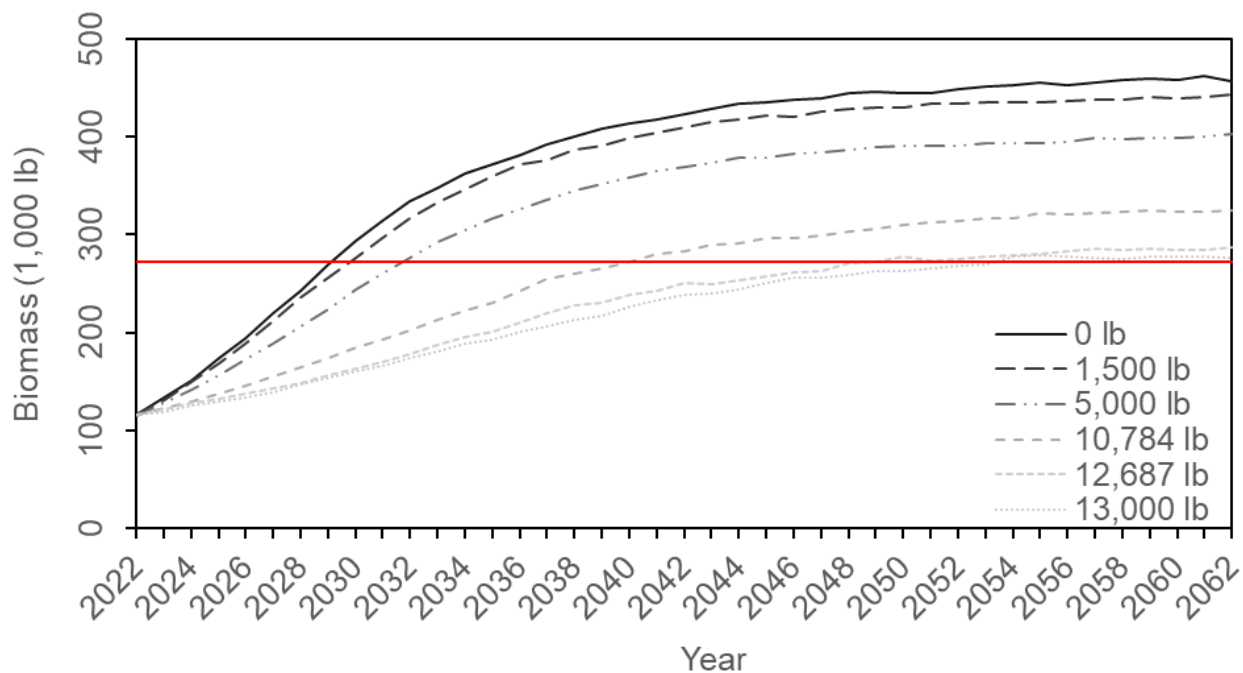
**Table 8. Projected biomass (B; 1,000 lb), probability that biomass is greater than or equal to  $B_{MSY}$ , and fishing mortality (F) for the American Samoa bottomfish stock complex from 2022 to 2062 under annual catches (lb) of 0 lb, 1,500 lb, 5,000 lb, 10,784 lb, 12,687 lb, and 13,000 lb. The highlights indicate the first year the probability that rebuilding would occur is at least 50 percent. Values for each year represent projections at the beginning of the listed year.**

Year	Annual Catch																	
	0 lb			1,500 lb			5,000 lb			10,784 lb			12,687 lb			13,000 lb		
	Biomass	Prob . B > $B_{MSY}$	F	Biomass	Prob . B > $B_{MSY}$	F	Biomass	Prob . B > $B_{MSY}$	F	Biomass	Prob . B > $B_{MSY}$	F	Biomass	Prob . B > $B_{MSY}$	F	Biomass	Prob . B > $B_{MSY}$	F
2022	115.8	0.160 0	0	115.4	0.155 8	0.0130 9	114.6	0.159 2	0.0446 2	116.0	0.154 0	0.0976 1	116.6	0.154 6	0.1152 0	115.8	0.150 8	0.1191 0
2023	132.9	0.208 9	0	131.3	0.210 6	0.0114 9	127.7	0.198 9	0.0399 3	122.6	0.191 1	0.0920 6	120.9	0.185 7	0.1108 6	119.1	0.184 8	0.1155 6
2024	150.8	0.262 6	0	150.3	0.258 4	0.0100 3	141.2	0.245 8	0.0360 4	130.0	0.224 4	0.0865 9	127.8	0.215 7	0.1045 3	125.5	0.212 0	0.1093 6
2025	173.4	0.312 9	0	168.6	0.305 1	0.0089 4	156.5	0.288 2	0.0324 8	137.2	0.255 4	0.0818 4	131.8	0.246 3	0.1012 2	129.4	0.242 3	0.1058 6
2026	194.4	0.362 1	0	189.0	0.350 7	0.0079 7	172.1	0.330 0	0.0294 9	146.2	0.280 3	0.0766 2	137.7	0.267 7	0.0966 4	134.1	0.267 7	0.1019 5
2027	219.5	0.405 7	0	212.0	0.398 0	0.0071 0	188.1	0.369 0	0.0269 5	155.1	0.309 1	0.0720 6	143.4	0.291 8	0.0926 2	138.8	0.287 4	0.0983 8
2028	243.2	0.451 6	0	235.5	0.435 2	0.0063 9	206.0	0.398 2	0.0245 7	165.1	0.330 1	0.0675 5	148.5	0.314 1	0.0893 0	146.8	0.312 1	0.0927 0
2029	269.4	0.491 2	0	256.4	0.471 0	0.0058 7	223.9	0.430 6	0.0225 8	174.1	0.355 0	0.0639 4	156.2	0.330 1	0.0847 2	153.2	0.330 3	0.0886 9
2030	294.1	0.528 8	0	275.7	0.502 1	0.0054 6	244.4	0.462 0	0.0206 7	185.2	0.379 4	0.0599 9	163.1	0.353 7	0.0809 6	160.8	0.345 3	0.0842 8
2031	314.5	0.559 3	0	296.4	0.535 2	0.0050 7	259.6	0.485 8	0.0194 4	193.1	0.394 6	0.0574 6	169.7	0.370 9	0.0776 8	165.9	0.362 7	0.0816 0
2032	334.7	0.589 4	0	316.6	0.566 8	0.0047 5	275.7	0.508 3	0.0183 0	202.2	0.411 3	0.0548 2	177.3	0.386 3	0.0742 3	173.7	0.373 7	0.0778 0
2033	348.3	0.615 9	0	332.6	0.593 4	0.0045 2	292.3	0.532 0	0.0172 5	213.2	0.422 7	0.0519 0	186.9	0.401 0	0.0702 9	180.1	0.387 3	0.0749 4
2034	362.1	0.638 0	0	346.7	0.613 6	0.0043 4	304.7	0.551 4	0.0165 5	222.8	0.437 1	0.0496 1	195.1	0.410 8	0.0672 5	188.5	0.401 7	0.0714 8
2035	372.3	0.662 4	0	359.2	0.638 1	0.0041 8	316.5	0.570 1	0.0159 2	230.3	0.448 0	0.0479 5	201.2	0.419 6	0.0651 4	193.1	0.412 3	0.0696 8
2036	381.8	0.683 2	0	371.4	0.657 9	0.0040 5	326.6	0.588 8	0.0154 3	243.2	0.458 7	0.0453 5	210.2	0.430 1	0.0622 5	201.0	0.420 3	0.0668 8
2037	392.6	0.703 2	0	376.7	0.672 9	0.0039 9	335.6	0.600 8	0.0150 1	254.6	0.474 2	0.0432 9	219.2	0.441 1	0.0596 3	205.6	0.429 4	0.0653 1
2038	399.8	0.720 9	0	386.7	0.688 3	0.0038 9	345.0	0.617 1	0.0146 0	260.7	0.484 1	0.0422 5	227.3	0.448 8	0.0574 4	213.1	0.438 9	0.0629 4
2039	408.1	0.736 3	0	391.4	0.701 0	0.0038 4	352.0	0.626 7	0.0143 1	265.4	0.489 0	0.0414 9	231.1	0.454 1	0.0564 7	216.7	0.446 6	0.0618 5

Year	Annual Catch																	
	0 lb			1,500 lb			5,000 lb			10,784 lb			12,687 lb			13,000 lb		
	Biomass	Prob . B > B <sub>MSY</sub>	F	Biomass	Prob . B > B <sub>MSY</sub>	F	Biomass	Prob . B > B <sub>MSY</sub>	F	Biomass	Prob . B > B <sub>MSY</sub>	F	Biomass	Prob . B > B <sub>MSY</sub>	F	Biomass	Prob . B > B <sub>MSY</sub>	F
2040	413.8	0.7507	0	398.6	0.7150	0.00377	358.5	0.6407	0.01404	272.9	0.4987	0.04033	238.5	0.4670	0.05467	226.9	0.4548	0.05901
2041	418.3	0.7630	0	404.4	0.7264	0.00372	364.9	0.6473	0.01380	279.7	0.5057	0.03932	242.8	0.4694	0.05366	233.3	0.4577	0.05733
2042	423.2	0.7774	0	410.2	0.7342	0.00366	368.7	0.6544	0.01365	282.5	0.5090	0.03892	250.2	0.4753	0.05204	238.0	0.4639	0.05617
2043	428.7	0.7872	0	414.8	0.7452	0.00362	373.6	0.6617	0.01347	289.8	0.5168	0.03792	249.6	0.4750	0.05216	240.2	0.4688	0.05565
2044	434.3	0.7980	0	417.9	0.7563	0.00360	378.1	0.6681	0.01331	291.7	0.5178	0.03767	253.5	0.4786	0.05135	244.0	0.4693	0.05475
2045	436.0	0.8079	0	421.3	0.7664	0.00357	378.6	0.6748	0.01329	296.6	0.5253	0.03703	257.4	0.4812	0.05054	250.9	0.4767	0.05320
2046	438.7	0.8159	0	421.2	0.7744	0.00357	382.5	0.6783	0.01316	297.2	0.5298	0.03696	261.4	0.4869	0.04975	255.5	0.4823	0.05222
2047	439.7	0.8200	0	426.4	0.7781	0.00352	383.6	0.6870	0.01312	299.9	0.5316	0.03663	262.9	0.4892	0.04946	256.1	0.4846	0.05209
2048	444.5	0.8273	0	428.7	0.7868	0.00350	386.5	0.6912	0.01302	303.0	0.5337	0.03625	270.3	0.4952	0.04807	259.3	0.4856	0.05144
2049	446.0	0.8349	0	430.6	0.7932	0.00349	389.9	0.6971	0.01291	305.6	0.5378	0.03593	272.2	0.4972	0.04772	262.4	0.4897	0.05081
2050	445.3	0.8410	0	430.4	0.7986	0.00349	391.1	0.7029	0.01287	309.8	0.5436	0.03543	278.2	0.5026	0.04668	263.2	0.4897	0.05065
2051	444.3	0.8481	0	433.5	0.7984	0.00347	390.9	0.7030	0.01287	313.3	0.5444	0.03502	273.9	0.4992	0.04743	265.6	0.4902	0.05018
2052	448.8	0.8521	0	434.3	0.8022	0.00346	390.9	0.7040	0.01287	313.6	0.5458	0.03500	275.5	0.5011	0.04715	267.7	0.4937	0.04977
2053	451.5	0.8548	0	435.3	0.8054	0.00345	393.1	0.7037	0.01280	316.5	0.5487	0.03467	277.3	0.5024	0.04683	269.6	0.4963	0.04942
2054	453.5	0.8569	0	434.8	0.8091	0.00346	393.6	0.7083	0.01278	317.3	0.5526	0.03458	278.6	0.5052	0.04661	277.5	0.5028	0.04798
2055	455.1	0.8633	0	435.0	0.8142	0.00345	394.0	0.7143	0.01277	322.5	0.5573	0.03401	280.9	0.5056	0.04622	279.2	0.5040	0.04769
2056	453.4	0.8674	0	436.2	0.8139	0.00344	394.9	0.7186	0.01274	321.2	0.5581	0.03415	283.0	0.5086	0.04587	277.1	0.5023	0.04804
2057	456.1	0.8723	0	438.7	0.8174	0.00342	398.5	0.7220	0.01263	322.1	0.5556	0.03405	285.4	0.5110	0.04547	276.1	0.5018	0.04824
2058	458.3	0.8771	0	438.1	0.8198	0.00343	397.9	0.7233	0.01265	323.4	0.5559	0.03392	284.1	0.5108	0.04568	275.0	0.5004	0.04844
2059	459.8	0.8801	0	440.1	0.8231	0.00341	398.7	0.7247	0.01262	324.6	0.5584	0.03379	285.5	0.5118	0.04546	277.3	0.5027	0.04802
2060	458.8	0.8814	0	439.7	0.8244	0.00342	398.7	0.7256	0.01262	323.6	0.5567	0.03389	284.2	0.5100	0.04567	277.7	0.5031	0.04794

Year	Annual Catch																	
	0 lb			1,500 lb			5,000 lb			10,784 lb			12,687 lb			13,000 lb		
	Biomass	Prob . B > B <sub>MSY</sub>	F	Biomass	Prob . B > B <sub>MSY</sub>	F	Biomass	Prob . B > B <sub>MSY</sub>	F	Biomass	Prob . B > B <sub>MSY</sub>	F	Biomass	Prob . B > B <sub>MSY</sub>	F	Biomass	Prob . B > B <sub>MSY</sub>	F
2061	462.3	0.886 2	0	440.2	0.823 0	0.0034 1	400.0	0.726 3	0.0125 8	323.3	0.556 3	0.0339 3	284.8	0.511 0	0.0455 7	277.7	0.502 8	0.0479 5
2062	457.3	0.889 4	0	443.4	0.824 6	0.0033 9	402.5	0.727 9	0.0125 0	324.6	0.557 9	0.0337 8	287.3	0.512 3	0.0451 6	276.8	0.502 8	0.0481 0

(Source: [Reference PIFSC SAP memo])



**Figure 6. Projected biomass of the American Samoa bottomfish stock complex from 2022 to 2062 under annual catches of 0 lb, 1,500 lb, 5,000 lb, 10,784 lb, 12,687 lb, and 13,000 lb. The red line denotes  $B_{MSY}$  at 272,800 lb.**

(Source: [Reference PIFSC SAP memo])

**Table 9. Summary of American Samoa bottomfish commercial revenues from revenues from 2011 to 2020.**

Year	Estimated total catch (lb)*	Estimated pounds sold (lb)**	Percent sold	Adjusted estimated revenue (\$)**	Adjusted average price per pound (\$)**
2011	24,569	711	2.9	2,128	2.99
2012	7,688	1,162	15.1	4,013	3.45
2013	19,740	882	4.5	3,375	3.83
2014	20,352	3,140	15.4	11,371	3.62
2015	29,511	2,048	6.9	6,304	3.08
2016	20,181	565	2.8	2,024	3.58
2017	15,913	1,130	7.1	5,778	5.11
2018	14,756	838	5.7	3,565	4.25
2019	13,714	1,749	12.8	7,423	4.24
2020	9,592	307	3.2	1,067	3.48
<b>Three-Year Average</b>	<b>12,687</b>	<b>965</b>	<b>7.2</b>	<b>4,018</b>	<b>3.99</b>

(Source: \*[Reference PIFSC SAP memo] and \*\*WPRFMC 2021)

## **2.4 Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard**

Under this alternative, the Council would recommend and NMFS would implement an ACL of 1,500 lb for the American Samoa bottomfish fishery until it is determined that overfishing has ended and the stock complex has rebuilt to its  $B_{MSY}$ . This level of catch, if maintained for both territorial and Federal waters, would end overfishing and allow the stock complex to rebuild in eight years. As an in-season AM, NMFS would close Federal waters around American Samoa to bottomfish fishing at such time as the agency estimates the fishery would attain the ACL or immediately if the agency determines that the fishery has attained or exceeded the ACL. An in-season restriction has only been used once before for the fishery in the preceding interim measure because catch statistics usually become available about six months after local management agencies collect the data. Implementing in-season monitoring would require close coordination between the American Samoa DMWR, who collects the data, and NMFS, who receive the data from DMWR, to allow for timely transmitting and processing of data. As a higher performance standard, if the ACL is exceeded during any fishing year over the course of the rebuilding plan, NMFS would close the fishery in Federal waters until, as an additional reopening mechanism, a coordinated management approach is developed that ensures catch in both Federal and territorial waters can be maintained at levels that allow the stock to rebuild. NMFS and the Council would review and amend the rebuilding plan as necessary using the best scientific information available to allow the reopening of the fishery in Federal waters consistent with rebuilding requirements specified under National Standard 1 of the Magnuson-Stevens Act such that a reasonable method of restricting fishing mortality at the level needed to rebuild in the target timeframe is implemented. This higher performance standard was included to address the possibility that the American Samoa Government may not implement complementary management with this Federal action to maintain overall catch of the stock below 1,500 lb, which is the highest level of catch that will allow rebuilding in the shortest possible time (i.e., in the same time frame as in the absence of fishing mortality). Catches from both Federal and territorial waters would be counted towards the ACL. Due to the relatively low nature of the ACL and level of recent average annual catch in the fishery, the in-season AM would likely be applied within the first few months of the first fishing year. The performance standard would also be applied at this time, effectively closing Federal waters around American Samoa to bottomfish fishing after the first year of the rebuilding plan until a more effective management approach is developed. Whether fishing is also restricted in territorial waters depends on the territory's decision to implement complementary management with this Federal action or not. Future changes to the ACL would be subject to separate environmental review when such changes are proposed and are not part of the proposed action.

The development of the ACL in Alternative 2 was done in accordance with the process described in the American Samoa FEP, the Magnuson-Stevens Act, and Federal regulations at 50 CFR 665.4. The SSC recommended an ABC based on a risk of overfishing ( $P^*$ , pronounced P-star) analysis. The  $P^*$  analysis determined a reduction of 20 percent from the OFL for the ABC, meaning that the American Samoa bottomfish fishery should be managed at a 30 percent risk of overfishing ( $ABC = OFL - P^* \text{ analysis} = 50\% - 20\% = 30\%$ ; WPRFMC 2020b). The American Samoa FEP limits the timeframe of ACL measures that can be implemented to four years. Therefore, this risk of overfishing corresponds to an ABC of 2,000 lb in 2024 (Table 4). The SSC did not conduct a Social, Ecological, Economic, and Management (SEEM) analysis, which can reduce the ACL below the ABC, due to scheduling issues associated with COVID-19. The

P\* analysis noted the social, economic, and ecological importance of the bottomfish fishery but also that a further reduction in the ABC is not warranted because the proposed ACL is so low that additional reduction would not retain sufficient catch for the fishery in Federal waters. The Council's American Samoa Advisory Panel (AP) suggested setting the ACL equal to the ABC, as this would provide the highest level of catch allowed without the fishery being subject to overfishing and allow the stock to rebuild incrementally. However, in order to develop an option that would allow for rebuilding consistent statutory requirements, the Council recommended an ACL of 1,500 lb. This level of annual catch would allow for the highest amount of bottomfish harvest (i.e., in consideration of the fishing community) while still allowing for the rebuilding of the American Samoa bottomfish stock complex in the shortest amount of time possible (i.e., in the same amount of time as in the absence of fishing mortality). Additionally, 1,500 lb of annual catch falls below the OFL identified in the benchmark stock assessment (Langseth et al. 2019), which is intended to restrict overfishing by the fishery. The recommendations of the SSC and AP were taken into account by the Council in addition to the analysis of recent catch averages and biomass projections for the American Samoa bottomfish fishery.

The projections from PIFSC show that the American Samoa bottomfish fishery has a 50 percent probability to be rebuilt to its  $B_{MSY}$  in eight years with an annual catch of 1,500 lb (Table 8), so eight years would be the  $T_{target}$  under this alternative. An annual catch level of 1,500 lb would generate biomass increases for the stock from 7.5 to 13.8 percent annually, with a total biomass increase of nearly 139 percent over eight years (Fig. 6). However, this level of annual catch and associated rebuilding timeline would only be feasible if the territorial government implemented complementary management with this Federal action. If the territory does not implement complementary management, fishing in territorial waters is expected to continue, and it would not be likely that the fishery rebuilds in the eight-year timeline associated with an authorized annual catch level of 1,500 lb. Continued fishing in territorial waters associated with the lack of complementary management by the American Samoa Government would cause the expected annual catch to be 10,784 lb to 12,687 lb annually, depending on the amount of displacement of fishing activity from Federal waters to territorial waters, which would realistically result in the stock complex rebuilding in 19 to 20 years (Section 2.4.1). The parameters required by Magnuson-Stevens Act for a rebuilding plan for an overfished fishery under Alternative 2 are presented in Table 10.

**Table 10. Rebuilding plan parameters under Alternative 2 as required by National Standard 1 for an overfished fishery.**

Parameter	Value
$T_{min}$	8 years
$T_{target}$	8 years
$T_{max}$	10 years
$F_{rebuild}$	0.0055 – 0.0131

There is little available information on the life history for American Samoa BMUS, and little is known on how the species of the stock complex interact with the surrounding marine ecosystem. The basis for the specification of an ACL of 1,500 lb complies with Magnuson-Stevens Act requirements to implement a level of authorized annual catch that would end overfishing and rebuild the stock in the shortest time possible while considering the needs of the fishing

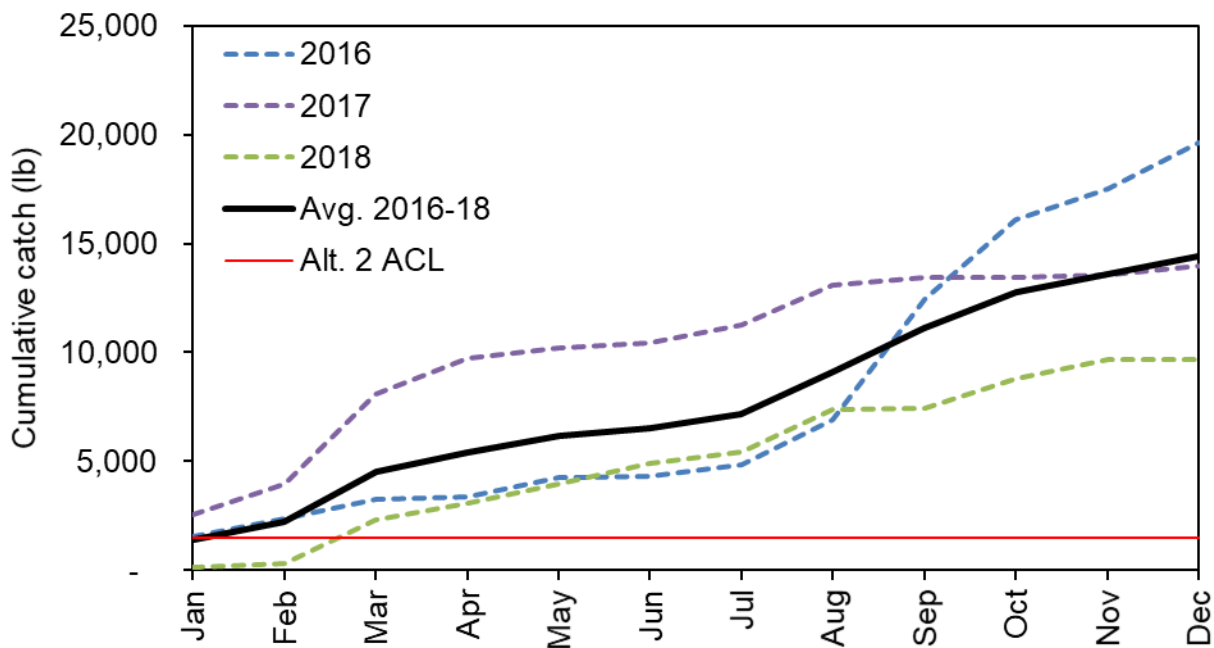
community by allowing access to a small amount of deep water bottomfish resources at offshore banks in Federal waters. Thus, Alternative 2 represents the Federal action that would be the most NMFS and the Council could do to mitigate impacts to the community while promoting rebuilding in the shortest possible time. Additionally, the Council's P\* working group, who met virtually on April 16, 2020, recommended a reduction score of 20 percent at a 30 percent risk of overfishing (WPRFMC 2020b). The annual catch level of 1,500 lb is equivalent to a P\* of 24 to 25 percent risk of overfishing, which is below the P\* recommended level of 30 percent risk of overfishing (equivalent to an annual catch of 2,000 lb). Ultimately, however, whether rebuilding can be achieved under this alternative within the regulatory maximum period depends on whether the territory implements management in its waters to complement Federal management. If it does, rebuilding under Alternative 2 is expected within 10 years (i.e.,  $T_{\max}$ ). If the territory does not implement complementary management, then this alternative would not be likely to allow the rebuilding of the bottomfish stock complex within statutory requirements.

#### **2.4.1 Expected Fishery Outcome**

Under Alternative 2, the American Samoa bottomfish fishery would be expected to continue fishing as it has in the past and annual catch of American Samoa BMUS would be either slightly or notably less than recent years dependent on whether the American Samoa Government implements complementary management with this Federal action. Due to the relatively low nature of the ACL under Alternative 2, it is likely that the ACL would be exceeded and the in-season AM would be applied. The application of the in-season AM would either result in a complete closure of the fishery in both territorial and Federal waters, restricting all further catch, or it would result in only a closure of Federal waters to the fishery and cause catch under Alternative 2 to be slightly lower than the status quo. It is expected that the ACL would be attained because the estimated annual catch for the fishery has surpassed the proposed ACL in all years from 2001 to 2020 (see Table 5), and the in-season AM would be applied early in the first year. While there are no territorial regulations in place to limit catch alongside this Federal action, it remains possible that the territory government could implement this complementary management. If not, it is likely that fishing would continue in territorial waters and could offset the potential conservation benefits of a Federal closure associated with the in-season AM. Thus, without the cooperation of the local government and communities, the ACL, AM, and performance standard under this alternative would likely be ineffective in ending overfishing and rebuilding the stock to  $B_{\text{MSY}}$ . In the event that complementary management is implemented by the American Samoa Government, Alternative 2 provides a Federal action that would support rebuilding in the shortest possible amount of time while still allowing a small level of catch in Federal waters in the first year.

Given average annual catch in recent years (Table 5), and assuming that catch is harvested in a consistent manner, we expect that the American Samoa bottomfish fishery would exceed its ACL within the first few months of the year. Considering monthly catch expansions for the fishery from 2016 to 2018 generated by NMFS from creel survey data (Fig. 7), the average monthly catch in the fishery is 1,232 lb so an ACL of 1,500 lb is expected to be exceeded before the end of February. However, the ACL may be reached as early as January (based on 2017 fishery performance) or as late as March (based on 2018 fishery performance). If complementary management is in place, the catch would be restricted to 1,500 lb in the first year. If there is no complementary management and we assume that catch is proportional to the amount of

bottomfish EFH in either Federal or territorial waters, a rough estimate can be made for the reduction in catch under an ACL of 1,500 lb from a closure of Federal waters. If the fishery continues operating as it has in recent years with an average annual catch of 12,687 lb, there would be another 11,187 lb of catch expected to be harvested in the fishery normally the remainder of the year. If catches are proportional to bottomfish habitat in Federal and territorial waters (15 and 85 percent, respectively; see Fig. 2), 1,678 lb that might have ordinarily been caught in Federal waters would not be caught in the fishery. Therefore, the total catch for this scenario in the absence of complementary management would be 11,009 lb rather than the recent average catch of 12,687 lb, but this improvement may not be fully realized if fishing is displaced to territorial waters. This level of expected catch exceeds the OFL specified in the most recent stock assessment (Langseth et al. 2019).



**Figure 7. Cumulative monthly catch of American Samoa BMUS from 2016 to 2018 compared to the proposed ACL under Alternative 2.**

(Source: PIFSC Fisheries Research and Monitoring Division data request)

Additionally, due to the application of the performance standard, it is likely that Federal waters around American Samoa would be closed to the fishery in subsequent years until a new management approach is developed under the reopening mechanism. Whether territorial waters would also be closed after the application of the performance standard is dependent on the American Samoa Government implementing complementary management. In this scenario, catch in subsequent years would be expected to be 0 lb. If complementary management is not implemented, catch in these years is expected to be 10,784 lb (85 percent of 12,687 lb) due to the restriction of bottomfish fishing in Federal waters only. At this point, the fishery impacts of Alternative 2 would be identical to those under Alternative 3 without complementary management (see Section 2.5.1). Thus, the rebuilding time of eight years designated as  $T_{\text{target}}$  would not be met under this alternative in the absence of complementary management by the territory, and rebuilding the stock complex to  $B_{\text{MSY}}$  would take at least 19 to 20 years with an annual catch of 10,784 lb to 12,687 lb each year after the initial year of the rebuilding plan



(Table 8). Thus, Alternative 2 could either slightly or notably reduce fishing relative to the status quo, and with complementary management by the territory, overfishing would be prevented and the stock would rebuild within the regulatory maximum time. However, adverse impacts to the American Samoa bottomfish stock would persist in the absence of complementary management, the stock would continue to be subject to overfishing, and rebuilding would be delayed.

Alternative 2 would serve to reduce catch in Federal waters, either slightly or notably depending on the territory's decision to implement complementary management, and implementation of the alternative would be in compliance with the Magnuson-Stevens Act, implementing Federal regulations, and the provisions of the Council's FEP that require ACLs and AMs to be implemented annually. Under Alternative 2, if catches in federal and territorial waters can be limited to the amount authorized by the ACL, the stock is expected to rebuild in eight years, which is within the  $T_{\max}$  (i.e., 10 years) and is consistent with National Standard 1 of the Magnuson-Stevens Act. However, without complementary management by the territory, there is likely no action that NMFS can take to rebuild the stock within  $T_{\max}$ , and rebuilding may not occur for at least 19 to 20 years.

#### **2.4.2 Estimated Conservation and Management Benefit to Bottomfish Stocks**

The level of catch authorized under Alternative 2 is intended to end overfishing and rebuild the American Samoa bottomfish fishery in a time frame identical to  $T_{\min}$  and two years less than  $T_{\max}$  while still allowing 1,500 lb of harvest to occur. However, this scenario assumes that complementary management would be implemented by the territory to limit annual catch to 1,500 lb. Without complementary management in territorial waters, fishing could continue there even after the ACL is attained and would substantially reduce the intended conservation benefits of the proposed management measures. Thus, in the absence of complementary management under Alternative 2, there would likely be minor conservation and management benefits to American Samoa BMUS relative to the baseline by reducing total catch approximately 1,678 lb to 1,903 lb relative to the status quo in a given year due to the expected closure of only Federal waters to the fishery. Any displacement of fishing effort from Federal waters to territorial waters could offset this anticipated reduction in catch in the absence of the territory implementing complementary management. It is expected that ACL of 1,500 lb would quickly be exceeded based on recent average annual catch for the fishery, and that the performance standard would cause the fishery to be closed in Federal waters in subsequent years until an alternative management measure is implemented in accordance with the reopening mechanism. Additionally, without complementary management by the territory, fishing would be expected to continue to occur in territorial waters at a level that would surpass sustainability thresholds specified in the stock assessment (Langseth et al. 2019). Thus, adverse impacts to the American Samoa bottomfish stock from fishing would remain, the stock would continue to be subject to overfishing, and the rebuilding of the fishery would be delayed; however, even without complementary territorial management, this alternative would still supply minor conservation benefits to the American Samoa bottomfish stock complex relative to the status quo by closing the fishery in Federal waters early in the fishing year, which is expected to slightly reduce catch.

#### **2.4.3 Degree to which this Alternative Mitigates Cultural, Economic, and Social Effects**

The authorized catch level under Alternative 2 is intended to end overfishing while mitigating cultural, economic, and social impacts to American Samoa communities by still allowing some

level of fishing in Federal waters relative to Alternative 3. This level of annual catch would allow for the rebuilding of the bottomfish stock complex in the shortest possible amount of time (i.e., the same as  $T_{min}$ ) while still allowing some harvest in consideration of the American Samoa fishing community. In the absence of complementary management under Alternative 2, minor cultural, economic, and social effects are likely to impact fishermen who primarily harvest bottomfish in Federal waters, as it is expected that the ACL would be exceeded in the first few months of the first year and Federal waters would be closed in accordance with the in-season AM; Federal waters would also likely be closed in subsequent years due to the application of the performance standard. This closure would likely result in a minor reduction in the availability of locally caught bottomfish over the course of the rebuilding plan relative to the status quo. While the recent average annual catch of BMUS in American Samoa is 12,687 lb, an average 965 lb (i.e., over 7 percent) of that was sold (Table 9). Considering that generally less than 10 percent of bottomfish catch is sold, the fishery can be considered predominantly non-commercial, primarily providing fish for sustenance and cultural events. The estimated commercial value of the bottomfish fishery was \$1,067 in 2020, likely hampered due to impacts from COVID-19 (WPRFMC 2021), with an average price per pound was \$3.48 for BMUS species (Table 9). If total expected catch is 11,009 lb in the first year of the rebuilding plan and 7.2 percent of the catch is sold at \$3.99 per pound, that means 793 lb would be sold for a revenue of \$3,163. Using the number of fishery participants from the 2021 LOF, the 20 participants would earn an average of \$158. Thus, if catch is reduced by an estimated 1,678 lb in the first year of the rebuilding plan, there would be an expected loss of revenue of \$482 for the fishery, or over \$24 per fisher (13 percent) relative to the status quo. However, after the first year of the rebuilding plan, the performance standard is expected to result in a closure of Federal waters to the fishery, which would result in impacts similar to Alternative 3 (see Section 2.5.3) with an expected loss of revenue of \$547 for the fishery and over \$27 per fisher (15 percent) relative to the status quo.

Larger impacts would occur if the American Samoa Government implements complementary closures with the Federal action. If catch were to dramatically decrease from recent averages due to the fishing constraints or complementary closures of territorial waters associated with Alternative 2, fishery revenues could decrease by over 88 percent; based on Table 9, the average price per pound is \$3.99 and we anticipate catch would be limited to 1,500 lb in this scenario, thus, fishery revenues could decline by \$3,214 (or 88 percent) from the recent average revenue. However, if territorial waters remain open due to the lack of complementary management, it is likely that fishermen would compensate for a closure of Federal waters by catching BMUS in territorial waters and revenue would be similar or slightly less than to the status quo. NMFS does not have information to estimate the shift in fishing effort that could occur in this scenario. Thus, there would be adverse economic effects to fishers if there were to be a complete moratorium on bottomfish fishing (i.e., in both Federal and territorial waters due to complementary management), but the effects to revenue would be relatively minor if fishing is constrained only in Federal waters once the ACL is reached. The reductions in catch would allow the biomass of the stock complex to recover slowly rather than decrease, and the improved health of the stock complex could benefit the community in the long-term by improving fishery sustainability.

## **2.5 Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters**

Under Alternative 3, the Council would recommend a fishing prohibition for and possession of BMUS in Federal waters around American Samoa until it is determined that the stock complex is

no longer experiencing overfishing and has rebuilt to its  $B_{MSY}$ . However, as an additional reopening mechanism, the Federal fishery closure may be ended if a coordinated management approach is developed and implemented that would restrict fishing mortality in Federal and territorial waters at a level that would allow rebuilding within the timeframe required under the Magnuson-Stevens Act (i.e., 10 years). This action would be equivalent to implementing a catch limit of 0 lb in Federal waters around American Samoa and is the Federal action that would be most likely to address overfishing as well as allow rebuilding of the stock complex in the shortest possible amount of time. There would be no AMs or performance standard associated with this alternative because catch would not need to be monitored towards an ACL, but the inclusion of the additional reopening mechanism would allow for the ability to implement new management under the rebuilding plan for the fishery in lieu of an indefinite closure. If the American Samoa Government implements complementary management with this Federal action, this alternative would result in the complete closure of both territorial and Federal waters to bottomfish fishing. If the territory does not implement complementary management, it is expected that there would be some displacement of bottomfish fishing that would normally occur Federal waters around American Samoa to territorial waters. Despite fishing for BMUS being likely to continue in territorial waters in this scenario, Alternative 3 would likely result in less annual catch for the American Samoa bottomfish fishery than Alternatives 1, 2, and 4 in the first year of the rebuilding plan assuming complementary management is not enacted. All other applicable fishing regulations would remain and the bottomfish fishery would continue to be monitored by NMFS and the Council.

The biomass projections from PIFSC show that, for the American Samoa bottomfish fishery, the  $T_{min}$  for rebuilding the fishery would be eight years in the absence of fishing mortality in both territorial and Federal waters (Table 8). This reflects the shortest amount of time to rebuild the American Samoa bottomfish stock to its  $B_{MSY}$ . Because  $T_{min}$  is eight years in the absence of fishing mortality, and the authorized catch under this alternative is 0 lb, the  $T_{target}$  under Alternative 3 would also be eight years. According to the projections for stock biomass, an annual catch level of 0 lb would generate biomass increases for the stock from approximately 9.2 to 14.8 percent annually, with a total biomass increase of approximately 154 percent over the course of eight years. However, this restriction of catch and associated rebuilding timeline would only be achievable if the American Samoa Government implemented complementary management with this Federal action such that territorial waters would be closed to the fishery alongside Federal waters. If the territory does not implement complementary management, fishing in territorial waters is expected to continue, and it would not be likely that the fishery rebuilds in the eight year timeline associated with an authorized annual catch level of 0 lb. In the absence of complementary management, because fishing activity is expected to continue in territorial waters, annual catch is anticipated to be approximately 10,784 lb to 12,687 lb (Section 2.5.1). Thus, the expected time to rebuild under this alternative in this scenario would be 19 years (Section 2.5.1). The parameters required by Magnuson-Stevens Act for a rebuilding plan for an overfished fishery under Alternative 3 are presented in Table 11.

**Table 11. Rebuilding plan parameters under Alternative 3 as required by National Standard 1 for an overfished fishery.**

Parameter	Value
$T_{min}$	8 years

T <sub>target</sub>	8 years
T <sub>max</sub>	10 years
F <sub>rebuild</sub>	0

Similar to Alternative 2, there is little available information on the life history for American Samoa BMUS to inform Alternative 3, and not much is known about how the stock complex interacts with the surrounding marine ecosystem. A closure of the fishery would be consistent with Magnuson-Stevens Act requirements to take action to end overfishing and rebuild the stock as quickly as possible, but it would grant less consideration to mitigating impacts to the fishing community than Alternatives 2 and 4. Additionally, whether rebuilding can be achieved in the regulatory maximum period under this alternative depends on whether the territory implements management in its waters to complement Federal management. If it does, rebuilding is expected within T<sub>max</sub>. If it does not, there is likely no action NMFS can take to rebuild within T<sub>max</sub>.

### 2.5.1 Expected Fishery Outcome

Under Alternative 3, the Council expects that the catch of American Samoa bottomfish would be less than the baseline and Alternatives 2 and 4 for the first year and the same as Alternatives 2 and 4 thereafter. If complementary management is implemented by the American Samoa Government, expected total catch from both territorial and Federal waters would be 0 lb and rebuilding would be allowed to occur in eight years. If complementary management is not implemented, the fishery would continue fishing at levels relatively similar to recent years. Though the closure of Federal waters to the bottomfish fishery in this scenario would effectively be the same as setting an ACL of 0 lb, it is likely that there would some be displacement of fishing effort from Federal to territorial waters to compensate for the loss in fishing grounds. As described for Alternative 2, the Council and NMFS do not possess the spatial information or data to discern the amount of BMUS harvested in Federal versus territorial waters around American Samoa or the level of displacement that could occur. However, if it is assumed that catch is proportional to the amount of bottomfish EFH in Federal and territorial waters and 15 percent of bottomfish EFH around American Samoa occurs in Federal waters, a rough estimate can be made for the reduction in catch resulting from Alternative 3 in the absence of complementary management. Assuming the fishery continues to harvest bottomfish as it has in recent years, the recent average annual catch of 12,687 lb (Table 5) would be reduced by approximately 15 percent (1,903 lb) to 10,784 lb with a closure of only Federal waters; however, this also assumes that there would be no displacement of fishing effort to territorial waters, which is unlikely. However, these catch values could change if the reopening mechanism is applied and a new coordinated management approach is implemented for the fishery. Additionally, like Alternative 2, the presented time frame for rebuilding in eight years assumes an annual catch level of 0 lb, which would not realistically occur without complementary management due to anticipated harvest of bottomfish in territorial waters. Because annual catch is expected to be 10,784 lb in this scenario, rebuilding to B<sub>MSY</sub> would take 19 years without complementary management being implemented (Table 8). Thus, this alternative would result in a slight or complete reduction in fishing, but it is expected the American Samoa bottomfish stock would continue to be subject to overfishing and the time necessary for it to rebuild would exceed the 10-year limit under statutory requirements without complementary management.

Though fishing cannot necessarily be constrained in territorial waters without complementary management by the territory, Alternative 3 would serve to reduce catch in Federal waters very slightly more than Alternatives 2 and 4 (in the first year of the rebuilding plan) while being in compliance with the Magnuson-Stevens Act, implementing Federal regulations, and the provisions of the Council's FEP. However, whether this alternative would be in compliance with rebuilding requirements under the Magnuson-Stevens Act to allow rebuilding within 10 years is dependent on the implementation of complementary management by the territorial government. Alternative 3 is estimated to reduce overfishing slightly more than Alternatives 2 and 4 in addition to presumably rebuilding in a shorter time frame depending on the level of displacement. However, Alternatives 2 and 4 allow slightly more bottomfish catch in Federal waters in the first year and, thus, would have increased consideration for the needs of the fishing community.

### **2.5.2 Estimated Conservation and Management Benefit to Bottomfish Stocks**

Alternative 3 would reduce overfishing and rebuild the American Samoa bottomfish fishery more quickly than Alternatives 2 and 4 by prohibiting all bottomfish catch in Federal waters. The extent of the conservation benefits under Alternative 3 is dependent on the territory's decision to implement complementary management or not. If complementary management is implemented by the American Samoa Government, both territory and Federal waters would be closed to the fishery and would result in an expected annual catch of 0 lb to allow rebuilding in eight years. Without complementary management, there would still likely be minor conservation and management benefits to American Samoa BMUS relative to the status quo alternative by eliminating harvest in Federal waters, which would reduce total harvest by approximately 1,903 lb to a total of 10,784 lb. However, displacement of fishing effort from Federal waters to territorial waters in this scenario could offset the anticipated reduction in catch. If Federal waters are closed to the fishery under Alternative 3, it is expected that the fishery would continue to operate in territorial waters in the absence of the territory implementing a complementary fishery closure. Thus, adverse impacts to the American Samoa bottomfish stock from fishing would likely remain, the stock would continue to be subject to overfishing and the rebuilding of the fishery would be delayed past the eight-year rebuilding time to 19 years. However, the alternative would supply some conservation benefit to the American Samoa bottomfish stock complex in the absence of complementary management relative to the status quo by resulting in a lower expected annual catch. Additionally, there would be added management benefits under Alternative 3 relative to Alternatives 2 and 4, as there would be no need to implement an ACL and monitor catch against it despite the alternatives having similar fishery impacts after the first year of the rebuilding plan.

### **2.5.3 Degree to which this Alternative Mitigates Cultural, Economic, and Social Effects**

Under Alternative 3, NMFS expects that the American Samoa bottomfish fishery would perform similarly to Alternatives 2 and 4 in all years except the first year of the rebuilding plan. This alternative would close the fishery in Federal waters, and the reduction in BMUS catch would be dependent on whether the territory implements complementary management. If both territorial and Federal waters are closed to the fishery, the expected BMUS catch would be 0 lb and revenues would be reduced by 100 percent; this scenario would represent a significant impact to the fishing community in both loss of bottomfish for non-commercial uses as well as the loss of revenues for the commercial sector of the fishery. If complementary management is not

implemented, catch is expected to be 10,784 lb (Section 2.5.1) due to the reduction of catch only from Federal waters. If 7.2 percent of the expected catch is sold commercially at \$3.99 per pound (Table 7), the expected revenue would be \$3,098. The estimated number of 20 fishery participants from the 2021 LOF would then earn \$155 each if divided equally; this is a decrease of approximately \$27, or 15 percent, per fisherman from the status quo. If fishermen compensated for a closure of Federal waters by catching BMUS in territorial waters that remained open to fishing, revenue would be closer to that expected under the status quo alternative. NMFS does not have information to estimate the magnitude of compensation that may occur. Additionally, if the reopening mechanism associated with the implementation of a new coordinated management approach is applied, these values would be subject to change in accordance with provisions of the new management. Because this alternative is expected to result in less catch of bottomfish than Alternative 1 (and Alternatives 2 and 4 in the first year), Alternative 3 would also result in less or no bottomfish available for subsistence, cultural, and religious purposes.

Alternative 3 does not provide for authorized catch in Federal waters, but territorial waters would remain open to fishing for bottomfish in the absence of complementary management. This would allow for some availability of bottomfish resources to the American Samoa fishing community; however, bottomfish are expected to be available in slightly lower quantities than under the status quo alternative. Thus, Alternative 3 would pose greater constraints to fishermen than Alternative 1 (and Alternatives 2 and 4 in the first year) for a slight conservation gain if no complementary management is implemented. Additionally, Alternative 3 would likely provide a tangible conservation benefit in the first year of the rebuilding plan relative to Alternatives 2 and 4 due to the restriction of catches in Federal waters. Thus, the fishery closure under Alternative 3 may decrease the amount of bottomfish available to the community for subsistence, cultural, and religious purposes as well as the amount of revenue available to fishermen. Revenue would be decreased relative to Alternative 1 (and Alternatives 2 and 4 in the first year), but this decrease would be marginal and is not expected to result in any large social or economic effects to the American Samoa fishing community. If complementary management is implemented, resulting in the complete closure of both territorial and Federal waters to the fishery, the amount of bottomfish available for subsistence, cultural, and religious purposes would be reduced to zero and the elimination of revenues would be expected to result in a significant economic impact to the fishing community. Overall, this alternative does less than the status quo alternative and Alternatives 2 and 4 to mitigate adverse cultural, economic, and social effects by slightly or completely reducing the amount of fish available to markets and for sustenance and cultural practices in American Samoa. Thus, Alternative 3 does not meet the need to mitigate socio-economic effects in the short-term as well as the status quo alternative or, technically, Alternatives 2 and 4. However, the reductions in catch would allow the biomass of the stock complex to recover rather than decrease, and the improved health of the stock complex could benefit the community in the long-term by improving the sustainability of the fishery.

## **2.6 Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard**

Under Alternative 4, the Council would recommend and NMFS would implement an ACL of 5,000 lb for the American Samoa bottomfish fishery to end overfishing and rebuild the BMUS stock complex to its  $B_{MSY}$ . An annual catch of 5,000 lb, if maintained for both territorial and Federal waters, would prevent overfishing and allow the stock complex to have greater than a 50

percent chance to rebuild in 10 years, which is the maximum amount of time permissible for rebuilding to take place under statutory requirements. This level of annual catch is the highest amount of bottomfish harvest that could occur each year that would allow for rebuilding to occur consistent with the Magnuson-Stevens Act. As an in-season AM, NMFS would close Federal waters around American Samoa to bottomfish fishing at such time as the agency estimates the fishery would attain the ACL or immediately if the agency determines that the fishery has attained or exceeded the ACL. An in-season AM to restrict the American Samoa bottomfish fishery has been used just once before, in the preceding interim measure, since catch summaries usually become available several months after the fishing year ends. Thus, implementation of an in-season AM under this rebuilding plan would require close coordination between the American Samoa DMWR, who collects the data, and NMFS, who receive the data from DMWR, to allow for timely transmitting and processing of the data. As a higher performance standard, if the ACL is exceeded during any fishing year over the course of the rebuilding plan, NMFS would close the fishery in Federal waters until, as an additional reopening mechanism, a coordinated management approach is developed that ensures catch in both Federal and territorial waters can be maintained at levels that allow the stock to rebuild. NMFS and the Council would review and amend the rebuilding plan as necessary using the best scientific information available to allow the reopening of the fishery in Federal waters consistent with rebuilding requirements specified under National Standard 1 of the Magnuson-Stevens Act such that a reasonable method of restricting fishing mortality at the level needed to rebuild in the target timeframe is implemented. Similar to Alternative 2, a higher performance standard was included to address the possibility that the American Samoa Government may not implement complementary management with this Federal action to maintain the total harvest of the stock complex below 5,000 lb, which is the highest level of catch that would promote rebuilding within the maximum allowable timeframe under the Magnuson-Stevens Act. Catches of BMUS from both Federal and territorial waters would be counted towards the ACL. Due to the low level of allowable annual catch under the ACL relative to the recent average annual catch, the in-season AM would likely be implemented less than halfway through the fishing year. If the ACL is attained, the performance standard would also be applied, which would close Federal waters around American Samoa to bottomfish fishing until a management approach is implemented that can constrain catch to remain under the ACL. Whether fishing is also restricted in territorial waters in coordination with the in-season AM depends on the decision by the American Samoa Government to implement complementary management with this Federal action or not.

The ACL under Alternative 4 was developed by determining the highest level of annual catch of American Samoa BMUS that would still allow for rebuilding to occur within 10 years as required by the Magnuson-Stevens Act. Inclusion of this alternative represents additional consideration for the American Samoa fishing community that would be impacted by the drastic reduction allowable bottomfish harvest under this Federal action. Although this level of annual catch would exceed the allowable risk of overfishing as determined by the Council's P\* working group (WPRFMC 2020b), it would be less than the OFL specified in the stock assessment (Langseth et al. 2019). An ACL of 5,000 lb would allow for the highest amount of bottomfish harvest (i.e., in consideration of the fishing community) while still allowing for the rebuilding of the American Samoa bottomfish stock complex within the regulatory maximum time.

Biomass projections generated by PIFSC show that the American Samoa bottomfish fishery has greater than a 50 percent probability to be rebuilt to its  $B_{MSY}$  in 10 years with an annual catch of

5,000 lb (Table 8), so 10 years would be the  $T_{\text{target}}$  under this alternative. According to the projections, an annual catch of 5,000 lb is the highest amount of annual harvest that would allow for a greater than 50 percent chance of the stock complex rebuilding within 10 years as required by the Magnuson-Stevens Act. An annual catch level of 5,000 lb would generate biomass increases for the stock from 6.2 to 11.5 percent annually, with a total biomass increase of over 140 percent over 10 years (Fig. 6). However, adhering to this level of annual catch and associated rebuilding timeline would only be feasible if the territorial government implemented complementary management with this Federal action. If the territory does not implement complementary management, fishing in territorial waters is expected to continue, and it would not be likely that the fishery rebuilds in the 10-year timeline associated with an authorized annual catch level of 5,000 lb. Continued fishing in territorial waters associated with the lack of complementary management by the American Samoa Government would cause the expected annual catch to be 10,784 lb to 12,687 lb annually, depending on the amount of displacement of fishing activity from Federal waters to territorial waters after the application of the in-season AM and performance standard, which would realistically result in the stock complex rebuilding in 19 to 21 years (Section 2.6.1). The parameters required by Magnuson-Stevens Act for a rebuilding plan for an overfished fishery under Alternative 4 are presented in Table 12.

**Table 12. Rebuilding plan parameters under Alternative 4 as required by National Standard 1 for an overfished fishery.**

Parameter	Value
$T_{\text{min}}$	8 years
$T_{\text{target}}$	10 years
$T_{\text{max}}$	10 years
$F_{\text{rebuild}}$	0.0183 – 0.0399

Similar to Alternatives 2 and 3, life history information for American Samoa bottomfish is scarce, and there is not much known about how bottomfish interact with the surrounding marine ecosystem. The specification of an ACL of 5,000 lb complies with Magnuson-Stevens Act requirements to implement a level of authorized annual catch that would end overfishing and rebuild the bottomfish stock complex within 10 years. Implementing an ACL that corresponds to the highest possible amount of harvest that would allow for rebuilding to occur within the maximum allowable timeframe under statutory requirements represents increased consideration for the American Samoa fishing community by limiting the reduction in typical annual bottomfish catch from this Federal action. Thus, Alternative 4 represents the Federal action that would be the most NMFS and the Council could do to mitigate impacts to the community while adhering to the requirements specified in the Magnuson-Stevens Act. However, whether rebuilding could occur within the regulatory maximum period of 10 years under this alternative depends on whether the American Samoa Government implements complementary management. If it does, rebuilding under Alternative 4 is expected within 10 years (i.e.,  $T_{\text{max}}$ ). If the territory does not implement complementary management, then Alternative 4 would not be likely to result in rebuilding within the 10 years required under the Magnuson-Stevens Act.



### 2.6.1 Expected Fishery Outcome

Under this alternative, the impacts to the American Samoa bottomfish fishery and stock complex would be dependent on whether the American Samoa Government implements complementary management with this Federal action to constrain catch in territorial waters, either resulting in a slight or notable reduction in catch relative to recent years. Because the ACL of 5,000 lb is relatively low considering recent annual catch for the fishery (see Table 5), NMFS expects that the ACL would be exceeded in the first half of the first fishing year, resulting in the application of the in-season AM and performance standard. The implementation of the in-season AM, if complementary management is also implemented, would result in a complete closure of the fishery in both territorial and Federal waters, restricting all further catch. In the absence of complementary management, the in-season AM would result in the closure of only Federal waters to the fishery, and catch would likely be slightly lower than the status quo. There are no territorial regulations in place that would limit catch in American Samoa waters alongside this Federal action, but the American Samoa Government could conceivably implement this complementary management. If complementary management is not implemented, NMFS expects that fishing would continue in territorial waters after the application of the in-season AM and performance standard, which could reduce the intended conservation benefits of a closure of Federal waters to the fishery. Ultimately, the effectiveness of the proposed management measures to end overfishing and promote rebuilding of the American Samoa BMUS stock complex would be contingent on cooperation between NMFS and the territorial government to employ a coordinated management approach to better restrict catch to the proposed level. Thus, in the absence of complementary management, Alternative 4 would serve to slightly reduce catch for the fishery due to an expected closure of Federal waters approximately halfway through the first fishing year. If complementary management is implemented by the American Samoa Government, Alternative 4 would provide the Federal action that would allow the American Samoa fishing community the highest possible level of annual BMUS harvest while rebuilding within 10 years as required by the Magnuson-Stevens Act.

Considering average annual catch in recent years (Table 5) and assuming that catch is harvested consistently over the course of a fishing year, NMFS expects that the American Samoa bottomfish fishery would exceed the proposed ACL under Alternative 4 by May of the first fishing year. The recent average annual catch of 12,687 lb, if caught in a uniform manner over the course of a year, would be associated with approximately 1,057 lb of catch each month, and an ACL of 5,000 lb could be exceeded sometime before the end of May at this rate. If complementary management is implemented by the territorial government, total catch would be restricted to 5,000 lb, or at a level just over 5,000 lb if there is a delay in implementing the fishery closure, in the first year of the rebuilding plan. In the absence of complementary management, if we assume that the amount catch in territorial waters versus Federal waters is proportional to the spatial distribution of bottomfish EFH, then the reduction in catch in the first fishing year of the rebuilding plan from the closure of Federal waters in accordance with the in-season AM under an ACL of 5,000 lb can be approximated relative to the status quo. If the fishery continues operating as it has in recent years with an average annual catch of 12,687 lb, there would be another 7,687 lb of catch normally harvest by the fishery for the remainder of the fishing year. If catches are proportional to the amount of bottomfish habitat in Federal and territorial waters (15 and 85 percent, respectively; see Fig. 2), then 1,153 lb of BMUS that would ordinarily be harvested in Federal waters may not be caught. Thus, the total catch under this

scenario where the American Samoa Government does not implement complementary management alongside this Federal action would be 11,534 lb rather than the recent average catch of 12,687 lb expected under the status quo. However, this reduction in catch may not occur if there is a displacement of fishing effort into territorial waters after the Federal closure to the fishery. Additionally, an annual catch of 11,534 lb exceeds the OFL specified in the benchmark stock assessment despite remaining below the long-term MSY (Langseth et al. 2019).

Because NMFS expects that the in-season AM would be applied to the fishery less than halfway through the first fishing year under the rebuilding plan, the performance standard would also be implemented once the ACL is attained. Thus, it is likely that Federal waters around American Samoa would be closed to the fishery in subsequent years until a new management approach is developed to restrict total annual catch under 5,000 lb. Whether territorial waters would also be closed after the application of the performance standard is dependent on the American Samoa Government implementing complementary management. If complementary management is implemented, NMFS expects that total BMUS catch each year after the first fishing year would be 0 lb due to the complete closure of both territorial and Federal waters around American Samoa to the bottomfish fishery. In the absence of complementary management, total annual catch after the first year of the rebuilding plan is expected to be 10,784 lb (i.e., 85 percent of the recent average catch of 12,687 lb) since the bottomfish fishery would only be restricted in Federal waters. In this scenario, Alternative 4 would have the same fishery impacts as Alternative 3 without complementary management (see Section 2.5.1) because the same management provisions would be in place. Therefore, the BMUS stock complex in American Samoa would be unlikely to rebuild to its  $B_{MSY}$  proposed rebuilding time of 10 years ( $T_{target}$ ) in the absence of complementary management being implemented by the territory, and the stock complex would not be likely to achieve rebuilding for at least 19 to 21 years with catches of 10,784 lb to 12,687 lb annually after the first year of the rebuilding plan (Table 8). Whether Alternative 4 slightly or notably reduces bottomfish fishing mortality relative to the status quo is dependent on the implementation of complementary management by the territory, and, if it is implemented, overfishing would be prevented and the stock complex would rebuild within the regulatory maximum time. Conversely, the bottomfish stock complex would continue to experience adverse impacts in the absence of complementary management, BMUS would continue to be subject to overfishing, and rebuilding would be delayed by about 10 years.

In summary, NMFS expects the management provisions under Alternative 4 to reduce total bottomfish catches around American Samoa over the course of the rebuilding plan, either slightly or substantially depending on the territorial government implementing complementary management with this Federal action. Management under this alternative would be in compliance with the Magnuson-Stevens Act, implementing Federal regulations, and the provisions of the Council's FEP that require ACLs and AMs to be implemented annually. If BMUS catch in both territorial and Federal waters around American Samoa can be limited to 5,000 lb (i.e., if complementary management is implemented), then NMFS expects the stock complex to be able to rebuild to its  $B_{MSY}$  within the regulatory maximum time ( $T_{max}$ ) of 10 years, adhering to requirements under National Standard 1 of the Magnuson-Stevens Act. In the absence of complementary management by the American Samoa Government, there is likely no action that NMFS can take to rebuild the stock complex within  $T_{max}$ , and rebuilding may not occur for approximately two decades.

### **2.6.2 Estimated Conservation and Management Benefit to Bottomfish Stocks**

The ACL of 5,000 lb implemented under Alternative 4 is intended to end overfishing and rebuild the American Samoa BMUS stock complex in 10 years as required by the Magnuson-Stevens Act and in consideration of the American Samoa fishing community by authorizing the highest amount of harvest permitted by statutory requirements. However, the fishery being able to adhere to the proposed rebuilding timeline assumes that complementary management would be implemented by the American Samoa Government to limit total annual catch from both territorial and Federal waters to 5,000 lb. With complementary management in place, the fishery would be restricted to 5,000 lb of total catch, and, given the likely situation that the ACL would still be slightly exceeded despite the implementation of complementary management due to delays between the monthly catch projection and the management action to close the fishery, the fishery could still be closed in subsequent years in accordance with the performance standard. In this situation, the bottomfish stock complex would be more likely to rebuild within the regulatory maximum time of 10 years.

Without complementary management in place to restrict catch in territorial waters after the ACL has been attained, fishing could continue there and reduce the intended conservation benefits of the management measures under the proposed alternative. Thus, in the absence of complementary management under Alternative 4, there would likely be only minor conservation benefits to American Samoa BMUS by reducing total catch approximately 1,153 lb relative to the status quo in the first fishing year given year due to the expected closure of only Federal waters to the fishery. Subsequent years would be expected to have a total reduction in catch of 1,903 lb relative to the baseline due to continued fishing in territorial waters despite the closure of Federal waters in accordance with the performance standard. Any additional displacement of fishing effort from Federal waters to territorial waters could further reduce the expected conservation benefits in the absence of the territory implementing complementary management. In the first fishing year, it is expected that ACL of 5,000 lb would be exceeded by the halfway point of the year based on recent average annual catch for the fishery, and that the performance standard would cause the fishery to be closed in Federal waters in subsequent years until a coordinated management approach is implemented under the reopening mechanism. Additionally, without complementary management by the territory, fishing would be expected to continue to occur in territorial waters at a level that would surpass sustainability thresholds specified in the stock assessment (Langseth et al. 2019). Consequently, adverse impacts to the American Samoa bottomfish stock from fishing could continue, the stock could still be subject to overfishing, and the rebuilding of the fishery could be delayed. In the absence of complementary territorial management, however, Alternative 4 would still supply minor conservation benefits to the American Samoa bottomfish stock complex relative to the status quo by closing the fishery in Federal waters early in the first fishing year and for the entirety of subsequent years until an alternative, coordinated management plan is implemented, which is expected to slightly reduce catch during that time.

### **2.6.3 Degree to which this Alternative Mitigates Cultural, Economic, and Social Benefits**

NMFS intends for the authorized catch level under Alternative 4 to end overfishing and rebuild the bottomfish stock complex within the regulatory maximum time while mitigating cultural, economic, and social impacts to American Samoa communities by allowing the highest possible amount of catch that would provide greater than a 50 percent of the stock complex rebuilding to

$B_{MSY}$  within 10 years ( $T_{max}$ ). This level of annual catch would allow for rebuilding to occur in just two years longer than the shortest possible amount of time (i.e., in the absence of fishing mortality,  $T_{min}$ ) while allowing more harvest than Alternatives 2 or 3 in consideration of the American Samoa fishing community. However, NMFS anticipates that this level of annual catch could only be achieved if complementary management is implemented by the territorial government, which could result in substantial impacts to the fishing community if the fishery is closed in both territorial and Federal waters after the likely application of the in-season AM and performance standard. In the absence of complementary management under Alternative 4, cultural, economic, and social effects from the management measures are expected to be much less substantial despite impacting fishermen who primarily harvest bottomfish in Federal waters. Because NMFS expects the proposed ACL to be exceeded before the halfway point of the first fishing year under the rebuilding plan, Federal waters would be closed for the rest of the fishing year and in future fishing years in accordance with the in-season AM and performance standard. A Federal closure would likely result in a slight reduction in the availability of locally harvested bottomfish relative to the status quo over the course of the rebuilding plan. Of the recent annual average catch of 12,687 lb, an average of 965 lb (i.e., 7.2 percent) has been sold annually over the past three years. Because of the low proportion of total estimated catch that is sold commercially, NMFS considers the fishery to be predominantly non-commercial, primarily providing fish for sustenance and cultural events.

The American Samoa bottomfish fishery had an estimated commercial value of \$1,067 and average price per pound of \$3.48 in 2020 (Table 9), and this notable reduction relative to previous years can likely be attributed to impacts to commerce from COVID-19 (WPRFMC 2021). In the absence of complementary management, if total annual catch is 11,534 lb in the first year of the rebuilding plan and 7.2 percent of the catch is sold at \$3.99 per pound (i.e., the recent annual average, see Table 9), then NMFS would expect 830 lb to be sold for a revenue of \$3,313. The 20 fishery participants estimated in the 2021 LOF would each earn an average of approximately \$166. Thus, if catch is reduced by an estimated 1,153 lb in the first year of the rebuilding plan, there would be an expected loss of revenue of \$332 for the fishery, or nearly \$17 per fisher (9.1 percent) relative to the status quo. After the first year of the rebuilding plan, the continued closure of Federal waters to the fishery in accordance with the performance standard would result in economic impacts similar to Alternative 3 (see Section 2.5.3) with an expected loss of revenue of \$547 for the fishery and over \$27 per fisher (15 percent) relative to the status quo.

If the American Samoa Government does decide to implement complementary management alongside this Federal action, NMFS expects that there would be larger impacts to the American Samoa fishing community under the rebuilding plan due to the parallel closure of territorial and Federal waters if the in-season AM is implemented. If, in the first year of the rebuilding plan, total catch is limited to 5,000 lb, then 360 lb would be solid for a total revenue of \$1,436 or \$72 per fisherman; this would represent a decrease of \$2,209 in total revenue, over 60 percent, relative to the status quo. In subsequent years, if the performance standard is applied, fishery catch and revenues would be expected to be zero due to the complete restriction of bottomfish fishing in both territorial and Federal waters around American Samoa. However, if territorial waters remain open due to the lack of complementary management, it is likely that fishermen would compensate for a closure of Federal waters by catching BMUS in territorial waters and revenue would be similar or slightly less than to the status quo depending on the level of

displacement that may occur. NMFS does not have information to estimate the shift in fishing effort that could happen in this scenario. Thus, there would be significant adverse cultural, economic, and social impacts to fishermen if there were to be a complete moratorium on bottomfish fishing in both Federal and territorial waters due to the implementation of complementary management, but impacts would be relatively minor if fishing is constrained only in Federal waters once the ACL is attained in the absence of complementary management. The expected reduction in catch in the absence of complementary management is still anticipated to allow the biomass of the stock complex to recover slowly rather than decrease, and the improved health of the BMUS stock complex could benefit the American Samoa fishing community in the long-term by improving the sustainability of the fishery.

## **2.7 Alternatives Considered but Not Analyzed**

### **2.7.1 Implement an ACL Higher than 5,000 lb**

Under this alternative, an ACL higher than 5,000 lb (e.g., 6,000 lb, 7,000 lb, etc.) would be implemented for the American Samoa bottomfish fishery until it is determined that overfishing has ended and the stock complex has rebuilt to its  $B_{MSY}$ . The same in-season AM and performance standard as Alternatives 2 and 4 would also be implemented under this alternative. Also similar to Alternatives 2 and 4, NMFS would account the catch from both Federal and territorial waters against the ACL to determine if the in-season AM and performance standard should be implemented. Even under the implementation of a relatively higher ACL, both the in-season AM and performance standard could be applied to the fishery in the first fishing year based on recent fishery performance depending on the level of ACL that would be implemented. However, authorizing higher levels of annual catch in the fishery was not analyzed in this EA because doing so would not allow for rebuilding within 10 years, and, therefore, would not be in compliance with National Standard 1 of the Magnuson-Stevens Act. According to biomass projections by PIFSC SAP (cite PIFSC memo to the record), an annual catch of 5,000 lb is the highest amount of catch that would allow rebuilding to within statutory requirements. Thus, the implementation of an ACL that would authorize a relatively higher level of annual catch would not allow for rebuilding to occur within the time frame specified under statutory requirements.

### **2.7.2 Implement Federal Permitting and Reporting Alongside Bag Limits**

Under this alternative, annual bag limits would be implemented for bottomfish fishing in Federal waters in addition to the ACLs and AMs proposed in the presented action alternatives. Federal permitting and reporting would also be implemented to support the monitoring of the bag limits. This alternative was initially presented to the Council and its SSC at their meetings in November and December 2020 but was not heavily considered to be enacted. These provisions would require substantial additional administrative resources and effort relative to all other alternatives to enact the new limitations, establish a permitting scheme, and develop of consistent method of reporting for fishermen. These regulations could also result in additional costs to fishermen to obtain the permit and dedicate time to accurately reporting their catches under the bag limits in Federal waters. Fishermen would also need to learn about the bag limit regulations, comply with the new laws such that they do not harvest more than the limit that they are individually allocated, and report their catches in Federal waters to NMFS. NMFS would need to dedicate resources to developing a system to distribute permits to fishermen, receive their catch reports, and ensure that fishers are not exceeding their allocated bag limit. Additional resources would

also be required by the NMFS Office of Law Enforcement (OLE) and U.S. Coast Guard (USCG) to enforce legal fishing in Federal waters under the bag limits. The substantial additional costs and effort required under this alternative for both NMFS and Guam bottomfish fishermen would likely result in little perceivable conservation benefit relative to the action alternatives, so this alternative was removed from consideration for this rebuilding plan when presented to the Council for final action.

### **2.7.3 Implement a Post-Season AM**

This alternative would employ a post-season AM to augment the implementation of the ACL under Alternatives 2 and 4 for the fishery to help ensure that the ACL can result in the rebuilding of the American Samoa BMUS stock complex. The post-season AM would require an accounting of annual catch (using a three-year running average of recent catch) for the stock complex relative to its ACL immediately after the end of the fishing year, or as soon as possible given the limitations in the data collection and processing methods. If landings for the three-year running average exceed the specified ACL, the AM would require the Council to take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. For the purposes of the post-season AM for this rebuilding plan, this would include a recommendation that NMFS implement a downward adjustment to the ACL in the subsequent fishing year by the amount of overage pursuant to 50 CFR 600.310(g)(3). NMFS would compare a three-year running average of catch to the ACL instead of comparing catch from a single year to apply the overage adjustment to the ACL in accordance with 50 CFR 600.310(g)(5). The American Samoa bottomfish fishery has variable catches and lacks reliable annual data on which to base a single-year post-season AM due to the nature of the creel survey program that currently collects data on the fishery. Additionally, there is precedence for the use of a three-year running average for the post-season overage adjustment in previous Council actions, as the post-season AM for the 2019 to 2021 ACL for gray jobfish (uku) in the Main Hawaiian Islands utilizes a three-year running average (85 FR 26622, May 5, 2020).

A post-season AM was not included in the alternatives of this rebuilding plan because it ultimately would not be able to address the operational issues that are likely to cause the exceedance of the implemented ACL for the fishery (i.e., continued fishing in territorial waters). Further, because the recent average catch is higher than ACLs presented in the Alternatives 2 and 4, it is likely that the post-season AM would have to be applied each year of the rebuilding plan and result in an annual reduction of the ACL without tangible conservation benefit.

**Table 13. Comparison of the proposed fishery management features and expected outcomes for this action.**

<b>Topic</b>	<b>Alt. 1 – ACL of 13,000 lb w/ In-Season AM</b>	<b>Alt. 2 – ACL of 1,500 lb with In-Season AM and Higher Performance Standard</b>	<b>Alt. 3 – Closure of Fishery in Federal Waters</b>	<b>Alt. 4 – ACL of 5,000 lb with In-Season AM and Higher Performance Standard</b>
Also referred to as:	Status quo, baseline.	N/A.	N/A.	N/A.
Active fisheries affected	American Samoa bottomfish.	No change from status quo.	No change from status quo.	No change from status quo.
Active fisheries potentially affected indirectly	American Samoa troll.	No change from status quo.	No change from status quo.	No change from status quo.
General characteristics of alternative	<p>ACL set consist with previous interim management measure; in-season fishery closure as the AM.</p> <p>Alt. 1 would have less adverse impact to the fishing community than the other alternatives.</p>	<p>ACL set to end overfishing and rebuild the fishery; in-season fishery closure as the AM with a higher performance standard.</p> <p>Alt. 2 reduces adverse effects on fishing community relative to Alt. 3 and 4 but would have impacts to the fishing community relative to Alt. 1.</p>	<p>Moratorium on fishing for or possessing BMUS in Federal waters to reduce overfishing and rebuild the fishery.</p> <p>Alt. 3 has more short-term effects on fishing community than the status quo but would increase sustainably over time.</p>	<p>ACL set to end overfishing and rebuild the fishery; in-season fishery closure as the AM with a higher performance standard.</p> <p>Alt. 4 reduces adverse effects on fishing community relative to Alt. 3 but would have impacts to the fishing community relative to Alt. 1 and 2.</p>
Authorized annual catch (lb) of BMUS in American Samoa	13,000 lb.	1,500 lb.	0 lb.	5,000 lb.
Time to rebuild	32 years.	8 years.	8 years.	10 years.

assuming complementary management by the territory ( $T_{\text{target}}$ )				
Time to rebuild assuming no complementary management	32 years.	19 to 20 years.	19 years.	19 to 21 years.
Catch monitored by:	American Samoa DMWR Creel Surveys.	No change from status quo.	No change from status quo.	No change from status quo.
Would expected catches allow stock biomass to increase?	<p>With complementary management: Yes. The expected level of annual catch would take 32 years to allow rebuilding. Biomass increases under this level of catch would occur at a slower pace than Alt. 2 and 3, and</p> <p>Without complementary management: Potentially. The expected level of annual catch would take 32 years to allow rebuilding, but any exceedance of the ACL could offset the increases to biomass and delay rebuilding.</p>	<p>With complementary management: Yes. The expected catch would allow biomass to increase and reach <math>B_{\text{MSY}}</math> in eight years.</p> <p>Without complementary management: Yes. Even if fishing continues in territorial waters, the expected catch would allow biomass to increase, albeit at a lesser rate than under complementary management, and reach <math>B_{\text{MSY}}</math> in 19 to 20 years.</p>	<p>With complementary management: Yes. Biomass would increase at the fastest possible rate in the absence of fishing mortality and reach <math>B_{\text{MSY}}</math> in eight years.</p> <p>Without complementary management: Yes. Even if fishing continues in territorial waters, the expected catch would allow biomass to increase, albeit at a lesser rate than under complementary management, and reach <math>B_{\text{MSY}}</math> in 19 years.</p>	<p>With complementary management: Yes. The expected catch would allow biomass to increase and reach <math>B_{\text{MSY}}</math> in 10 years.</p> <p>Without complementary management: Yes. Even if fishing continues in territorial waters, the expected catch would allow biomass to increase, albeit at a lesser rate than under complementary management, and reach <math>B_{\text{MSY}}</math> in 19 to 21 years.</p>
Is the ACL	No, since the recent	Yes, likely by Feb. in the	N/A.	Yes, likely by May in the first year of the rebuilding



likely to be exceeded in a given year (based on recent average catch)	average catch is below this ACL. However, it remains possible.	first year of the rebuilding plan.		plan.
Accountability Measures	In-season: If available data indicates the fishery would attain the ACL, NMFS would close the fishery in Federal waters.	In-season: No change from status quo.  Performance Standard: If the ACL is exceeded once, Federal waters would be closed to the fishery until a new management approach is implemented.	No AMs implemented, as the fishery would be closed in Federal waters.	Same as Alt. 2.
Would there be a complementary closure of territorial waters by the American Samoa Government?	Unknown. Analyses account for both the possibility of complementary management by the territory as well as the Federal action without complementary management.	No change from status quo.	No change from status quo.	No change from status quo.
Possibility of fishery closure in Federal waters	Yes, possible but not certain given the recent average catch level.	Likely by Feb. in 2022 and for the full year each subsequent year.	Full year for duration of plan.	Likely by May in 2022 and for the full year each subsequent year.
Expected annual catch of American Samoa BMUS	With complementary management: 12,687 lb.  Without complementary management: 12,687 lb.	With complementary management: 1,500 lb in 2022 and 0 lb in subsequent years.  Without complementary	With complementary management: 0 lb.  Without complementary management: 10,784 lb.	With complementary management: 5,000 lb in 2022 and 0 lb in subsequent years.  Without complementary

		management: 11,009 lb in 2022 and 10,784 lb in subsequent years.		management: 11,534 lb in 2022 and 10,784 lb in subsequent years.
Probability of rebuilding after 10 years ( $T_{max}$ ) under expected catch	With complementary management: 38.6 percent.  Without complementary management: 38.6 percent.	With complementary management: 56.7 to 58.9 percent.  Without complementary management: 40.7 to 41.1 percent	With complementary management: 58.9 percent.  Without complementary management: 41.1 percent.	With complementary management: 50.8 to 58.9 percent.  Without complementary management: 39.9 to 41.1 percent
Reduces overfishing relative to previous years	No, not relative to the previous interim measure.	Yes, slight reduction of catch relative to status quo (less than Alt. 3 and 4 in the first year).	Yes, slight reduction of catch relative to status quo (more than Alt. 2 and 4 in the first year).	Yes, slight reduction of catch relative to status quo (less than Alt. 3 in the first year).
Mitigates effects of immediately ending overfishing on communities during rebuilding	Yes, in the short term. Fishing in the fishery would be the same as it has been under the interim measure and closer to previous years than the action alternatives.  However, this alternative lacks the long-term benefits of restricting overfishing and shortening the rebuilding time frame to the same extent that the action alternatives would provide.	Yes, in the short term. Most mitigation of community impacts possible while rebuilding in the shortest feasible time frame. More fishing would be expected than under Alt. 3 in the first year of the plan.  Long-term, there would likely be additional benefit to rebuilding the stock than under Alt. 1 and 4.	In the short term, not relative to Alt. 1 or 2 since a closure of Federal waters would achieve rebuilding in the shortest time possible but does not account for impacts to the community.  Long-term, there would likely be additional benefit to rebuilding the stock more quickly than under Alt. 1, 2 and 4, which could improve the future outlook of the fishery.	Yes, to the greatest possible extent under statutory requirements. Most mitigation of community impacts possible while rebuilding regulatory maximum time. More fishing would be expected than under Alt. 2 and 3 in the first year of the plan.  Long-term, there would likely be additional benefit to rebuilding the stock than under Alt. 1.

### **3 AFFECTED ENVIRONMENT AND POTENTIAL EFFECTS OF THE ALTERNATIVES**

This section describes the affected fishery, fishery resources, protected species, habitats, and the potential environmental effects of the proposed rebuilding plan on these resources. Climate change and environmental justice are considered, along with potential effects to fishing communities, species marine areas and other resources, and potential effects on fishery administration and enforcement.

#### **3.1 American Samoa**

The Samoa Archipelago is located in the central South Pacific Ocean and consists of seven major volcanic islands, several small islets, and two coral atolls. The largest islands in this chain are Upolu and Savaii, which belong to the independent state of Samoa with a population of approximately 198,950 people ([World Population Review](#), accessed November 11, 2020). In contrast, the Territory of American Samoa has a population of 55,191 ([World Population Review](#), accessed November 11, 2020). The territory consists of five volcanic islands (i.e., Tutuila, Aunu'u, Ofu, Olosega, and Ta'ū) with steep, mountainous terrain and high sea cliffs in addition to two coral atolls (i.e., Swains Island and Rose Atoll). Tutuila is the largest and most populous island in the territory, inhabited by over 95 percent of the total population of American Samoa ([World Population Review](#), accessed November 11, 2020). Tutuila is characterized by an extensive shelf area accompanied by offshore banks and barrier reefs. Tutuila is also the center of government and business for the territory, and Pago Pago Harbor on Tutuila is one of the most sheltered natural deep water harbors in the Southern Pacific (WPRFMC 2009).

#### **3.2 Overview of Bottomfish Management**

NMFS and the Council manage bottomfish fishing in Federal waters (3 to 200 nm) around American Samoa in accordance with the FEP for the American Samoa Archipelago (WPRFMC 2009), which was developed by the Council and implemented by NMFS under the authority of the Magnuson-Stevens Act. The American Samoa Archipelago FEP emphasizes community participation, increased consideration of the habitat and ecosystem in its management structure, and other elements that are not usually incorporated in fishery management decision making. The American Samoa DWMR manages bottomfish fishing from 0 to 3 nm from the shore. A joint Federal-territorial partnership enforces Federal fishery regulations, and the American Samoa Archipelago FEP requires the Council to produce an annual performance report for the fishery (e.g., WPRFMC 2021). Federal regulations prohibit bottom trawls, bottom gillnets, explosives, and poisons (50 CFR Parts 665.104 and 665.406). Additionally, territorial regulations also prohibit the use of explosives, poisonous substances, and electrical devices, in addition to specifying requirements for which cast nets, gill nets, seines, surround nets, and drag nets may be used (ASCA § 24.0920 through 24.0933).

Currently, there are no Federal permit or reporting requirements for bottomfish fishing in Federal waters around American Samoa. The American Samoa bottomfish fishery is monitored using data voluntarily provided by fishermen to DMWR through the boat-based and shore-based creel survey programs. Additionally, DMWR receives commercial sales data from the mandatory commercial receipt book system in accordance with territorial regulations.

### **3.2.1 Overview of the Fishery Data Collection and Permit Systems in American Samoa**

In American Samoa, local resource management agencies, such as DMWR, collect bottomfish fishery data with assistance from NMFS PIFSC through the boat-based creel survey program, the shore-based creel survey program, and the commercial receipt book system. Bottomfish fishermen in American Samoa are not required to obtain a Federal permit to fish for BMUS or report their BMUS catch to NMFS.

The boat-based creel survey program collects data on catch, effort, and participation for offshore fishing activities conducted by commercial and non-commercial fishing vessels. Surveys are conducted at main docks and boat ramps using two separate phases of data collection: participation counts and fishermen interviews. Participation counts are done by counting the number of boats not at port, identifying the presence of boat trailers, and determining the type of gear used. The fishermen interviews document catch composition, CPUE, length-weight information, catch disposition, and additional socioeconomic information. Survey days are randomly selected three to eight times per month. Surveys follow a random stratified design by survey area, weekday/weekend, and time of day (e.g., daytime and nighttime). The creel survey data are transcribed weekly into the NMFS Western Pacific Fisheries Information Network (WPacFIN) database. NMFS applies catch expansion algorithms to the data, which also include port, time of day, and fishing method, at the stratum level on an annual scale to estimate total catch, effort, and CPUE in the fishery.

The shore-based creel survey program collects data on catch, effort, and participation for inshore fishing activities. The surveys randomly sample shore-based fishing and also consist of both participation counts and fishermen interviews. Participation counts are done using a “bus route” method, with data collectors using predefined stopping points and time constraints to count the number of fishermen along the shoreline while recording gear type and number of gears. The fishermen interviews document catch composition, CPUE, length-weight information, catch disposition, and additional socioeconomic information. Survey dates are randomly selected two to four times per week and the surveys take place over eight-hour periods. The creel survey data are transcribed weekly into the WPacFIN database. NMFS applies catch expansion algorithms to the data, which also include island region, weekday/weekend, and fishing method, at the stratum level on an annual scale to estimate total catch, effort, and CPUE in the fishery.

American Samoa has a mandatory requirement for entities that sell any seafood products (e.g., fish dealers, hotels, and restaurants) to submit invoice reports to DMWR (ASCA § 24.0305). This commercial receipt book system collects information by the 16<sup>th</sup> day of every month. The system monitors fish sold locally and collects information by vendors who purchase fish directly from fishermen. The reported information typically includes the weight and number of each species purchased, the name of the fishermen providing the fish, the boat registration name and number as applicable, the name of the dealer, the date, the price paid, the type of fishing gear used, whether fish were taken in territorial or Federal waters, and other information as requested by DMWR. The submitted invoices usually compile daily trip landings.

### **3.3 Physical Resources and Potential Effects**

There are no known significant impacts to air quality, noise, water quality, view planes, or terrestrial resources from past or current bottomfish fishing activity in American Samoa. The

fishery does not have adverse effects on unique features of the geographic environment, and fishing behavior and effort are not expected to change under any alternative in a manner that would result in effects on physical resources (see Sections 2.3 through 2.6). Given the characteristics of the fishing fleet and the offshore nature of the fishery, none of the alternatives would result in impacts to air quality, noise, water quality, view planes, or terrestrial resources.

### 3.4 American Samoa Bottomfish Fishery

Throughout the development of the American Samoa bottomfish fishery in the 1900s, indigenous people harvested many of the same bottomfish species and used some of the same gears and techniques utilized currently (WPRFMC 2009). Bottomfish are typically harvested in deep waters, though some species are caught over reefs at shallower depths. The eteline snappers (e.g., *Etelis* and *Pristipomoides* spp.) are known to inhabit high-relief, deep slopes ranging from 80 to 400 m deep, and are primarily harvested using a vertical handline (see below). Other species, such as jacks, emperors, and lutjanid snappers are targeted by fishermen at shallower depths. Fishermen also catch the gray jobfish (*Aprion virescens*) by vertical handline, but this species is also harvested with drifting or slowly-moving vessels and trolling gear over relatively flat-bottom areas.

Bottomfish fishermen normally fish using a vertical hook-and-line method in which weighted and baited lines are lowered and raised with electric, hydraulic, or hand-powered reels. The main line is typically 400 to 450-pound test, with hook leaders of 80 to 120-pound test monofilament. The hooks are circle hooks, generally of the Mustad (conventional scale) sizes 11/0, 12/0, and 13/0, and a typical arrangement uses six to eight hooks branching off the main line. The terminal weight is typically 5 to 6 lb. The hook leaders are typically 2 to 3 feet long and separated by about 6 feet along the main line. Fishermen may bait hooks with fish such as the big-eye scad (*Selar crumenophthalmus*) or squid. Sometimes, fishermen supplement lines with a chum bag containing chopped fish or squid suspended above the highest hook. Commercial and non-commercial fisheries for bottomfish occur primarily in nearshore territorial waters, although some fishermen make longer trips to offshore banks in Federal waters (Brodziak et al. 2012).

The 2021 LOF estimated that there were less than 20 participants in the American Samoa bottomfish fishery (86 FR 3028, January 14, 2021). Fishing for bottomfish primarily occurs using aluminum *alia* catamarans less than 32 feet in length that are outfitted with outboard engines and wooden hand reels that fishermen use for both trolling and bottomfish fishing. Fishermen typically fish less than 20 miles from shore because few vessels carry ice (WPRFMC 2009). Since 2000, the boat-based segment of the fishery has landed between an estimated 7,688 and 42,301 lb of BMUS annually (Table 5). Over the last three years (2018 to 2020), approximately 7.2 percent of that catch has been commercially sold (Table 8; see Section 3.7.1), so the fishery is primarily non-commercial. Though the pelagic fisheries play a relatively larger role in American Samoa's economy, insular fisheries hold fundamental socioeconomic and dietary importance (Levine and Allen 2009). The demand for bottomfish on American Samoa varies depending on the need for fish at government and cultural events, and *alia* fishermen may switch to bottomfish fishing during periods when longline catches or prices are low (WPRFMC 2021). Fishing grounds in Federal waters around American Samoa are also important for the harvest of deep-water snappers used for chiefly position entitlements and *fa'a lavelave* ceremonies (e.g., funerals, weddings, births, and special birthdays).

### 3.4.1 Potential Effects on the Bottomfish Fishery

#### Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)

Under Alternative 1, management would mirror the provisions of the interim measure with an ACL of 13,000 lb and in-season AM to prevent the fishery from exceeding the catch limit. Under the in-season AM, the fishery would be closed in Federal waters if available information indicates that the ACL would be attained during the fishing year. During a closure of Federal waters, NMFS would prohibit fishing for and possession of BMUS in Federal waters. The potential for a parallel closure of territorial waters is dependent on the American Samoa Government implemented complementary management with this Federal action.

This alternative would set the ACL equivalent to the limit under the interim measure at approximately 12 percent of the ACLs recently implemented in 2016 and 2017 (ACLs were not implemented in 2018 and 2019) and 103 percent of the recent five-year average of 12,687 lb. While NMFS does not assume that annual catch under this alternative would attain the ACL and trigger the in-season AM if catches are similar to those in recent years (Table 5), it remains possible that the catch limit could be exceeded during a year of variably high catch and trigger the in-season AM. Territorial waters of American Samoa would not be affected by the Federal closure if complementary management is not implemented, and bottomfish habitat is predominantly found in territorial waters. NMFS expects that some fishing effort could be displaced from Federal waters to unrestricted territorial waters in response to a closure of Federal waters to bottomfish fishing in the absence of complementary management, and this displacement would limit the potential reduction in catch from the application of the in-season AM. However, given the recent average catch level relative to the ACL under this alternative, we expect that the fishery will continue operating as it has in recent years and not attain the ACL. The fishery is not expected to change the way it fishes with respect to catch, area fished, fishing gear, fishing effort, participation, or intensity since the ACL would not assuredly be attained. Overall, catch may remain consistent with recent performance of the fishery under the interim measure, but a Federal closure, if implemented, would likely be subverted by continued fishing in territorial waters beyond the jurisdiction of NMFS with the lack of complementary management.

Since ACLs were first implemented in 2012, the lowest estimated catch of BMUS in American Samoa was in 2012 at 7,688 lb, and the greatest catch was in 2015 at 29,511 lb. The average annual catch from 2018 to 2020 was 12,687 lb (Table 5). The level of catch authorized under this alternative is over 60 percent larger than the six-year OFL of 8,000 lb estimated in the 2019 stock assessment (Langseth et al. 2019). Thus, the catch level authorized under this alternative would limit overfishing relative to an unrestricted fishery but would not end overfishing. Additionally, an annual catch of BMUS of 13,000 lb would not allow rebuilding of the stock complex to its  $B_{MSY}$  for at least 32 years (Table 8). The stock complex persisting in an overfished state could impact fishery productivity in the long-term if the worsening condition of the stock complex impacts fishery performance due to reduced availability of bottomfish resources. In summary, similar to the interim measure, Alternative 1 has the potential to result in reduced fishery impacts on the bottomfish stock complex relative to an unrestricted fishery, which could improve the ability of the fishery to harvest bottomfish resources in the short-term; this could also reduce adverse social, cultural, and economic effects on members of the American Samoa

fishing community relative to acting to end overfishing immediately as required under the Magnuson-Stevens Act. However, implementing the status quo alternative is not consistent with the Purpose and Need for NMFS to act to end overfishing and rebuild the fishery consistent with requirements under the Magnuson-Stevens Act.

### **Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard**

Under Alternative 2, NMFS would implement an ACL of 1,500 lb and establish an in-season AM to close the fishery if the ACL were to be exceeded during the fishing year. Additionally, a higher performance standard would be implemented to close the fishery in Federal waters if the ACL is exceeded once until a coordinated management approach is developed that ensures catch in both Federal and territorial waters can be maintained at levels that allow the stock to rebuild. This alternative would set the ACL at 1.4 percent of the ACLs recently implemented in 2016 and 2017 (ACLs were not implemented in 2018 or 2019) and approximately 12 percent of the recent three year average catch of 12,687 lb. It is expected that total annual catch would exceed the ACL in the first fishing year and trigger the in-season AM, as this level of authorized catch is lower than any estimate of annual catch for the fishery (Table 5). Using monthly catch expansions provided by NMFS, the fishery would likely reach the ACL within the first few months of the year (Section 2.4.1). The outcome of implementing the management provisions under Alternative 2 is dependent on the decision by the American Samoa Government to implement complementary management with this Federal action. In the absence of complementary management, a closure of Federal waters to bottomfish fishing could result in a reduction of catch of 1,678 lb from the recent average (and status quo) if fishing occurs consistent with the proportion of bottomfish habitat in Federal waters versus territorial waters. However, in this scenario, it is anticipated that some fishing effort may be displaced from Federal waters to unrestricted territorial waters in response to a closure of Federal waters to bottomfish fishing without a complementary closure of territorial waters. Continued harvest in territorial waters would limit the potential reduction in catch realized from a closure of Federal waters, so catch in the first year under this alternative is expected to be 11,009 lb to 12,687 lb (Section 2.4.1). If complementary management is enacted by the territory, catch in both territory and Federal waters would be limited to 1,500 lb. Due to the application of the performance standard, the fishery is expected to be closed in subsequent years of the rebuilding plan until a reasonable method of restricting fishing mortality at the level needed to rebuild in the target timeframe is developed; this would likely be the case regardless of whether complementary management is implemented. Thus, the expected annual catch would be 10,784 lb to 12,687 lb after the first year of the rebuilding plan, which would allow a potential reduction of catch of 1,903 lb from the recent average catch and status quo if complementary management is not implemented. If it is implemented, the expected annual catch in subsequent years would be 0 lb.

In the absence of complementary management, the fishery is not expected to change the way it fishes with respect to fishing gear, effort, participation, or intensity, and it is expected to change slightly with respect to catch and areas fished since bottomfish fishing would likely be prohibited in Federal waters for a majority of the first fishing year and then the entirety of subsequent years of the rebuilding plan. Under complementary management, the catch level authorized under Alternative 2 would end overfishing and rebuild the bottomfish fishery in American Samoa from its overfished state in eight years, and there could be substantial changes to effort, participation, intensity, catch, and areas fished due to the closure of both territorial and

Federal waters to the fishery if the in-season AM and performance standard are applied. Without complementary management, rebuilding would likely be delayed to 19 to 20 years due to fishing continuing in territorial waters. Although catch is expected to exceed the level specified by the ACL because of continued fishing in territorial waters after a Federal fishery closure in this scenario, catch and overfishing would still be reduced compared to the status quo alternative (Sections 2.3 and 2.4). Implementing the ACL, AM, and performance standard for this alternative would not address concerns by the Council and its SSC associated with immediately ending overfishing, as this level of authorized catch would be a drastic reduction from the recent average levels of annual catch. While this alternative provides a small level of catch in Federal waters during the first year, continued fishing in territorial waters would not allow overfishing to be prevented and rebuilding would be substantially delayed without complementary management; however, it is expected that the relatively lower annual expected catch would allow rebuilding in a shorter period than the status quo. Alternative 2 has the potential to result in reduced fishery impacts on the bottomfish stock complex relative to Alternatives 1 and 4, which could allow the fishery to be more productive in harvesting bottomfish resources, while limiting adverse social, cultural, and economic effects on the fishing community relative to Alternative 3 by allowing a small amount of catch in the first year of the rebuilding plan.

### **Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters**

Under Alternative 3, NMFS would prohibit fishing for and possession of BMUS in Federal waters around American Samoa. This alternative is functionally equivalent to an ACL of 0 lb in Federal waters and is the Federal action that would reduce overfishing to the greatest extent and rebuild the bottomfish stock complex in the shortest possible time. Because most of the bottomfish habitat around American Samoa is in territorial waters (Fig. 2), closing Federal waters is expected to reduce catch moderately for the fishery relative to the status quo and only slightly relative to Alternatives 2 and 4 in the first year of the rebuilding plan if complementary management is not implemented by the territorial government. In this scenario, if the fishery continues activity as it has in recent years at an annual average of 12,687 lb, catch of American Samoa BMUS may be reduced by 1,903 lb due to the Federal fishery closure; this would be a reduction of 225 lb from Alternative 2 in the first year of the rebuilding plan. However, it is expected that some fishing activity would be displaced from Federal waters to territorial waters if a closure were to be implemented and may offset some of the expected reduction in catch. Thus, catch under this alternative is expected to range from 10,784 lb to 12,687 lb for each year of the rebuilding plan without complementary management. If complementary management is implemented, then annual BMUS catch would be expected to be 0 lb.

The fishery is not expected to make any significant changes to its fishing gear, effort, participation, or intensity over the course of the rebuilding plan as a result of this alternative without the implementation of complementary management, but slight changes are expected for the total amount of catch and areas fished since bottomfish fishing would be prohibited in Federal waters. Due to the slight reduction in catch expected under this alternative in this scenario, it would provide some conservation benefit to the American Samoa bottomfish stock complex relative to the status quo alternative. If complementary management is implemented, the fishery would be closed in both territory and Federal waters, significantly impacting effort, participation, intensity, catch, and areas fished by the fishery.



Although the catch level under this alternative would prohibit all BMUS fishing in Federal waters to end overfishing and rebuild the fishery in eight years, whether this outcome can be achieved is dependent on the territory's decision to implement complementary management with this Federal action. If complementary management is not implemented, actual catch is expected to continue to exceed sustainable fishing levels identified in the 2019 stock assessment due to continued fishing in territorial waters (Langseth et al. 2019) and extend the rebuilding timeline to 19 years (Table 8). However, it is expected that catch and overfishing would be reduced compared to the status quo (Section 2.5.1). If complementary management is implemented, rebuilding could be achieved in the originally proposed timeline. Implementing Alternative 3 would not address concerns by the Council or its SSC that taking action to end overfishing would negatively impact fishing communities in American Samoa because authorized catch levels would allow for no BMUS harvest and are lower than the level that would restrict overfishing and rebuild the fishery as presented under Alternatives 2 and 4. Alternative 3 has the potential to reduce adverse effects to the American Samoa bottomfish stock relative to status quo and would also result in slightly less catch than Alternatives 2 and 4 in the first year of the rebuilding plan. However, Alternative 3 does not reduce adverse social, cultural, and economic effects on the American Samoa fishing community to the same extent as Alternatives 2 and 4 in the first year of the plan since it would prohibit all bottomfish fishing in Federal waters and may restrict fishing in territorial waters if complementary management is implemented. Therefore, this alternative would do less than Alternatives 1, 2, and 4 to address Council concerns regarding negative impacts to the American Samoa fishing community associated with restricting the fishery to immediately end overfishing.

#### **Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard**

Under this alternative, the Council would recommend and NMFS would implement an ACL of 5,000 lb with the same in-season AM and performance standard as Alternative 2. Alternative 4 would set the ACL at 4.7 percent of the ACLs implemented in 2016 and 2017 (ACLs were not implemented by NMFS in 2018 or 2019), at 39.4 percent of the recent average catch of 12,687 lb, and at 38.5 percent of the ICL most recently implemented for the fishery in 2020 and 2021. NMFS expects that total annual catch by the fishery would attain the proposed ACL in the first half of the first fishing year under the rebuilding plan (Section 2.6.1) and trigger the in-season AM since a catch level of 5,000 lb is lower than any recent estimate of total annual catch for the fishery (see Table 5). The expected outcome associated with the management provisions under Alternative 4 would be dependent on the implementation of complementary management by the American Samoa Government. In the absence of complementary management, a closure of Federal waters to bottomfish fishing could result in a reduction of catch of 1,153 lb relative to the status quo if BMUS harvest is consistent with the proportion of bottomfish EFH in Federal versus territorial waters. However, NMFS also expects, in this scenario, that some fishing effort may be displaced from newly closed Federal waters to unrestricted territorial waters in response to the application of the in-season AM and performance standard if complementary management is not in place. Displacement of fishing effort from Federal to territorial waters could reduce the conservation benefits anticipated under a Federal closure, so catch in the first year of the rebuilding plan under Alternative 4 would range from 11,534 lb to 12,687 lb (Section 2.6.1). If the territory does decide to implement complementary management alongside this Federal action, total annual catch in both Federal and territorial waters would be restricted to around 5,000 lb, the proposed ACL. Due to the expected application of the performance standard, the

fishery would likely be closed in subsequent years of the rebuilding plan until a collaborative approach of restricting fishing mortality at the level needed to rebuild in the target timeframe is developed; this would likely occur regardless of whether complementary management is implemented or not. Thus, the expected annual catch would be 10,784 lb to 12,687 lb in years after the first year of the rebuilding plan in the absence of complementary management, which would allow a potential reduction of catch of 1,903 lb from the status quo (Section 2.6.1). If complementary management is implemented, the expected annual catch in subsequent years would be 0 lb due to the fishery being restricted in both territorial and Federal waters.

If complementary management is not implemented, NMFS does not expect the fishery to change the way it fishes with respect to fishing gear, effort, participation, or intensity, but we do expect a slight change in catch and areas fished since bottomfish fishing would likely be prohibited in Federal waters for over half of the first fishing year and the entirety of subsequent years of the rebuilding plan. Rebuilding would likely take 19 to 21 years due to continued fishing in territorial waters after the ACL would be attained. Although catch is expected to exceed the level authorized by the ACL because of continued fishing in territorial waters after a Federal fishery closure, both total catch and overfishing would still be reduced relative to the status quo (Sections 2.3 and 2.6). If complementary management is implemented by the territorial government, the management provisions under Alternative 4 would be likely to end overfishing and rebuild the American Samoa bottomfish fishery to its  $B_{MSY}$  within the 10 year timeframe mandated by National Standard 1 of the Magnuson-Stevens Act. However, in this scenario, there could also be substantial changes to effort, participation, intensity, catch, and areas fished for the fishery if the in-season AM and performance standard are applied (i.e., resulting in a closure of both territorial and Federal waters to the fishery).

Implementing the ACL, AM, and performance standard proposed under this alternative would not address concerns by the Council and its SSC associated with impacts to the American Samoa fishing community from immediately ending overfishing, as this level of authorized catch reflects notable reduction in permitted fishing actively relative to recent average levels of annual catch. While Alternative 4 allows for a small level of catch in Federal waters during the first year, continued fishing in territorial waters would not allow overfishing to be prevented and rebuilding would be substantially delayed without complementary management. However, it is expected that the relatively lower annual expected catch would allow rebuilding in a shorter time than the status quo. Thus, Alternative 4 has the potential to result in reduced fishery impacts on the American Samoa bottomfish stock complex relative to Alternative 1, which could allow the fishery to be more productive in the harvest of bottomfish resources going forward, while limiting adverse social, cultural, and economic effects on the fishing community relative to Alternatives 2 and 3 by allowing the highest possible amount of authorized catch while still promoting rebuilding within the maximum regulatory timeframe.

### **3.5 Target, Non-Target, and Bycatch Species**

The bottomfish fishery in American Samoa primarily targets and harvests a complex of 11 species comprised of emperors, snappers, groupers, and jacks (Table 1). BMUS are typically monitored at the complex level in both territorial and Federal waters, and the 2019 stock assessment (Langseth et al. 2019) and PIFSC SAP provided stock status and biomass projections at this level. Therefore, the proposed rebuilding plan under the action alternatives would be

applied to the entire American Samoa bottomfish stock complex rather than to the 11 individual species comprising the group; however, NMFS only has regulatory over Federal waters, and any action taken in territorial waters in accordance with this Federal action would be due to the territory deciding to implement complementary management with this Federal action.

The primary sources of information on target, non-target, and bycatch species associated with American Samoa bottomfish are NMFS stock assessments by Brodziak et al. (2012), Yau et al. (2016), and Langseth et al. (2019), data provided by PIFSC SAP ([[Reference PIFSC SAP memo](#)]), as well as data provided by NMFS and summarized in the Council's annual SAFE report (e.g., WPRFMC 2021). The stock assessment concluded that the American Samoa bottomfish stock complex is overfished and experiencing overfishing (Section 2.1.1), estimated the long-term MSY for the stock complex to be 28,800 lb, and determined the six-year OFL proxy for the stock to be 8,000 lb for 2020 to 2025. Between 2018 and 2020, the fishery harvested an average of 12,687 lb annually (Table 5), which is 44 percent of the MSY and 159 percent of the OFL from the 2019 stock assessment.

The Magnuson-Stevens Act defines bycatch as finfish, mollusks, crustaceans, and all other forms of marine animal and plant life (other than marine mammals and seabirds) that are harvested in a fishery that are not sold or kept for personal use. Bycatch can be further described as either economic or regulatory discards. Economic discards are fish that are discarded because they are of undesirable size, sex, or quality, while regulatory discards are fish that are discarded because regulations do not allow fishermen to retain the fish. Discards in American Samoa usually occur due to regulatory requirements, cultural reasons, ciguatera poisoning, or shark depredation. Data on bycatch harvested in the American Samoa bottomfish fishery are collected through the boat-based and shore-based creel survey programs run by DMWR and are reported by the Council in its annual SAFE reports. Bottomfish fishing is target-specific, and no fish recorded in creel survey fishermen interviews for the American Samoa bottomfish fishery were released in 2020 (see Table 12 in WPRFMC 2021). Thus, there is no current concern regarding non-target or bycatch species in the fishery.

### **3.5.1 Potential Effects of the Alternatives on Target Stocks**

#### **Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)**

Under Alternative 1, the Council would recommend and NMFS would implement management measures mirroring the same provisions as the interim measure in 2020 and 2021 for the fishery, including an ACL of 13,000 lb and an in-season AM to prevent the fishery from greatly exceeding the catch limit. The ACL and AM under the status quo alternative would be expected to maintain the fishery outcomes observed under the interim measure, which include an expected reduction in overfishing from previous years. This would still likely be the case in the absence of complementary management despite continued harvests in territorial waters if the fishery attains the ACL and the in-season AM is applied to close Federal waters. Catch would be comparable to the levels observed under the interim measure, which are expected to be maintained at the recent annual average of 12,687 lb (Section 2.3.1). Thus, Alternative 1 would reduce overfishing relative to the previous years, maintain recent average fishery activity, and be consistent with the outcomes of the interim measure. Bottomfish populations resident at offshore banks in Federal waters (e.g., South Bank, Northeast Bank, see Fig. 2) may benefit from a closure of these areas if implemented after a year of variably high catch, though fish at inshore areas in territorial waters

are expected to experience continued fishing effort if complementary management is not implemented. If it is implemented, total catch for the fishery would be restricted to 13,000 lb annually. The annual catch level expected under this alternative would not allow for rebuilding of the stock complex for 30 years. Overall, implementation of the status quo would slightly reduce overfishing compared to years prior to the application of the interim measure in 2020, is expected to be consistent with the outcomes of the interim measure, but would not serve to end overfishing or rebuild the stock complex in accordance with Magnuson-Stevens Act requirements.

The ACL and AM under the status quo are expected to result in catches by the fishery similar to the interim measure, and catch levels are expected to be slightly less than observed prior to the implementation of the interim measure. Therefore, the fishery is expected to continue operating as it has in recent years under the status quo alternative with respect to species targeted, effort, participation, and intensity, with slightly changes to catch and areas fished (Section 2.3.1). Fishing would still occur in waters outside NMFS control if a closure would be enacted unless complementary management is enacted, so overfishing would be limited but not ended in this scenario. Because this alternative provides for the closure of offshore fishing grounds under Federal jurisdiction even in the absence of complementary management, there would be the same benefit to the stock complex as under the interim measure. If complementary management is implemented, there could be greater conservation benefits to the stock complex in years of high catch. Since overfishing would not be prevented and rebuilding of the fishery would not occur within 10 years, this alternative is not consistent with the Purpose and Need for this proposed action.

### **Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard**

Under Alternative 2, the catch authorized is intended to prevent overfishing while rebuilding the American Samoa bottomfish fishery to its  $B_{MSY}$  in eight years, but this outcome being achieved is dependent on the territory implementing complementary management. Without complementary management, it is expected that the fishery would exceed this level of catch due to the displacement of fishing effort to territorial waters, where the majority of bottomfish EFH around American Samoa is situated, in the event of a Federal fishery closure after the ACL is reached. Thus, the rebuilding timeline in this scenario is expected to be substantially delayed to 19 to 20 years. In the first year of the rebuilding plan, it is anticipated, even with fishery operations continuing in territorial waters after a closure of Federal waters, that Alternative 2 would reduce catch by 1,678 lb from the recent annual average of 12,687 lb, which is also the level of catch expected under the status quo. The application of the performance standard in subsequent years would cause catches to be reduced to 10,784 lb annually due to a complete Federal closure, which would be a reduction of 1,903 lb from the status quo. While bottomfish harvested in territorial waters may continue experiencing consistent fishing effort in the absence of complementary management, there may be beneficial effects for fish populations at offshore banks in Federal waters (Fig. 2) if a Federal closure is implemented. If complementary management is implemented, catch is expected to be restricted to 1,500 lb in the first year and 0 lb in subsequent years due to application of the performance standard. In summary, without complementary management, Alternative 2 is expected to slightly reduce overfishing relative to the status quo alternative, so fishery impacts on bottomfish populations around American Samoa would be slightly diminished relative to the baseline. If complementary management is

implemented, the fishery impacts on bottomfish populations would be substantially diminished due to the restriction of harvest in both territorial and Federal waters.

Whether the implementation of the proposed ACL, AM, and performance standard would cause large changes in impacts to the target stock complex relative to recent years is dependent on the territory implementing complementary management or not. If complementary management is not implemented, catch levels may be slightly reduced compared to the recent annual average and catch expected under the status quo alternative. If a Federal closure is implemented in this scenario, fishing would likely persist in territorial waters, overfishing may not be ended, and rebuilding would be delayed, which would be inconsistent with the Purpose and Need for this action; however, overfishing would still likely be reduced relative to the status quo. If complementary management is enacted, catch levels would be notably reduced and fishing in territorial waters would be restricted once the ACL would be attained. Overfishing would be restricted and rebuilding would be allowed to occur within the regulatory maximum time. The expected closure of Federal waters a few months into the first fishing year and for the full year for the remainder of the rebuilding plan would likely provide conservation benefit to the American Samoa bottomfish stock complex. However, the provisions of the proposed alternative that are intended to rebuild the fishery in eight years would not be actualized without the implementation of complementary management. The action that the Council could recommend for NMFS to implement under Alternative 3 (Section 3.3.2.1.3) that would promote rebuilding in the shortest possible time would also not achieve rebuilding of the fishery in the proposed eight years without complementary management. Alternative 2, in contrast, would allow a small level of catch in Federal waters in the first year in consideration of mitigating social, cultural, and economic impacts to the American Samoa fishing community while providing more conservation benefit than the status quo alternative.

### **Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters**

Under Alternative 3, the outcome of the closure of Federal waters around American Samoa to bottomfish fishing is dependent on the decision by the American Samoa Government to implement complementary management. Without complementary management, this alternative would be expected to result in slightly less catch than the status quo alternative and Alternatives 2 and 4 in the first year of the plan. In this scenario, the expected reduction in catch from a Federal closure would be 1,903 lb from the expected catch under the status quo of 12,687 lb (Section 2.5.1). If complementary management is implemented, expected annual catch would be 0 lb. Therefore, it is expected that overfishing would also be reduced relative to the status quo alternative. Bottomfish populations at the offshore banks in Federal waters would likely have some conservation benefit from a Federal closure if implemented, but fish harvested in territorial waters would likely experience continued fishing effort consistent with the baseline in the absence of complementary management. Thus, the provisions of Alternative 3 are expected to either slightly or completely reduce catch and overfishing relative to Alternatives 1 and 2, so fishery impacts to American Samoa bottomfish would also be relatively less. Under Alternative 3, annual catch would also likely be 225 lb to 1,500 lb less than Alternative 2 in the first year of the rebuilding plan, depending on the implementation of complementary management, but would be comparable in subsequent years.

Overall, the closure of Federal waters around American Samoa to bottomfish fishing under Alternative 3 is expected to result in the largest reduction to annual catches for the fishery among the action alternatives. Without complementary management, fishing is still likely to occur in territorial waters and overfishing would not be prevented consistent with the Purpose and Need for this action, but overfishing would be reduced to the greatest possible extent. In this scenario, rebuilding would not take place consistent with Magnuson-Stevens Act requirements, but there is likely no action NMFS could take to achieve this without territorial cooperation. There would also be some conservation benefit to the stock complex due to the reduction in catch from the closure of Federal waters to the fishery. If complementary management were to be implemented, fishing for bottomfish would also be restricted in territorial waters, overfishing would be prevented, and rebuilding would be allowed to occur in the shortest possible time. The stock complex would receive conservation benefits from the restrictions on fishing in both territorial and Federal waters. Thus, Alternative 3 would provide a greater conservation benefit than the status quo as well as Alternatives 2 and 4 in the first year regardless of whether complementary management is implemented.

#### **Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard**

Under Alternative 4, the ACL of 5,000 lb is intended to prevent overfishing while allowing the American Samoa bottomfish stock complex to rebuild to its  $B_{MSY}$  in 10 years, the regulatory maximum time. Additionally, this alternative would allow the highest possible amount of annual harvest that would still allow the BMUS stock complex to rebuild within this timeframe. Whether the provisions of Alternative 4 would be able to achieve rebuilding in the proposed timeframe is dependent on the decision by the American Samoa Government to implement complementary management alongside this Federal action or not. In the absence of complementary management, NMFS expects that fishery harvest would be in excess of the proposed ACL even after the closure of Federal waters from the application of the in-season AM when the ACL is attained because of the displacement of fishing effort from Federal waters to unrestricted territorial waters, where the majority of bottomfish EFH around American Samoa is located. If this were to occur, it is likely that the time it would take to rebuild would be extended from the proposed 10 years to 19 to 21 years due to continued BMUS harvest after the catch limit has been reached. Despite the delays to rebuilding in this scenario from fishery operations continued in territorial waters after Federal waters are closed to the fishery, NMFS anticipates that Alternative 4 could reduce catch of the target species by 1,153 lb from the recent annual average catch of 12,687 lb (i.e., the catch expected under the status quo). The implementation of the performance standard in the absence of complementary management could cause catches of the target species in subsequent years to be reduced 10,784 lb annually due to the closure of Federal waters to the fishery for the full fishing year, a reduction in harvest of 1,903 lb from the status quo. While bottomfish harvested in territorial waters may continue experiencing consistent fishing effort in the absence of complementary management, there may be beneficial effects for fish populations at offshore banks in Federal waters (Fig. 2) if a Federal closure is implemented.

If the American Samoa Government does decide to implement complementary management with this Federal action, catch would be restricted to around 5,000 lb in the first year of the rebuilding plan. The in-season AM would be applied once 5,000 lb of BMUS have been harvested, closing both territorial and Federal waters to the fishery and reducing expected catch for the remainder of the year to 0 lb. However, due to the nature of how NMFS would track bottomfish catch

through the fishing year, it remains likely that the fishery could slightly exceed this proposed catch limit, resulting in the application of the performance standard for subsequent fishing years. Thus, in the following years under the rebuilding plan, total catch of target species by the American Samoa bottomfish fishery would be expected to be reduced to 0 lb due to the complete closure of territorial and Federal waters. Overall, without complementary management, NMFS expects this alternative to reduce, but not end, overfishing relative to the status quo, and fishery impacts to bottomfish populations around American Samoa under Alternative 4 would be slightly diminished compared to the baseline. If complementary management is implemented, the fishery impacts to populations of BMUS in territorial and Federal waters around American Samoa would be substantially reduced, overfishing would be ended, and rebuilding would be allowed to occur within 10 years.

Whether the proposed management provisions of Alternative 4 would cause large changes in impacts to the target stock complex relative to the status quo would be dependent on the territory's decision to implement complementary management. In the absence of complementary management, NMFS expects that catch levels of target stocks would be slightly reduced relative to the status quo. BMUS harvest would be likely to persist in territorial waters in the event of a closure of Federal waters in accordance with the in-season AM and performance standard, which could result in continued overfishing and a delay in the proposed rebuilding timeline. While overfishing would not be ended, NMFS expects that it would still be reduced relative to the status quo. If the territorial government does decide to enact complementary management, impacts to the target stock complex could be substantially reduced, as fishing in both territorial and Federal waters would be restricted once the ACL has been attained. Overfishing would be prevented and rebuilding would be promoted to occur within the proposed 10 years. Thus, in this scenario, Alternative 4 would provide notable conservation benefits to the American Samoa bottomfish stock complex, but these benefits may not be fully realized if complementary management is not implemented. The action that the Council could recommend for NMFS to implement under Alternative 3 (Section 3.3.2.1.3) that would promote rebuilding in the shortest possible time would also not achieve rebuilding of the fishery in the proposed eight years without complementary management. Alternative 4 would allow the most catch of the target species while maintaining a high likelihood of the stock complex rebuilding within the regulatory maximum time in consideration of mitigating social, cultural, and economic impacts to the American Samoa fishing community.

### **3.5.2 Potential Effects of the Alternatives on Non-Target Species and Bycatch**

#### **Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)**

With the same management provisions as the previous interim measure under Alternative 1, it is expected that the American Samoa bottomfish fishery would continue to operate as under the interim measure with respect to catch, species targeted, effort, participation, intensity, and areas fished (Section 2.3). Catch and areas fished may be slightly changed from previous years due to the potential Federal closure in years of high catch if complementary management is not implemented, but most of bottomfish habitat is situated in territorial waters and no substantial changes are expected in this scenario. If complementary management is implemented, catch and areas fished would be completely restricted if the ACL is attained. Since there is currently no bycatch in the fishery (WPRFMC 2021), NMFS does not expect that shifts in bottomfish fishing

due to the maintenance of the status quo would be likely to change the relative impact of the fishery on non-target species and bycatch. Any catch of non-target species and bycatch would continue to be reported by the creel survey program and commercial receipt book system and summarized in the Council's annual SAFE report, which would allow for any changes in the fishery to be monitored. Any notable changes in the catch of non-target species and bycatch can be monitored and addressed by fisheries scientists and managers in future management measures. However, it is expected that the American Samoa bottomfish fishery would continue to be target-specific for BMUS under Alternative 1, and, thus, no increases in catches of non-target species and bycatch are expected. Therefore, there are no impacts expected in the absence of ACLs and AMs under Alternative 1 on non-target species and bycatch if fishery operations are with recent years.

### **Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard**

Under Alternative 2, bottomfish fishing in Federal waters would be prohibited after the cumulative catch for the year reaches 1,500 lb, likely within the first few months of the first fishing year. Subsequent years would likely be subject to the closure of the Federal fishery due to the application of the performance standard after the first year of the rebuilding plan until a reasonable method of restricting fishing mortality at the level needed to rebuild in the target timeframe is implemented. Whether fishing would also be restricted in territorial waters after the fishery attains the ACL is dependent on the territory's decision to implement complementary management or not. If complementary management is not implemented, because the majority of bottomfish habitat around American Samoa is found in territorial waters (approximately 85 percent, see Fig. 2), it is not expected that the area fished by the fishery would substantially change in the event of a Federal closure. If complementary management is implemented, the complete restriction of bottomfish fishing after the application of the in-season AM would substantially impact catch and area fished, as both territorial and Federal waters would be unavailable for bottomfish fishing. Thus, since there is currently no bycatch in the fishery (WPRFMC 2021), shifts in bottomfish fishing due to a Federal closure are not likely to change the relative impact of the fishery on non-target species and bycatch. Similarly, species targeted, effort, participation, and intensity are not anticipated to change drastically under Alternative 2 without complementary management, and effort, participation, and intensity would be completely restricted with complementary management (Section 2.4). Additionally, if the bottomfish fishery is completely restricted due to the implementation of complementary management alongside the application of the in-season AM and performance standard, bottomfish fishermen may opt to preferentially harvest other, non-BMUS species. In this scenario, there would be added impacts to the non-target species that the fishermen would begin targeting, but NMFS does not have information to determine which species may be targeted or the level of effort that the species may experience. Because the fishery would not substantially change under Alternative 2 relative to the status quo alternative, catch of non-target species and bycatch are expected to remain low or non-existent. While there may be additional impacts to non-target species under complementary management if fishermen shift their fishing targets, there is no available information to measure the extent of these potential impacts. NMFS and the Council would continue to monitor catches of all species harvested in the fishery through the creel survey program and the commercial receipt book system, and these data would continue to be summarized by the Council in its annual SAFE report. If relative impacts to non-target species



and bycatch are noted to change at some point in the future, fishery scientists and managers would be able to address these changes in future management measures.

### **Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters**

Under Alternative 3, NMFS would prohibit bottomfish fishing in the Federal waters around American Samoa. If complementary management is implemented, bottomfish fishing in territorial waters would also be restricted. Similar to Alternative 2, because there is currently no recorded catch of non-target species and bycatch in the American Samoa bottomfish fishery and large changes in the area fished by the fishery in the absence of complimentary management are not expected due to bottomfish habitat primarily occurring in territorial waters, large changes in the catch of non-target species and bycatch are not expected under this alternative. Similarly, drastic changes are not expected for species targeted, effort, participation, and intensity due to the implementation of a Federal closure. If complementary management is implemented, the fishery would be completely restricted, and no bycatch could occur. Additionally, if the bottomfish fishery is completely restricted due to the implementation of complementary management alongside the application of the in-season AM and performance standard, bottomfish fishermen may opt to preferentially harvest other, non-BMUS species. While there may be additional impacts to non-target species under complementary management if fishermen shift their fishing targets, there is no available information to measure the extent of these potential impacts. NMFS and the Council would continue to monitor the catches of all species in the fishery, which would be summarized and reported in the Council's annual SAFE reports. Fishery scientists and managers would be able to detect any change in impacts to non-target species and bycatch using these data and would address these changes in future management measure if they occur.

### **Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard**

Under Alternative 4, an ACL of 5,000 lb would be implemented alongside an in-season AM and performance standard to close Federal waters to the American Samoa bottomfish fishery if this level of authorized catch is exceeded, and it is likely that these management provisions would be applied by within the first half of the first year under the rebuilding plan. Under the performance standard, Federal waters would be closed to the fishery in subsequent years until a reasonable method of restricting fishing mortality at the level needed to rebuild in the target timeframe is implemented. Whether BMUS harvest would also be restricted in territorial waters is dependent on the territorial government's decision to implement complementary management with this Federal action. In the absence of complementary management, NMFS does not expect that the catch or area fished by the fishery would substantially change in the event of a Federal closure because most of the bottomfish habitat around American Samoa is situated in territorial waters (approximately 85 percent, see Fig. 2) that would remain unrestricted for bottomfish fishing. If complementary management is implemented by the territorial government, the complete restriction of bottomfish harvest in both territorial and Federal waters after the application of the in-season AM would substantially impact catch and areas fished. Since there is currently no bycatch in the fishery (WPRFMC 2021), shifts in areas fished by the bottomfish fishery due to a Federal closure are not likely to change the relative impact on non-target species and bycatch in the absence of complementary management. Similarly, species targeted, effort, participation, and intensity are not anticipated to change drastically under Alternative 4 without complementary management. However, if complementary management is implemented, effort, participation, and

intensity would be notably impacted (Section 2.4). Additionally, if the bottomfish fishery is completely restricted due to the implementation of complementary management alongside the application of the in-season AM and performance standard, bottomfish fishermen may opt to preferentially harvest other, non-BMUS species. In this scenario, there would be added impacts to the non-target species that the fishermen would begin targeting, but NMFS does not have information to determine which species may be targeted or the level of effort that the species may experience. In summary, because the fishery would not substantially change under Alternative 4 in the absence of complementary management relative to the status quo alternative, catch of non-target species and bycatch are expected to remain low or non-existent. While there may be additional impacts to non-target species under complementary management if fishermen shift their fishing targets, there is no available information to measure the extent of these potential impacts. NMFS and the Council would continue to monitor catches of all species harvested in the fishery through the creel survey program and the commercial receipt book system, and these data would continue to be summarized by the Council in its annual SAFE report. If relative impacts to non-target species and bycatch are noted to change at some point in the future, fishery scientists and managers would be able to address these changes in future management measures.

### **3.6 Protected Resources in American Samoa and Potential Effects**

There are several protected species known to occur in the waters around American Samoa, and thus, there exists potential for the American Samoa bottomfish fishery to interact with these protected species. NMFS has evaluated potential impacts on protected species by the American Samoa bottomfish fishery such that they can be managed in compliance with the Magnuson-Stevens Act, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), and other laws as applicable. More detailed descriptions of protected species around American Samoa are available in Section 3.3.4 of the FEP for the American Samoa Archipelago (WPRFMC 2009) and online on the [NMFS website](#).

#### **3.6.1 Applicable ESA Coordination for American Samoa Bottomfish Fisheries**

In a biological opinion submitted on March 8, 2002, for the FMP for Bottomfish and Seamount Groundfish Fisheries of the Western Pacific, NMFS determined that bottomfish and seamount groundfish fisheries of the western Pacific region (including the bottomfish fishery of American Samoa) that operate in accordance with regulations implementing the FMP were not likely to adversely affect ESA-listed sea turtle and marine mammal species. Critical habitat is not designated for any species in American Samoa, so bottomfish fishery does not adversely modify critical habitat of any ESA-listed species. Bottomfish fishing vessels are anchored or moving slowly while fishing, and there have been no reports of observations of substantial interactions between the American Samoa bottomfish fishery and ESA-listed protected species.

In 2009, the Council recommended and NMFS approved the development of five archipelagic-based FEPs, including the FEP for the American Samoa Archipelago. The FEP incorporated and reorganized elements of the Council's species-based FMPs, including the Bottomfish and Seamount Groundfish Fisheries FMP into a spatially-oriented management plan (75 FR 2198, January 14, 2010). The Council retained all applicable regulations pertaining to bottomfish fishing in the development and implementation of the FEP for the American Samoa Archipelago.

There have been several new species added to the list of threatened and endangered species since the 2002 biological opinion by NMFS. On July 3, 2014, NMFS published a final rule that listed four distinct population segments (DPSs) of scalloped hammerhead sharks under the ESA (79 FR 38213), and it was shown that the threatened Indo-West Pacific DPS occurs around American Samoa. On September 10, 2014, NMFS published a final rule that listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852), and six of those species may occur around American Samoa. On April 9, 2015, NMFS determined that the continued authorization of the coral reef, bottomfish, crustacean, and precious coral fisheries under the FEP for the American Samoa Archipelago is not likely to adversely affect the Indo-West Pacific DPS of scalloped hammerhead sharks or ESA-listed reef building corals.

On January 22, 2018, NMFS issued a final rule to list the giant manta ray as a threatened species under the ESA (83 FR 2916). On January 30, 2018, NMFS issued a final rule to list the oceanic whitetip shark as a threatened species under the ESA (83 FR 4153). On September 28, 2018, NMFS issued a final rule to list the chambered nautilus as a threatened species under the ESA (83 FR 48976). In response to these listings, NMFS reinitiated consultation under the ESA on June 5, 2019, as required by 50 CFR 402.16, to seek concurrence that the American Samoa bottomfish fishery is not likely to adversely affect the oceanic whitetip shark, giant manta ray, or chambered nautilus. Based on the information in the biological evaluation prepared to support this consultation (NMFS 2019a), NMFS concluded that the bottomfish fishery in American Samoa (1) may affect, but is not likely to adversely affect, the oceanic whitetip shark in American Samoa; (2) may affect, but is not likely to adversely affect, the giant manta ray in American Samoa; and (3) may affect, but is not likely to adversely affect, the chambered nautilus in American Samoa. On June 6, 2019, August 11, 2020, and December 15, 2020, NMFS determined that during the period of consultation, the continued operation of the bottomfish fishery in American Samoa is not likely to jeopardize the oceanic whitetip shark, giant manta ray, or chambered nautilus, would not violate ESA section 7(a)(2), and would not result in an irreversible or irretrievable commitment of resources precluding implementation of any reasonable and prudent alternatives (NMFS 2019b; NMFS 2020b; NMFS 2020c).

Additional information is provided on sea turtles, marine mammals, seabirds, corals, giant manta rays, sharks, and chambered nautilus in American Samoa in the following sections.

### **3.6.2 Sea Turtles**

All sea turtles are subject to protection under the ESA in American Samoa. Direct harvest, direct harm, and indirect harm are prohibited unless otherwise authorized. NMFS has coordinated the continued authorization of the American Samoa bottomfish fishery under Section 7 of the ESA. All six sea turtle species occurring in U.S. waters are listed under the ESA. The range of five of these species overlaps with the EEZ around American Samoa, and they may be encountered by fishermen. Territorial regulations prohibit the take, possession, and sale of green, hawksbill, and leatherback sea turtles (ASCA § 24.0959). Table 14 lists the sea turtle species reasonably likely to occur around American Samoa. No critical habitat has been established for any sea turtle species in American Samoa.

On September 22, 2011, NMFS published a final rule determining that the world loggerhead turtle population was comprised of nine DPSs, five of which are an endangered and four that are threatened. The distribution of the South Pacific Loggerhead turtle DPS overlaps with the EEZ

around American Samoa. Though this DPS is known to nest on beaches several hundred nautical miles north of the islands of the Samoa Archipelago, loggerheads may travel to and reside in habitats in the central and southeastern Pacific Ocean for several years before returning to the western Pacific for reproduction (Conant et al. 2009). There are no records of this species nesting in American Samoa, but loggerheads are known to transit the EEZ around the territory (Maison et al. 2010; Seminoff et al. 2015). The presence of green turtles, hawksbill turtles, and olive ridley turtles in the EEZ around American Samoa is well-documented (Seminoff et al. 2015).

Sea turtles currently face many threats, including (1) direct harvest of animals and eggs or predation; (2) incidental interactions with fisheries; (3) collisions with vessels and automobiles; (4) urban development / loss of habitat; (5) pollution (e.g., plastics); and (6) climate change. Sea turtle conservation initiatives are also in place, including restoration of habitats, laws to protect turtles, and management of threats to help provide for recovery. More information on the conservation of sea turtles is available on the [NMFS website](#).

**Table 14. ESA-listed sea turtles known to occur or reasonably expected to occur in waters around the American Samoa Archipelago.**

Common names/ DPS if applicable	Scientific Name	ESA listing status in American Samoa	Occurrence in American Samoa	Interactions with the American Samoa bottomfish fishery through 2020
Green sea turtle (laumei enaena and fonu)  Central South Pacific DPS	<i>Chelonia mydas</i>	Endangered DPS	Frequently seen. Nest at Rose Atoll. Known to migrate to feeding grounds.	No interactions observed or reported.
Hawksbill sea turtle (laumei uga)	<i>Eretmochelys imbricata</i>	Endangered	Frequently seen. Nest at Rose Atoll and Swain's Island.	No interactions observed or reported.
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered	Rare in American Samoa. One recovered dead in experimental longline fishing.	No interactions observed or reported.
Olive ridley sea turtle	<i>Lepidochelys olivacea</i>	Threatened	Uncommon in American Samoa. Three sightings.	No interactions observed or reported.
Loggerhead sea turtle  South Pacific DPS	<i>Caretta</i>	Endangered DPS	American Samoa is within the species nesting range, but the species has not been observed in the territory.	No interactions observed or reported.

Both commercial and non-commercial fisheries have the potential to cause adverse effects to sea turtles, including injuries and mortalities that occur incidental to fishing, such as fishing gear or vessel interactions. The most likely impacts of the bottomfish fishery in American Samoa on sea

turtles is the potential for vessel collisions causing injuries and mortalities. The frequency of this type of effect is unknown in American Samoa. However, given the limited number of bottomfish fishing vessels in American Samoa (seven recorded vessels; WPRFMC 2021), and the fact that bottomfish fishing occurs while either at anchor or slowly drifting over fishing grounds, sea turtle collisions with vessels in this fishery are expected to be rare. As Table 14 indicates, no records exist of interactions between the American Samoa bottomfish fishery and sea turtles.

A 2002 NMFS Biological Opinion on the FMP for Bottomfish and Seamount Groundfish Fisheries in the Western Pacific Region found that,

Although hawksbill, leatherback, loggerhead, and olive ridley turtles may be found within the action area and could interact with the FMP bottomfish fishery, there have been no reported or observed incidental takes of these species in the history of the bottomfish fisheries. In addition, hawksbill, leatherback, and olive ridley turtle species are likely to occur only very rarely in the action area. Therefore, NMFS concludes that the proposed action is not likely to adversely affect hawksbill, leatherback, loggerhead, and olive ridley turtles.

Similarly, the Biological Opinion found that,

Prior biological opinions discussed the potential for adverse effects from vessel lighting and activity near and around nesting beaches utilized by the green turtle. There are no documented green turtle takes resulting from past fishery operations near nesting beaches. There are also no documented takes of green turtles from past fishing operations. Therefore, NMFS concludes that the proposed action is not likely to adversely affect green turtles.

On March 13, 2015, NMFS reinitiated consultation in response to ESA listing of several reef-building corals and the Indo-West Pacific DPS of scalloped hammerhead shark. The supporting biological evaluation found no new information to indicate that the American Samoa bottomfish fishery may affect ESA-listed marine mammals and turtles or critical habitat in a manner or to an extent not previously considered in prior consultations and determined that the fishery may affect, but is not likely to adversely affect ESA-listed reef building corals and the Indo-West Pacific DPS of scalloped hammerhead shark (NMFS 2015). On June 5, 2019, NMFS reinitiated consultation with respect to the fishery's impacts on the oceanic whitetip shark, giant manta ray, and chambered nautilus, and requested confirmation that the previous determinations that the fishery is not likely to adversely affect turtles remain valid. Methods, locations, and target species of fishery operations have not changed substantially since 2002. Also, the fishery has not had any known interactions with sea turtles. Based on this information, it is reasonably concluded that the analysis in the 2002 consultation and the conclusion that the fishery is not likely to adversely affect turtles remain valid.

### **3.6.2.1 Potential Effects of the Alternatives on Sea Turtles**

#### ***Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)***

Under Alternative 1, the same management measures as implemented under the previous interim measure would be applied to the American Samoa bottomfish fishery. The 2002 ESA

consultation evaluated the potential impact of the bottomfish fishery prior to the implementation of management measures such as ACLs, but the implementation of a catch limit under this alternative is not expected to change the conduct of the fishery relative to operations considered under this consultation. The fishery is expected to continue catching bottomfish as it has in recent years under this alternative (Section 2.3.1). Because Alternative 1 is not expected to result in substantial changes to fishing activity relative to years considered in previous consultations, regardless of the implementation of complementary management, this alternative would not increase the potential for, or severity of, interactions between the fishery and ESA-listed sea turtles. The fishery is not likely to adversely affect any ESA-listed sea turtle species under this alternative, and vessel collisions are expected to be rare. In summary, previous consultations found that the American Samoa bottomfish fishery is not likely to adversely affect sea turtles, and because fishing activity under Alternative 1 is not expected to change, this alternative is not likely to cause any adverse effects to ESA-listed sea turtle species.

#### ***Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 2, BMUS catch in future years may be slightly less than the status quo due to the closure of Federal waters when the relatively lower ACL is reached in accordance with the in-season AM and performance standard, which may result in the displacement of fishing activity to unrestricted territorial waters if complementary management is not enacted (Section 2.4.1). Because there have been no reported interactions with any species of sea turtles for this fishery in territorial or Federal waters, this change is not expected to affect the number of interactions. Additionally, fishing activity under Alternative 2 is expected to be slightly less or notably than the Alternative 1, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and listed sea turtles. If complementary management is implemented, there would be no displacement of fishing effort to territorial waters since restrictions would occur in both territorial and Federal waters if the ACL is attained, which would further decrease the likelihood of interactions occurring in the fishery. Thus, Alternative 2 is not expected to change or increase interactions with listed sea turtles in any way not already considered in prior consultations. Under this alternative, the fishery is not likely to adversely affect any listed sea turtle species, vessel collisions would be rare, and there is no anticipated change to the number, severity, or types of interactions with sea turtles.

#### ***Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters***

Under Alternative 3, BMUS catch is expected to be slightly reduced from the status quo due to the closure of Federal waters around American Samoa to bottomfish fishing, and some fishing may be displaced into territorial waters if complementary management is not implemented (Section 2.5.1). Since this fishery has no reported interactions with any species of sea turtle in territorial or Federal waters, this change is not expected to affect the number of interactions in the fishery. It is expected that fishing activity under Alternative 3 would be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and listed sea turtles in any way not already considered in prior consultations, implementation of Alternative 3 is not expected to change or increase interactions with listed sea turtles. If complementary management is implemented, the fishery would be restricted in both territorial and Federal waters, eliminating the likelihood of interactions occurring. Under this alternative, the fishery is not likely to adversely affect any

listed sea turtle species, vessel collisions would be rare, and there is no anticipated change to the number, severity, or types of interactions with sea turtles.

#### **Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard**

Under Alternative 4, if complementary management is not implemented by the territory, BMUS catch under the rebuilding plan may be slightly less than the status quo due to the closure of Federal waters when the ACL is attained in accordance with the in-season AM and performance standard, which could result in the displacement of fishing activity to unrestricted territorial waters (Section 2.6.1). Because there have been no reported interactions with any species of sea turtles for this fishery in territorial or Federal waters, this change is not expected to affect the number of interactions. Additionally, fishing activity under Alternative 4 is expected to be slightly or notably less than Alternative 1, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and listed sea turtles. If complementary management is implemented, there would be no displacement of fishing effort to territorial waters since the fishery would be restricted in both territorial and Federal waters if the ACL is attained, which would further decrease the likelihood of interactions occurring in the fishery. Thus, this alternative is not expected to change or increase interactions with listed sea turtles in any way not already considered in prior consultations. Under this alternative, the fishery is not likely to adversely affect any listed sea turtle species, vessel collisions would be rare, and there is no anticipated change to the number, severity, or types of interactions with sea turtles.

#### ***All Alternatives***

Overall, no alternative considered would substantially change fishing activity in the American Samoa bottomfish fishery such that there would be adverse effects to listed sea turtles that have not already been considered in prior consultations of the fishery under the ESA, regardless of the implementation of complementary management. On June 5, 2019, NMFS reinitiated consultation in response to the listing of the oceanic whitetip shark, giant manta ray, and chambered nautilus to seek concurrence that the American Samoa bottomfish fishery may affect, but is not likely to affect, any sea turtle.

#### **3.6.3 Marine Mammals**

Marine mammal species that are reasonably likely to occur in American Samoa are listed in Table 15. In accordance with ESA Section 7(a)(2), NMFS previously evaluated the potential impacts of the American Samoa bottomfish fishery to ESA-listed marine mammals and determined that the fishery is not likely to adversely affect any species or critical habitat in the action area. NMFS documented its determinations in a Biological Opinion for bottomfish fisheries on March 8, 2002 and a Letter of Concurrence for bottomfish fisheries on June 3, 2008. 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). Territorial regulations prohibit the take, possession, and sale any marine mammal (ASCA § 24.0960). NMFS classifies the American Samoa bottomfish fishery as a Category III fishery under Section 118 of the MMPA (86 FR 3028, January 14, 2021). A Category III fishery is one with a low likelihood or no known incidental takings of marine mammals. Additionally, the ESA lists five whale species known to occur in the EEZ around American Samoa (see note under Table 15).

**Table 15. Marine mammals known to occur or reasonably expected to occur in waters around American Samoa.**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Interactions with the American Samoa bottomfish Fishery through 2019</b>
Humpback whale* (tafolā or ia manu)	<i>Megaptera novaeangliae</i>	No interactions observed or reported.
Sperm whale*	<i>Physeter macrocephalus</i>	No interactions observed or reported.
Blue whale*	<i>Balaenoptera musculus</i>	No interactions observed or reported.
Fin Whale*	<i>Balaenoptera physalus</i>	No interactions observed or reported.
Sei whale*	<i>Balaenoptera borealis</i>	No interactions observed or reported.
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.
Dwarf sperm whale	<i>Kogia sima</i>	No interactions observed or reported.
False killer whale	<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.
Melon-headed whale	<i>Peponocephala electra</i>	No interactions observed or reported.
Minke whale	<i>Balaenoptera acutorostrata</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



Common Name	Scientific Name	Interactions with the American Samoa bottomfish Fishery through 2019
		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 (Panropical spotted dolphin)	<i>Stenella attenuata</i>	No interactions observed or reported.
Striped dolphin	<i>Stenella coeruleoalba</i>	No interactions observed or reported.
Longman's beaked whale	<i>Indopacetus pacificus</i>	No interactions observed or reported.

(Source: NMFS PIRO and PIFSC unpublished data)

\* Species is also listed under the Endangered Species Act.

### 3.6.3.1 Potential Effects of the Alternatives on Marine Mammals

None of the alternatives considered are expected to impact marine mammals because the American Samoa bottomfish fishery is not known to affect marine mammals through gear interactions or through disruptions in or adverse effects on prey, and no alternative would change the conduct of the bottomfish fishery in a manner that would alter the type or frequency of marine mammal interactions with the fishery.

#### ***Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)***

Under Alternative 1, the Council would recommend and NMFS would implement the same management provisions as the interim measure with an ACL of 13,000 lb and an in-season AM to close the fishery when the ACL is attained. The bottomfish fishery is not known to adversely affect marine mammals in terms of noise, water pollution, accidental entanglement, or competition for food resources. No interactions have been reported between the fishery and marine mammals (Table 15). There have been no comprehensive diet studies of piscivorous marine mammals in American Samoa and their relationship to the fishery to date. However, evaluation of the bottomfish fishery in Hawaii did not find that it would adversely modify prey populations important to the insular false killer whale (NMFS 2018). Inshore dolphins, such as spinner dolphins, feed on shrimp, squid, and small fish (e.g., Myctophidae) in the mid-water (Benoit-Bird 2004). The bottomfish fishery in American Samoa is similar in terms of gear, methods, and species targeted, so it can be reasonably concluded that the fishery is not adversely affecting prey available to marine mammals. Under Alternative 1, the fishery would continue to catch bottomfish similar to or slightly less than recent years (Section 2.3.1), and catches would continue to be monitored through the fisheries monitoring programs administered by the DMWR with assistance from NMFS. In recent years, the fishery has not interacted with or affected marine mammals, and the fishery is not expected to change under status quo, so interactions with marine mammals are not anticipated under this alternative.

### ***Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 2, the Council would recommend and NMFS would implement an ACL of 1,500 lb, an in-season AM to close fishing for BMUS in Federal waters for the remainder of the fishing year if available information indicates that the ACL would be reached, and a performance standard to close the fishery in Federal waters if the ACL is exceeded once until a coordinated management approach is developed that ensures catch in both Federal and territorial waters can be maintained at levels that allow the stock to rebuild. Under this alternative, it is expected that BMUS catch may be slightly reduced from the status quo and some fishing activity may move into territorial waters if a closure of Federal waters is implemented in the absence of complementary management (Section 2.4.1). However, since this fishery has no reported interactions with any species of marine mammal in territorial or Federal waters, this change is not expected to affect the number of interactions. Further, since fishing activity under Alternative 2 is expected to be slightly or notably less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and marine mammals in any way, implementation of Alternative 2 is not expected to change or increase interactions with marine mammals. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. In summary, this alternative is not expected to change the conduct of the fishery in any way that would affect marine mammals, so interactions with marine mammals are not anticipated and a change to the number, severity, or type of interactions with marine mammals is not expected.

### ***Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters***

Under Alternative 3, fishing for and possession of bottomfish in Federal waters around American Samoa would be prohibited. Under this alternative, it is expected that BMUS catch may be slightly reduced from the status quo and some fishing activity may move into territorial waters due to the closure of Federal waters in the absence of complementary management (Section 2.5.1). However, since this fishery has no reported interactions with any species of marine mammal in territorial or Federal waters, this change is not expected to affect the number of interactions. Additionally, since it is expected that fishing activity under Alternative 3 would be less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and marine mammals in any way, implementation of Alternative 3 is not expected to change or increase interactions with marine mammals. If complementary management is implemented, fishing activity would be completely restricted, eliminating the likelihood of interactions occurring in the fishery. Overall, this alternative is not expected to change the conduct of the fishery in any way that would affect marine mammals, so interactions with marine mammals are not anticipated and a change to the number, severity, or type of interactions with marine mammals is not expected.

### ***Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 4, the Council would recommend and NMFS would implement an ACL of 5,000 lb and the same in-season AM and performance standard as Alternative 2. NMFS expects that, if complementary management is not implemented by the American Samoa Government, Alternative 4 would slightly reduce BMUS catch relative to the status quo and that some fishing activity may move into territorial waters if a closure of Federal waters is implemented (Section

2.6.1). However, since this fishery has no reported interactions with any species of marine mammal in territorial or Federal waters, this change is not expected to affect the number of interactions. Further, since fishing activity under Alternative 4 is expected to be slightly or notably less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and marine mammals in any way, implementation of Alternative 4 is not expected to change or increase interactions with marine mammals. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. In summary, Alternative 4 is not expected to change the conduct of the fishery in any way that would affect marine mammals, so interactions with marine mammals are not anticipated and a change to the number, severity, or type of interactions with marine mammals is not expected.

### ***All Alternatives***

In summary, there is no new information that indicates that the American Samoa bottomfish fishery may affect ESA-listed marine mammals in a manner or to an extent not previously considered in past consultations. All prior consultations for ESA-listed marine mammals species remain valid and effective. Because the fishery has had no known interactions with marine mammals, because interactions with marine mammals are expected to remain rare under any of the alternatives under consideration, and because none of the alternatives would substantially change the conduct of the fishery in a way that would increase interactions, the fishery is not expected to interact with marine mammals under any of the considered alternatives.

### **3.6.4 Seabirds**

Table 16 lists seabird species that are considered residents or visitors of American Samoa. Of the presented species, only the Newell's shearwater is listed as threatened under the ESA.

**Table 16. Seabirds occurring in American Samoa.**

<b>Samoan name</b>	<b>English name</b>	<b>Scientific name</b>
<b>Residents (i.e., breeding)</b>		
Taio	Wedge-tailed shearwater	<i>Puffinus pacificus</i>
Taio	Audubon's shearwater	<i>Puffinus lherminieri</i>
Taio	Christmas shearwater	<i>Puffinus nativitatis</i>
Taio	Tahiti petrel	<i>Pterodroma rostrata</i>
Taio	Herald petrel	<i>Pterodroma heraldica</i>
Taio	Collared petrel	<i>Pterodroma brevipes</i>
Fuao	Red-footed booby	<i>Sula sula</i>
Fuao	Brown booby	<i>Sula leucogaster</i>
Fuao	Masked booby	<i>Sula dactylatra</i>
Tavaesina	White-tailed tropicbird	<i>Phaethon lepturus</i>
Tavaeula	Red-tailed tropicbird	<i>Phaethon rubricauda</i>
Atafa	Great frigatebird	<i>Fregata minor</i>
Atafa	Lesser frigatebird	<i>Fregata ariel</i>
Gogouli	Sooty tern	<i>Onychoprion fuscatus</i>
Gogo	Brown noddy	<i>Anous stolidus</i>

<b>Samoan name</b>	<b>English name</b>	<b>Scientific name</b>
Gogo	Black noddy	<i>Anous minutus</i>
Laia	Blue-gray noddy	<i>Procelsterna cerulea</i>
manu sina	Common fairy-tern (white tern)	<i>Gygis alba</i>
<b>Visitors/vagrants/accidental visitors</b>		
Taio	Short-tailed shearwater	<i>Puffinus tenuirostris</i>
Taio	Newell's shearwater (ESA threatened)	<i>Puffinus auricularis newelli</i>
Taio	Mottled petrel	<i>Pterodroma inexpectata</i>
Taio	Phoenix petrel	<i>Pterodroma alba</i>
Taio	White-bellied storm petrel	<i>Fregetta grallaria</i>
Taio	Polynesian storm petrel	<i>Nesofregetta fuliginosa</i>
-----	Laughing gull	<i>Larus atricilla</i>
Gogosina	Black-naped tern	<i>Sterna sumatrana</i>

(Source: WPRFMC 2009; online sources).

There has only been one confirmed sighting of the threatened Newell's shearwater in American Samoa (Grant et al.1994), and it appears to be an uncommon visitor to the archipelago. There have been no reports of interactions between the American Samoa bottomfish fishery and seabirds (WPRFMC 2009).

#### **3.6.4.1 Potential Effects of the Alternatives on Seabirds**

None of the alternatives under consideration are expected to affect seabirds, as the American Samoa bottomfish fishery is not known to affect seabirds through gear interactions or through disruptions in or adverse effects on seabird prey since seabirds are not known to prey on bottomfish. No alternative considered would change the bottomfish fishery in a manner that would change the type or frequency of interactions with seabirds.

##### ***Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)***

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. Under the status quo alternative, it is expected that the fishery would continue to catch bottomfish in the same way as under the interim measure and possibly slightly less than previous years (Section 2.3.1). Because this alternative is not expected to change fishing activity relative to previous years, this alternative would not increase the potential for, or severity of, interactions between the fishery and listed seabirds. Under this alternative, the fishery is not likely to adversely affect any listed seabird species. In summary, the bottomfish fishery is not known to affect seabirds, and under Alternative 1 the fishery is not expected to change, so the fishery is not likely to adversely affect any seabird species under this alternative.

##### ***Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 2, catch of BMUS may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented as an AM in the absence of complementary management (Section 2.4.1). However, since this fishery has no reported interactions with any species of seabird in territorial or Federal

waters, this change is not expected to affect the number of interactions. Further, since fishing activity under Alternative 2 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and seabirds, implementation of Alternative 2 is not expected to change or increase interactions with listed seabirds in any way. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. Under this alternative, the fishery is not likely to adversely affect any listed seabird species, and there is no anticipated change to the number, severity, or type of interactions with seabirds.

### ***Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters***

Under Alternative 3, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters due to the complete closure of Federal waters in the absence of complementary management (Section 2.5.1). However, since this fishery has no reported interactions with any species of seabirds in territorial or Federal waters, this change is not expected to affect the number of interactions. Further, since fishing activity under Alternative 3 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and seabirds, implementation of Alternative 3 is not expected to change or increase interactions with listed seabirds. If complementary management is implemented, fishing activity would be completely restricted, removing the likelihood of interactions occurring. Under this alternative, the fishery is not likely to adversely affect any listed seabird species, and there is no anticipated change to the number, severity, or type of interactions with seabirds.

### ***Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 4, whether BMUS catch would be slightly or substantially reduced from the status quo would be dependent on the territory implementing complementary management with this Federal action. In the absence of complementary management, some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented as an AM as NMFS anticipates (Section 2.6.1). However, since this fishery has no reported interactions with any species of seabird in territorial or Federal waters, this change is not expected to affect the number of interactions. Further, since fishing activity under Alternative 4 is expected to be slightly or notably less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and seabirds, implementation of this alternative is not expected to change or increase interactions with listed seabirds in any way. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. Under Alternative 4, the fishery is not likely to adversely affect any listed seabird species, and there is no anticipated change to the number, severity, or type of interactions with seabirds.

### ***All Alternatives***

No alternative under consideration would substantially change the conduct of the fishery in a manner that would affect seabirds, and there are no expected adverse effects to these species.

### 3.6.5 ESA-Listed Reef Building Corals

On September 10, 2014, NMFS listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852). Six species of listed corals are known to occur in waters around American Samoa from 0–50 m deep. None of the species have common names.

On November 27, 2020, NMFS published a proposed rule in the Federal Register (85 FR 76262) to designate critical habitat for the seven threatened corals in U.S. waters in the Indo-Pacific pursuant to section 4 of the ESA. Six of these corals occur around American Samoa: *Acropora globiceps*, *Acropora jacquelineae*, *Acropora retusa*, *Acropora speciosa*, *Euphyllia paradivisa*, and *Isopora crateriformis*. Specific occupied areas containing physical features essential to the conservation of these coral species are being proposed for designation as critical habitat. At this point in time there is insufficient information to determine the proposed designation's potential impacts on the American Samoa bottomfish fishery. If the proposal is finalized, NMFS would re-initiate consultation under Section 7 of the ESA to determine the impact of fishing activities on critical habitat and any necessary management measures.

Table 17 lists the ESA-listed coral species found in American Samoa. Corals usually live in colonies and form “heads” or “shelves.” Generally, thousands of individual coral organisms (polyps) live together in a single structure that grows over time. Recently, many nearshore coral reefs have died through a process called bleaching when coral expel algae that live within them. Bleaching often leads to death for coral colonies by causing malnutrition and increasing the colony’s susceptibility to disease. Some coral species populations have suffered declines because of bleaching.

**Table 17. ESA-listed corals in American Samoa.**

Common name	Scientific Name	ESA listing status in American Samoa	Occurrence in American Samoa	Interactions with the American Samoa bottomfish fishery
None	<i>Acropora globiceps</i>	Threatened	Present	No interactions observed or reported
None	<i>A. jacquelineae</i>	Threatened	Present	No interactions observed or reported
None	<i>A. retusa</i>	Threatened	Present	No interactions observed or reported
None	<i>A. speciosa</i>	Threatened	Present	No interactions observed or reported
None	<i>Euphyllia paradivisa</i>	Threatened	Present	No interactions observed or reported
None	<i>Isopora crateriformis</i>	Threatened	Present	No interactions observed or reported

#### 3.6.5.1 Potential Effects of the Alternatives on ESA-Listed Corals

Some damage to corals and the bottom is possible via anchoring, or entanglement of bottomfish fishing tackle on the bottom, but studies in Hawaii where methods are similar found that

bottomfish fishing generally has minimal impact on benthic habitat (Kelley and Moffit 2004; Kelley and Ikehara 2006). The bottomfish fishery is a hook-and-line fishery, and fishermen have an interest in minimizing both of these interactions, not only for the conservation benefit, but also because they do not want to lose their gear. The FEP also protects corals and habitat through prohibitions on the use of bottom-set nets, bottom trawls, explosives, and poisons. Territory regulations prohibit the use of explosives and poisons (ASCA § 24.0921 through 24.0923) and specify requirements for the use of gillnets and drag nets (ASCA § 24.0930 through 24.0931). It is unlawful for any person to fish for, take, or retain any wild live rock or live hard coral except under a valid special permit for scientific research, aquaculture seed stock collection or traditional and ceremonial purposes by indigenous people (50 CFR 665.125(c)). Additionally, territory regulations pursuant to ASCA § 24.0951 through 24.0964 prohibit the take of certain species of fish and invertebrates, including coral and live rock. On April 9, 2015, NMFS documented its determination in a Letter of Concurrence that the continued authorization of the bottomfish fishery is not likely to adversely affect reef-building corals. Methods, locations, and target species of fishery operations have not changed substantially since 2015. Also, the fishery has not had any known interactions with listed corals. Based on this information, NMFS reasonably concludes that the analysis in that 2015 consultation and its conclusion that the fishery is not likely to adversely affect listed corals, remains valid today. On June 5, 2019, NMFS reinitiated consultation in response to listing of the oceanic whitetip shark, giant manta ray, and chambered nautilus, and to seek concurrence with the conclusion that the American Samoa bottomfish fishery may affect, but is not likely to affect, any listed coral.

***Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)***

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. While the 2015 consultation evaluated the potential impact of the bottomfish fishery on ESA-listed corals under a higher ACL and post-season AM, it is expected that the fishery would continue to catch bottomfish under the status quo alternative slightly less than previous years because the fishery in 2015 was not functionally constrained by an in-season AM (Section 2.3.1). Because this alternative is not expected to change fishing activity relative to years considered the 2015 consultation, this alternative would not increase the potential for, or severity of, interactions between the fishery and listed corals, and the fishery is not likely to adversely affect listed coral species. In summary, the previous consultation found that the bottomfish fishery is not likely to adversely affect corals, and the fishery is expected to have less activity under Alternative 1, so this alternative is not likely to cause the fishery to adversely affect any listed coral species.

***Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard***

Under this alternative, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented if complementary management is not implemented (Section 2.4.1). However, since this fishery has no reported interactions with any species of listed coral in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 2 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and listed corals in any way not already considered in prior consultations, implementation

of Alternative 2 is not expected to change or increase interactions with listed corals. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with listed corals under this alternative.

### ***Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters***

Under Alternative 3, BMUS catch is expected to be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters due to the closure of Federal waters if complementary management is not enacted (Section 2.5.1). However, since this fishery has no reported interactions with any listed species of coral in territorial or Federal waters, this change is not expected to affect the number of interactions. Further, since fishing activity under Alternative 3 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and listed corals in any way not already considered in prior consultations, implementation of Alternative 3 is not expected to change or increase interactions with listed corals. If complementary management is implemented, fishing activity would be completely restricted, precluding the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with listed corals under this alternative.

### ***Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 4, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented in the absence of complementary management (Section 2.6.1). However, since this fishery has no reported interactions with any species of listed coral in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 4 is expected to be less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and listed corals in any way not already considered in prior consultations, implementation of this alternative is not expected to change or increase interactions with listed corals. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with listed corals under this alternative.

### ***All Alternatives***

In summary, the bottomfish fishery has no recorded interactions with listed corals, and no alternative under consideration would substantially change the conduct of the fishery in a way that would increase the likelihood of interactions, so it is not expected there would be effects on listed coral species that have not already been considered in prior consultations of the fishery under the ESA. Under all alternatives considered, the proposed action is not expected to have a substantial effect on the overall population size of ESA-listed corals in American Samoa and is not likely to appreciably reduce the likelihood of both survival and recovery of the species in the wild.



### **3.6.6 Scalloped Hammerhead Sharks**

On July 3, 2014, NMFS listed the Indo-West Pacific scalloped hammerhead shark DPS under the ESA (79 FR 38213). The Indo-West Pacific scalloped hammerhead shark DPS occurs in all U.S. Pacific Island territories. Scalloped hammerhead sharks range widely from nearshore to pelagic environments and from the surface to 500 meters (m) deep. Because the shark is listed in American Samoa, it is illegal to target or retain the shark.

As noted in the final rule (79 FR 38213, July 3, 2014), the significant operative threats to the listed scalloped hammerhead DPSs are overutilization by foreign industrial, commercial, and artisanal fisheries as well as inadequate regulatory mechanisms in foreign nations to protect these sharks from the heavy fishing pressure and related mortality, with illegal fishing identified as a significant problem in areas outside of U.S. jurisdiction. Some fishermen target sharks, including the scalloped hammerhead, to harvest their fins. Incidental capture in fisheries also contributes to increased mortality in this species (79 FR 38213, July 3, 2014).

Conservation initiatives for scalloped hammerhead sharks are in place and include, in addition to the Federal prohibition on retention of the scalloped hammerhead DPS, territorial prohibitions on the retention or transport of any sharks. The territorial government passed a law in 2012 (ASAC § 24.0961) stating that no person shall:

- (1) Possess, deliver, carry, transport or ship by any means whatsoever any shark species or the body parts of any such species;
- (2) Import, export, sell or offer for sale any such species or body parts of such species; or
- (3) Take or kill any such species in American Samoa.

### **3.6.6.1 Potential Effects of the Alternatives on Scalloped Hammerhead Sharks**

NMFS conducted Section 7 consultation under the ESA to evaluate the potential effects of the American Samoa bottomfish fisheries on the Indo-West Pacific DPS of scalloped hammerhead shark. This consultation found that American Samoa bottomfish fisheries did not have any recorded or observed catches of scalloped hammerhead sharks based on boat-based creel surveys conducted from 2002 to 2013 (NMFS 2015). On April 9, 2015, NMFS concluded that the continued authorization of the bottomfish fishery under the FEP for American Samoa is not likely to adversely affect the Indo-west Pacific scalloped hammerhead shark DPS. Their conclusion was based on the finding that the effects of reauthorizing the fishery were expected to be insignificant and discountable because fishery participants are very unlikely interact with Indo-West Pacific scalloped hammerhead sharks because of limited distribution, selective fishing techniques, and the small scale and scope of these fisheries. Methods, locations, and target species of fishery operations have not changed substantially since 2015. Also, the fishery has not had any known interactions with scalloped hammerhead sharks. Based on this information, NMFS reasonably concludes that the analysis in that 2015 consultation, and the conclusion that the fishery is not likely to adversely affect this species, remain valid today. On June 5, 2019, NMFS reinitiated consultation in response to listing of the oceanic whitetip shark, giant manta ray, and chambered nautilus, and to seek concurrence with the conclusion that the American Samoa bottomfish fishery may affect but is not likely to affect the Indo-West Pacific DPS of scalloped hammerhead shark.

#### ***Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)***

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. While the 2015 consultation evaluated the potential impact of the bottomfish fishery on scalloped hammerheads under a higher ACL and post-season AM, it is expected that the fishery would continue to catch bottomfish under the status quo alternative slightly less than previous years because the fishery in 2015 was not functionally constrained by an in-season AM (Section 2.3.1). Because the 2015 consultation found that effects of the fishery on the Indo-West Pacific scalloped hammerhead shark DPS would be insignificant and discountable and this alternative is not expected to change fishing activity relative to years considered in the 2015 consultation, Alternative 1 would not increase the potential for, or severity of, interactions between the fishery and the Indo-West Pacific scalloped hammerhead shark such that the fishery is not likely to adversely affect this DPS. In summary, the previous consultation found that the bottomfish fishery is not likely to adversely affect the Indo-West Pacific DPS of scalloped hammerhead shark, and under Alternative 1 the fishery is expected to have less activity, so the fishery is not likely to adversely affect this DPS.

#### ***Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 2, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented in the absence of complementary management (Section 2.4.1). However, since this fishery has no reported interactions with scalloped hammerhead sharks in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under

Alternative 2 is expected to be slightly less than the status quo alternative and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the Indo-West Pacific scalloped hammerhead shark in any way not already considered in prior consultations, implementation of Alternative 2 is not expected to change or increase interactions with this DPS. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with this DPS.

### ***Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters***

Under Alternative 3, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters due to the complete closure of Federal waters if complementary management is not implemented (Section 2.5.1). However, since this fishery has no reported interactions with scalloped hammerhead sharks in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 3 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the Indo-West Pacific scalloped hammerhead shark in any way not already considered in prior consultations, implementation of Alternative 3 is not expected to change or increase interactions with this DPS. If complementary management is implemented, fishing activity would be completely prohibited, eliminating the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with this DPS.

### ***Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard***

Under this alternative, in the absence of complementary management, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented (Section 2.6.1). However, since this fishery has no reported interactions with scalloped hammerhead sharks in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 4 is expected to be slightly or substantially less than the status quo alternative and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the Indo-West Pacific scalloped hammerhead shark in any way not already considered in prior consultations, implementation of this alternative is not expected to change or increase interactions with this DPS. If complementary management is implemented by the American Samoa Government, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with this DPS.

### ***All Alternatives***

There are no targeted shark fisheries in American Samoa, and regulations prohibit take or killing of any shark species as well as possession and sale of shark fins and shark products. The likelihood of interactions is low, and the 2015 consultation found that American Samoa fisheries did not have any recorded or observed catches of scalloped hammerhead sharks (NMFS 2015). No alternative under consideration would substantially change the way the fishery is conducted with respect increasing interactions or result in effects on scalloped hammerhead sharks that

have not already been considered in the 2015 consultation. Under all alternatives considered, the proposed action is not expected to have a substantial effect on the overall population size of the Indo-West Pacific scalloped hammerhead shark DPS and is not likely to appreciably reduce the likelihood of both survival and recovery of the species in the wild.

### **3.6.7 Oceanic Whitetip Sharks**

On January 30, 2018, NMFS issued a final rule to list the oceanic whitetip shark as threatened under the ESA (83 FR 4153). The oceanic whitetip shark is found in tropical and subtropical seas between 30° N. and 35° S. latitudes worldwide. The oceanic whitetip shark experiences high encounter and mortality rates in some commercial fisheries (e.g., pelagic longline, purse seine, and gillnet fisheries) throughout its range because of its tropical distribution and tendency to remain in surface waters (NMFS 2019a).

As noted in the final rule, the greatest threat to the oceanic whitetip shark is overutilization from fishing pressure and inadequate regulatory mechanisms to protect the species. However, American Samoa has territorial conservation measures that prohibit retention or transport of any shark (ASAC § 24.0961). The best available information to estimate interactions with oceanic white tip sharks are boat-based creel surveys, and review of 33 years of creel survey data did not find evidence of interactions with oceanic whitetip sharks and the American Samoa bottomfish fishery (NMFS 2019a). On June 5, 2019, NMFS reinitiated informal consultation under ESA to seek concurrence that bottomfish fishing activities are not likely to adversely affect this species, as required by 50 CFR 402.16. On June 6, 2019, August 11, 2020, and December 15, 2020, NMFS determined that that pending that concurrence, the continued operation of the bottomfish fishery in American Samoa during the period of consultation is not likely to jeopardize the continued existence of the oceanic whitetip shark, would not violate ESA section 7(a)(2), or result in an irreversible or irretrievable commitment of resources precluding implementation of any reasonable and prudent alternatives, and would not violate ESA section 7(d) (NMFS 2019b; NMFS 2020b; NMFS 2020c).

#### **3.6.7.1 Potential Effects of the Alternatives on Oceanic Whitetip Sharks**

##### ***Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)***

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. The American Samoa bottomfish fishery is expected to continue to catch bottomfish in a manner consistent with, if not slightly less than, recent years, and catches would continue to be monitored through the fisheries monitoring program administered by the DMWR with assistance from NMFS. The management provisions under this alternative would not substantially change the conduct of the fishery relative to recent years (Section 2.3.1). Therefore, this alternative is not expected to increase the potential for interactions between the fishery and oceanic whitetip shark in any way.

##### ***Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 2, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented as an AM in the absence of complementary management (Section 2.4.1). However, since this

fishery has no reported interactions with oceanic whitetip sharks in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 2 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the oceanic whitetip shark in any way, implementation of Alternative 2 is not expected to change or increase interactions with this species. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with oceanic whitetip sharks.

### ***Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters***

Under Alternative 3, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters due to the closure of Federal waters without the implementation of complementary management (Section 2.5.1). However, since this fishery has no reported interactions with oceanic whitetip sharks in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 3 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the oceanic whitetip shark in any way, implementation of Alternative 3 is not expected to change or increase interactions with this species. If complementary management is implemented, fishing activity would be prohibited, precluding the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with oceanic whitetip sharks.

### ***Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 4, in the absence of complementary management, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented as an AM (Section 2.6.1). However, since this fishery has no reported interactions with oceanic whitetip sharks in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 4 is expected to be slightly or notably less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the oceanic whitetip shark in any way, implementation of this alternative is not expected to change or increase interactions with this species. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with oceanic whitetip sharks.

### ***All Alternatives***

There are no targeted shark fisheries in American Samoa, and regulations prohibit take or killing of any shark species, along with possession and sale of shark fins and shark products. The alternatives under consideration would not change the way the fishery operates with respect to areas fished, gear used, or methods employed in a manner that would alter the likelihood of interactions with oceanic whitetip sharks, so interactions with this shark are not anticipated. Based on the lack of expected interactions with oceanic whitetip sharks, the proposed action is not expected to have a substantial effect on the overall population size of oceanic whitetip sharks.

under all alternatives considered and is not likely to reduce appreciably the likelihood of both survival and recovery of the species in the wild.

### **3.6.8 Giant Manta Ray**

On January 22, 2018, NMFS issued a final rule to list the giant manta ray as a threatened species under the ESA (83 FR 2916). The giant manta ray is found worldwide in tropical, subtropical, and temperate bodies of water. It is commonly found offshore, in oceanic waters, and near productive coastlines. As noted in the final rule (83 FR 2916, January 22, 2018), the giant manta ray appears to be most at risk of overutilization in the Indo-Pacific and eastern Pacific portions of its range. Targeted fishing and incidental capture of the species in Indonesia, Philippines, Sri Lanka, India, and throughout the eastern Pacific, has led to observed declines in populations.

There are no targeted giant manta ray fisheries in American Samoa. Manta rays are filter feeders who forage near the surface and do not interact with bottomfish fishing gear (Miller and Klimovich 2016). The rate at which the American Samoa bottomfish fishery interacts with giant manta rays in other ways is unknown; however, there are no reported or observed collisions with giant manta rays and bottomfish fishing vessels in any island area. Over the last ten years, there have been less than 100 trips per year on average (WPRFMC 2021). Due to the small number of bottomfish trips in American Samoa and the fact that there have been no reported or observed collisions between giant manta rays and bottomfish fishing vessels, interactions between the bottomfish vessels and giant manta ray are not expected. On June 5, 2019, NMFS reinitiated informal consultation under ESA to seek concurrence that fishing activities are not likely to adversely affect this species, as required by 50 CFR 402.16. On June 6, 2019, August 11, 2020, and December 15, 2020, NMFS determined that that pending that concurrence, the continued operation of the bottomfish fishery in American Samoa during the period of consultation is not likely to jeopardize the continued existence of the giant manta ray, would not violate ESA section 7(a)(2), or result in an irreversible or irretrievable commitment of resources precluding implementation of any reasonable and prudent alternatives, and would not violate ESA section 7(d) (NMFS 2019b; NMFS 2020b; NMFS 2020c).

#### **3.6.8.1 Potential Effects of the Alternatives on Giant Manta Rays**

##### ***Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)***

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. The fishery is expected to continue to catch bottomfish in a manner similar to recent years, and catches would continue to be monitored through the fisheries monitoring program administered by the DMWR with assistance from NMFS. The management provisions under this alternative would not substantially change the conduct of the fishery relative to recent years (Section 2.3.1). Therefore, this alternative would not increase the potential for interactions between the fishery and giant manta ray in any way.

##### ***Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 2, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented in

the absence of complementary management (Section 2.4.1). However, since this fishery has no reported interactions with giant manta rays in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 2 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the giant manta ray in any way, implementation of Alternative 2 is not expected to change or increase interactions with this species. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with giant manta rays.

### ***Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters***

Under Alternative 3, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters due to the closure of Federal waters in the absence of complementary management (Section 2.5.1). However, since this fishery has no reported interactions with giant manta rays in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 3 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the giant manta ray in any way not already considered in prior consultations, implementation of Alternative 3 is not expected to change or increase interactions with this species. If complementary management is implemented, fishing activity would be prohibited, precluding the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with giant manta rays.

### ***Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 4, in the absence of complementary management, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented (Section 2.6.1). However, since this fishery has no reported interactions with giant manta rays in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 4 is expected to be slightly or notably less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the giant manta ray in any way, implementation of this alternative is not expected to change or increase interactions with this species. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with giant manta rays.

### ***All Alternatives***

The alternatives under consideration are not expected to change the way the fishery operates with respect to areas fished, gear used, or methods employed in a manner that would alter the likelihood of interactions with giant manta ray, so interactions with this species are not anticipated. Based on the lack of expected interactions with giant manta rays, the proposed action is not expected to have a substantial effect on the overall population size of the giant manta ray

under all alternatives considered and is not likely to reduce appreciably the likelihood of both survival and recovery of the species in the wild.

### **3.6.9 Chambered Nautilus**

On September 28, 2018, NMFS issued a final rule to list the chambered nautilus as threatened under the ESA (83 FR 48976). The chambered nautilus is found in tropical, coastal reef, deep-water habitats native to tropical reef habitats of the Indo-Pacific, and its known range includes waters off American Samoa. As noted in the final rule (83 FR 48976, September 28, 2018), the most significant threat to the chambered nautilus is overutilization through commercial harvest to meet the demand for the international nautilus shell trade. Targeted fishing of, and trade in, the species is thought to primarily occur in Philippines, Indonesia, India, and China, despite prohibitions (Miller 2018). Commercial harvest of the species is also thought to occur in Papua New Guinea, East Asia, Thailand, Vanuatu, and Vietnam (Miller 2018).

There is no known local utilization or commercial harvest of chambered nautilus in American Samoa (CITES 2016). Additionally, there are no records of any interaction between the American Samoa bottomfish fishery and chambered nautilus, and it is highly unlikely that they would be caught while bottomfish fishing. Research suggests that chambered nautilus may be strict or obligate bottom-dwelling scavengers (Barord 2015; Barord et al. 2014; Miller 2018). Further, chambered nautilus have an estimated average swimming speed of 0.10 m/s (Barord et al. 2014). To catch them, targeted fisheries use traps that are deployed for several hours or left overnight (Freitas and Krishnasamy 2016). Given the limited mobility and feeding behavior of the species, they would not be able to approach and take bait in the short time it is deployed by hook and line while bottomfish fishing.

On June 5, 2019, NMFS reinitiated informal consultation under ESA to seek concurrence that fishing activities are not likely to adversely affect this species, as required by 50 CFR 402.16. On June 6, 2019, August 11, 2020, and December 15, 2020, NMFS determined that that pending that concurrence, the continued operation of the bottomfish fishery in American Samoa during the period of consultation is not likely to jeopardize the continued existence of the chambered nautilus, would not violate ESA section 7(a)(2), or result in an irreversible or irretrievable commitment of resources precluding implementation of any reasonable and prudent alternatives, and would not violate ESA section 7(d) (NMFS 2019b; NMFS 2020b; NMFS 2020c).

#### **3.6.9.1 Potential Effects of the Alternatives on Chambered Nautilus**

##### ***Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)***

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. The fishery is expected to continue to catch bottomfish in a manner consistent with recent years, and catches would continue to be monitored through the fisheries monitoring program administered by the DMWR with assistance from NMFS. The management provisions under this alternative would not substantially change the conduct of the fishery relative to recent years (Section 2.3.1). Therefore, this alternative would not increase the potential for interactions between the fishery and the chambered nautilus in any way.



### ***Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 2, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented in the absence of complementary management (Section 2.4.1). However, since this fishery has no reported interactions with chambered nautilus in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 2 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the chambered nautilus in any way, implementation of Alternative 2 is not expected to change or increase interactions with this species. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with chambered nautilus.

### ***Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters***

Under Alternative 3, BMUS catch may be slightly reduced from the status quo, and some fishing activity may move into territorial waters due to the closure of Federal waters without complementary management in place (Section 2.2.5). However, since this fishery has no reported interactions with chambered nautilus in territorial or Federal waters, this change is not expected to affect the number of interactions. Since NMFS expects fishing activity under Alternative 3 to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the chambered nautilus in any way, implementation of Alternative 3 is not expected to change or increase interactions with this species. If complementary management is implemented, fishing activity would be completely restricted, removing the likelihood of interactions occurring in the fishery. Thus, there is no anticipated change to the number, severity, or type of interactions with chambered nautilus.

### ***Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard***

Under Alternative 4, in the absence of complementary management, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented (Section 2.6.1). However, since this fishery has no reported interactions with chambered nautilus in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 4 is expected to be slightly or substantially less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the chambered nautilus in any way, implementation of this alternative is not expected to change or increase interactions with this species. If complementary management is implemented, fishing activity would be substantially reduced, further decreasing the likelihood of interactions occurring. Thus, there is no anticipated change to the number, severity, or type of interactions with chambered nautilus.

### ***All Alternatives***

The alternatives under consideration would not change the way the fishery operates with respect to areas fished, gear used, or methods employed in a manner that would alter the likelihood of

interactions with chambered nautilus, so interactions with this species are not anticipated. Based on the lack of expected interactions with chambered nautilus, under all alternatives considered, the proposed action is not expected to have a substantial effect on the overall population size of chambered nautilus and is not likely to reduce appreciably the likelihood of both survival and recovery of the species in the wild.

### **3.6.10 Habitats and Vulnerable Ecosystems and Potential Effects**

#### **3.6.10.1 Essential Fish Habitat and Habitat Areas of Particular Concern**

The Magnuson-Stevens Act defines essential fish habitat (EFH) as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (Magnuson-Stevens Act § 3(10)). This includes the marine areas and their chemical and biological properties that organisms use. 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) (64 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 FR 8336, February 24, 2004). NMFS approved EFH definitions for deepwater shrimp through an amendment to the Crustaceans FMP in 2008 (73 FR 70603, November 21, 2008).

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 would stress the habitat, and/or the habitat type is rare. The FMPs defined HAPC for bottomfish, crustaceans, pelagic, and coral reef species in Guam, CNMI, and American Samoa and for bottomfish, pelagic, and coral reef species in the Pacific Remote Island Areas.

Ten years later, in 2009, the Council developed and NMFS approved five new archipelagic-based FEPs. The FEPs incorporated and reorganized elements of the Councils’ species-based FMPs into a spatially-oriented management plan (75 FR 2198, January 14, 2010). The Council subsequently carried forward EFH definitions and related provisions for all FMP fishery resources into the respective FEPs. In 2019, Amendment 4 to the American Samoa FEP, and Amendment 5 to the Marianas FEP reclassified some bottomfish, pelagic, crustacean, precious coral and coral reef ecosystem species as ecosystem component species (84 FR 2767, February 8, 2019). These species do not have EFH or HAPC under the Magnuson-Stevens Act, as these habitat categories only apply to MUS. The following discussion and analysis of potential effects on EFH and HAPC will only consider these habitat designations for species remaining as BMUS.

Table 18 summarizes the designated areas of EFH and HAPC for American Samoa FEP bottomfish by life stage. To analyze the potential effects of a proposed fishery management action on EFH, one must consider all designated EFH.

According to the most recent bottomfish fishery ESA consultations for American Samoa (April 9, 2015), the current bottomfish fishery does not have an adverse effect on listed corals in

American Samoa. The findings were based on the fact that the fishery is a targeted fishery with little bycatch, or gear contact with the bottom (i.e., no trawling, nets, traps, etc. and only a few weighted hooks and lines deployed at a time). However, this fishery is not known to adversely affect habitat. Similar methods are used to fish for bottomfish in American Samoa and Hawaii, and studies of bottomfish habitat in Hawaii have not found adverse impacts to habitat from bottomfish fishing activities (Kelley and Moffit 2004; Kelley and Ikehara 2006). Also, to prevent and minimize adverse bottomfish fishing impacts to EFH, each western Pacific FEP prohibits the use of explosives, poisons, bottom trawl, and other non-selective and destructive fishing gear. No alternative under consideration would result in substantial changes to the way fishermen conduct the bottomfish fishery in American Samoa, and, under complementary management, may substantially reduce fishery activity; therefore, the alternatives are not expected to result in adverse effects on bottomfish EFH or HAPC.

**Table 18. Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC) for American Samoa bottomfish management unit species (BMUS).**

American Samoa BMUS	EFH	HAPC
Lehi ( <i>Aphareus rutilans</i> ) Uku ( <i>Aprion virescens</i> ) Black trevally ( <i>Caranx lugubris</i> ) Lunartail grouper ( <i>Variola louti</i> ) Ehu ( <i>Etelis carbunculus</i> ) Onaga ( <i>Etelis coruscans</i> ) Redgill emperor ( <i>Lethrinus rubrioperculatus</i> ) Blueline snapper ( <i>Lutjanus kasmira</i> ) Opakapaka ( <i>P. filamentosus</i> ) Yelloweye snapper ( <i>P. flavipinnis</i> ) Gindai ( <i>P. zonatus</i> )	<p><b>Eggs and larvae:</b> the water column extending from the shoreline to the outer limit of the EEZ down to a depth of 400 m (200 fm).</p> <p><b>Juvenile/adults:</b> the water column and all bottom habitat extending from the shoreline to a depth of 400 m (200 fm)</p>	All slopes and escarpments between 40–280 m (20 and 140 fm)

### 3.6.10.2 Marine Protected Areas (MPAs)

Bottomfish fishing is prohibited through Federal management in the Rose Atoll Marine National Monument, the National Marine Sanctuary of American Samoa in the Fagatele Bay unit, and the research zone of the Aunu'u Island units. It is also prohibited in the territorial MPAs where and/or when fishing is prohibited, such as the no-take Fagamalo Village Marine Protected Area. These MPAs would not be affected by the proposed action, so adverse effects to them would be unlikely under all alternatives under consideration. None of the proposed alternatives would change the way bottomfish fishing is conducted with respect to these MPAs, so continued operation of the fishery under the baseline or action alternatives would not result in adverse impacts to the Monument, Sanctuary, or other MPAs.

### **3.6.10.3 Vulnerable Marine or Coastal Ecosystems**

Although precious coral species occur in American Samoa, there are no known precious coral beds in waters around American Samoa (WPRFMC 2009). All precious coral species in American Samoa are classified as ecosystem component species. Although little is known about the distribution and abundance of precious corals in American Samoa, bottomfish fishing is unlikely to affect these species. Exposure of precious corals to damage from bottomfish fishing activities is limited due to existing Federal regulations (e.g., use of trawls, poisons, explosives) that are not subject to change due to the proposed action. In addition to overlapping potential deep water precious coral habitat, the fishery operates in areas that include coral reef ecosystem habitat (e.g., areas shallower than 50 m). As discussed above, the fishery is not known to adversely affect benthic habitats (Section 3.6.5 and Section 3.6.10.1).

Fishing activity under the status quo alternative is not expected to change from 2020 and 2021 and only slightly from previous years; therefore, it is unlikely that the fishery would affect vulnerable marine ecosystems such as deep or shallow coral ecosystems under this alternative. Fishing activity under any of the action alternatives is not expected to increase relative to the status quo and may substantially decrease if complementary management is implemented. Additionally, none of the alternatives under consideration would fundamentally change the way the fishery is conducted. Considering that the fishery is not expected to change in a way that would impact vulnerable marine ecosystems under any alternative, the fishery is not expected to affect vulnerable marine ecosystems under any alternative, and no adverse impacts are expected to these areas as a result of implementing any alternative.

In summary, none of the alternatives are expected to change the way in which this fishery is conducted or the magnitude of impacts on habitats. Also, the alternatives under consideration would not change regulations that are in place to prevent and minimize adverse effects from bottomfish fishing on fish habitat. For these reasons, none of the alternatives considered are expected to lead to substantial physical, chemical, or biological alterations to ocean, coral, or coastal habitats or result in impacts to the marine habitat, including areas designated as EFH, HAPC, or unique areas such as MPAs or deep coral ecosystems.

## **3.7 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 the 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

effects on such communities. The request from the Council for interim action accounts for this consideration, in that it seeks a catch limit that reduces rather than immediately ends overfishing, which would mitigate effects of more stringent management measures on the American Samoa Fishing community. Additionally, section 304(e)(4) of the Magnuson-Stevens Act requires NMFS to consider the needs of the fishing community when developing a rebuilding plan. The Council accounted for this consideration with the inclusion of Alternative 2, which would allow for rebuilding of the bottomfish stock complex in the shortest time possible while still authorizing a level of bottomfish catch.

The Council, in 1998, identified American Samoa as a fishing community and requested the Secretary of Commerce concur with this determination. American Samoa was recognized in regulation as a fishing community under the Magnuson-Stevens Act on April 19, 1999 (64 FR 19067). The community continues to participate in the Council decision-making process through its representatives on the Council, its Advisory Panel members, and through opportunities for public input during the Council's deliberations and through public comment periods during NMFS's rulemaking process.

The 2020 SAFE report (WPRFMC 2020a) was the first iteration of the report to present included sales data after the ecosystem component amendment that revised the list of BMUS in American Samoa from seventeen to eleven species, so estimates of commercial sales of just the eleven species that remain classified as BMUS only recently became available. The species that remain BMUS were selected in part because of their importance to the fishery, and likely comprised the majority of reported sales prior to the ecosystem component species amendment.

Table 9 in Section 2.3.3 shows that between 2018 and 2020, American Samoa bottomfish fishermen caught an average of 12,687 lb of BMUS annually and sold an average of 965 lb of BMUS (i.e., a recent average 7.2 percent of total estimated catch sold). Based on the 2020 commercial estimate of pounds sold (307 lb) and the commercial value of the fishery in 2020 (\$1,067), the average adjusted price per pound was \$3.48. The 2021 LOF estimated there were less than 20 participants in the fishery (86 FR 3028, January 14, 2021). If participation and effort were equal in 2020, each of the 20 fishermen would have sold approximately 15 lb of BMUS valued at \$53 per fisherman.

“Cultural fishing” is a relatively new term and is not readily defined (Kleiber and Leong 2018). As with other studies of culture, cultural fishing is context dependent; definitions from other areas may not be suitable for American Samoa. As noted in Section 2.2, American Samoa culture is often framed in terms of *fa'a Samoa*, or the “Samoan Way”, which govern local social norms and practices. This includes core values and practices such as *tautua*, or “service”, which involves the broad collective sharing of labor, resources, income, and social and political support to strengthen the *aiga* (family groups), the village, and the role of chiefs in perpetuating *fa'a Samoa*. In a fisheries context, this may mean the distribution of catch within the *aiga*, or the use of fish as specific ceremonial events. In a letter to NMFS on June 15, 2020, the DMWR highlighted that deepwater snappers are critical for cultural ceremonies and *fa'a lavelave* (e.g., funerals, weddings, births, special birthdays). Cultural fishing would also encompass day-to-day practices of subsistence, and coral reef fisheries are particularly important from a dietary and socio-cultural standpoint (Kilarski et al. 2006; Levine and Allen 2009). Considering that generally less than eight percent of bottomfish catch is sold (Table 9), this fishery can be

considered predominantly non-commercial, providing fish for sustenance and cultural events. This importance for subsistence and cultural use is evident during important community events, and demand for bottomfish varies depending on the need for fish at government and cultural events (WPRFMC 2021).

### 3.7.1 Potential Effects of the Alternatives on the American Samoa Fishing Community

#### Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. As described in Section 2.3.1, the level of bottomfish catch under this alternative is expected to be identical to catch under the interim measure and the average annual catch in recent years (12,687 lb from 2018 to 2020). No available information indicates that commercial sales would change, so NMFS anticipates that an average of 7.2 percent of bottomfish would be sold in subsequent years based on the recent average (Table 19). Using the recent average price of \$3.99 per lb for 913 lb expected to be sold under Alternative 1, this would generate approximately \$3,644 in revenue. Using the upper estimate of the number of fishery participants from the 2021 LOF, the 20 participants would earn approximately \$182 each (Table 19). NMFS expect this scenario to remain consistent regardless of the implementation of complementary management by the territorial government (Table 19) This alternative would not further restrict bottomfish fishing activity in American Samoa relative to the interim measure and only slightly constrain catch relative to previous years, so the status quo is not expected to substantially impact the fishing communities in American Samoa. Non-commercial fishing (inclusive of recreational, sustenance, and cultural fishing) would be similarly affected under the status quo.

**Table 19. Estimated revenues in American Samoa bottomfish fishery under each of the alternatives. All estimates assume a price per lb of \$3.99, and 20 participants in the fishery.**

Years	Alt.	Parallel mgmt. by territory?	Expected catch (lb)	Expected lb sold	Total revenue (\$)	Revenue per participant (\$)	Difference from Alt. 1 (\$)	Percent difference from Alt. 1
<b>Annually</b>	1	Yes	12,687	913	3,645	182	0.0	0.0
<b>Annually</b>	1	No	12,687	913	3,645	182	0.0	0.0
<b>2022</b>	2	Yes	1,500	108	431	22	160.7	88.2
<b>2022</b>	2	No	11,009	793	3,163	158	24.1	13.2
<b>After 2022</b>	2	Yes	0	0	0	0	182.0	100.0
<b>After 2022</b>	2	No	10,784	776	3,098	155	27.3	15.0
<b>Annually</b>	3	Yes	0	0	0	0	182.0	100.0
<b>Annually</b>	3	No	10,784	776	3,098	155	27.3	15.0
<b>2022</b>	4	Yes	5,000	360	1,436	72	110.4	60.6
<b>2022</b>	4	No	11,534	830	3,313	166	16.6	9.1
<b>After 2022</b>	4	Yes	0	0	0	0	182.2	100.0
<b>After 2022</b>	4	No	10,784	776	3,098	155	27.3	15.0

#### Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard

In the absence of complementary management under Alternative 2, BMUS catch may be slightly reduced from the status quo, and catch is expected to be between 11,009 lb and 12,687 lb in the

first year of the plan. If total bottomfish catch is 11,009 lb in the first year in this scenario and 7.2 percent of the catch is sold commercially at \$3.99 pound, that means 793 lb would be sold for \$3,163. Using the number of fishery participants from the 2021 LOF, the 20 participants would earn \$158 each. This is a decrease of approximately \$24 (13.2 percent) from the status quo alternative (Table 19). If fishermen compensated for a closure of Federal waters by catching BMUS in territorial waters that remained open to fishing, revenue would be closer to that expected under the status quo alternative. There is no information available to estimate the magnitude of compensation that would occur. If complementary management is implemented by the American Samoa Government, both territorial and Federal waters would be restricted to bottomfish fishing after the ACL is attained. Thus, NMFS expects that the fishery would catch 1,500 lb in total. If 7.2 percent of this catch is sold for \$3.99 per pound, that means that 108 lb would be sold for a total of \$431 and each fishery participant would earn \$22. This would be a decrease of approximately \$161 (88 percent) from the status quo (Table 19), and this would likely represent significant impacts to the fishing community with respect to the loss of available bottomfish resources for subsistence, cultural, and religious purposes and the loss of revenue for commercial fishermen.

For the subsequent years under the plan in the absence of complementary management, socioeconomic impacts would be similar to Alternatives 3 and 4. If total catch is 10,784 lb in this scenario and 7.2 percent of the catch is sold commercially at \$3.99 pound that means 776 lb would be sold for \$3,098. Using the number of fishery participants from the 2021 LOF, the 20 participants would earn an average of \$155 each. This is a decrease of \$27, or 15 percent, from the status quo alternative (Table 19). If complementary management is enacted, fishing for and possession of bottomfish would likely be prohibited in subsequent years due to the application of the performance standard after the first fishing year. If total catch is 0 lb in this scenario, revenue would also be \$0. This is a decrease of 100 percent relative to the status quo alternative (Table 19), which would represent a significant impact to the fishing community considering the loss of locally sourced bottomfish for subsistence, cultural, and religious purposes as well as the elimination of revenue for commercial fishermen.

Offshore banks in Federal waters do not have shallow coral reef habitat, so these areas may produce more deep water snappers for the fishery. However, there is not detailed information on whether catch for commercial or non-commercial purposes comes disproportionately from territorial or Federal waters or the proportions of species that are caught in these waters. Overall, it is expected that the amount of fish caught for sustenance and cultural purposes would be affected similarly to fish caught for commercial purposes. Specifically, there may be a decrease in available fish of 13.2 to 15 percent under Alternative 2 relative to the status quo alternative in the absence of complementary management, and a reduction in available fish of 88 to 100 percent if complementary management is enacted by the territorial government.

The proposed ACL under this alternative is intended to provide for continued availability of bottomfish resources to the American Samoa fishing community while ending overfishing and rebuilding the fishery, and this catch level is the highest amount of catch that would allow for rebuilding to be achieved in the shortest possible time (i.e., eight years, as in the absence of fishing mortality) in consideration of the fishing community while still adhering to regulatory requirements under National Standard 1 of the Magnuson-Stevens Act. However, these objectives would not be expected to be achieved in the absence of complementary management

since fishing is likely to continue in territorial waters. Under Alternative 2, fish would be available in slightly or notably lower quantities than under the status quo alternative depending on the implementation of complementary management. The decrease under Alternative 2 is less than would be expected under Alternative 3, and more than Alternative 4, for the first year of the rebuilding plan, but the alternatives would likely be comparable after the first year regardless of whether complementary management is implemented. The decrease in revenue and fish available for cultural and subsistence purposes under Alternative 2 would be 15 percent from the status quo without complementary management or 100 percent with complementary management. This decrease is roughly 12 percent larger under Alternative 3 compared to the first year of Alternative 2 in the absence of complementary management, while the decrease for Alternative 3 in the first year with complementary management in place would be 100 percent.

Overall, implementation of Alternative 2 is expected to change the American Samoa bottomfish fishery slightly or notably relative to the status quo during the time frame of the rebuilding plan, depending on the implementation of complementary management by the territory. These changes may decrease the amount of fish available to the community and the amount of revenue available to fishermen by 13.2 percent in the first year of the rebuilding plan and by 15 percent for subsequent years of the rebuilding plan in the absence of complementary management, whereas this reduction would be increased to 88 percent in the first year and 100 percent in subsequent years if complementary management is enacted. Thus, fish available for sustenance and cultural purposes, and revenue would be slightly or notably decreased relative to the status quo. A disruption to the fishery that would result in any substantial social or economic effects to the American Samoa fishing community is not expected if complementary management is not implemented by the territory, but if complementary management is implemented, there would be substantial social and economic impacts to the fishing community.

### **Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters**

In the absence of complementary management from the territory under Alternative 3, BMUS catch may be slightly reduced from the status quo, and catch is expected to be between 10,784 lb and 12,687 lb (Section 2.5.1). If total catch is 10,784 lb in this scenario and 7.2 percent of the catch is sold commercially at \$3.99 pound, that means 776 lb would be sold for \$3,098. Using the number of fishery participants from the 2021 LOF, the 20 participants would earn an average of \$155 each. This is a decrease of \$27, or 15 percent from the status quo alternative (Table 19). If fishermen compensated for a closure of Federal waters by catching BMUS in territorial waters that remained open to fishing, revenue would be closer to that expected under the status quo alternative. There is no information available to estimate the magnitude of compensation that could occur. If complementary management were to be implemented by the American Samoa Government, then both territorial and Federal waters would be closed to the fishery, expected catch would be 0 lb, and, accordingly, revenue would be \$0. This would represent a significant economic impact to the American Samoa bottomfish fishing community since the reduction in revenue would be 100 percent relative to the status quo.

Detailed information on whether catch for commercial or non-commercial purposes comes disproportionately from territorial or Federal waters or the proportions of species that are caught in these waters is not available. Overall, it is expected that the amount of fish caught for sustenance and cultural purposes would be affected similarly to fish caught for commercial



purposes whether or not complementary management is implemented. Specifically, there may be a decrease in available fish of 15 percent relative to the status quo alternative without complementary management, and this reduction could be 100 percent under complementary management.

The action under Alternative 3 does not provide for authorized catch in Federal waters, but territorial waters would remain open to fishing for bottomfish if complementary management is not implemented by the territory, which would allow for some availability of bottomfish resources to the American Samoa fishing community through the duration of the rebuilding plan. In this scenario, fish are expected to be available in slightly lower quantities than under the status quo alternative and Alternatives 2 and 4 in the first year. The Federal fishery closure under Alternative 3 may decrease the amount of bottomfish available to the community and the amount of revenue available to fishermen by as much as 15 percent from the status quo, 12 percent from Alternative 2 in the first year of the rebuilding plan, and 39 percent from Alternative 4 in the first year of the rebuilding plan. If complementary management is implemented by the territory such that both territorial and Federal waters would be closed to bottomfish fishing, the reduction in available fish and revenue would be 100 percent. Implementation of Alternative 3 is therefore expected to affect the fishery and associated communities more than the status quo alternative as well as Alternatives 2 and 4 in the first year. Revenue would be decreased relative to the status quo, but a disruption to the fishery that would result in any large or substantial social or economic effects to the American Samoa fishing community is not expected due to the relatively small nature of the decrease in the absence of complementary management. With complementary management, there would be substantial social and economic impacts to the American Samoa fishing community due to both the loss of revenue and locally sourced bottomfish for subsistence, cultural, and religious purposes. Overall, this alternative does less than the status quo alternative to mitigate effects on fish available to markets and for sustenance and cultural practices in American Samoa and does not meet the need to mitigate socio-economic effects as well as the Alternative 2.

#### **Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard**

In the absence of complementary management under Alternative 4, BMUS catch may be slightly reduced from the status quo, and catch is expected to be between 11,534 lb and 12,687 lb in the first year of the rebuilding plan. If total bottomfish catch is 11,534 lb in the first fishing year under the rebuilding plan in this scenario and 7.2 percent of the catch is sold commercially at \$3.99 pound, that means 830 lb would be sold for \$3,313. Using the number of fishery participants from the 2021 LOF, the 20 participants would earn \$166 each. This is a decrease of nearly \$17 (9.1 percent) from the status quo alternative (Table 19). If there is displacement of fishing effort from Federal waters to unrestricted territorial waters after a Federal fishery closure in accordance with the in-season AM, revenue could be comparable to revenue expected under the status quo alternative. NMFS does not possess information to estimate the amount of displacement that may occur. If complementary management is implemented by the American Samoa Government, both territorial and Federal waters would be restricted to bottomfish fishing after the ACL is attained in accordance with the in-season AM. Thus, NMFS expects that the fishery would catch around 5,000 lb, depending on the timeframe in which NMFS would be able to apply the in-season AM considering potential delays in the tracking of cumulative annual catch. If 7.2 percent of this catch is sold for \$3.99 per pound, that means that 360 lb would be

sold for a total of \$1,436 and each fishery participant would earn \$72. This would be a decrease of approximately \$110 (60.6 percent) from the status quo (Table 19). Overall, the implementation of Alternative 4 in a scenario where the territory implements complementary management would likely result in significant impacts to the fishing community with respect to the loss of locally-sourced bottomfish resources for subsistence, cultural, and religious purposes as well as the loss of revenue for commercial bottomfish fishermen.

In the absence of complementary management for subsequent years of the rebuilding plan, NMFS expects that the socioeconomic impacts of Alternative 4 would be similar to Alternatives 2 and 3. If total catch is 10,784 lb in this scenario and 7.2 percent of the catch is sold commercially at \$3.99 pound, then 776 lb would be sold for \$3,098. The 20 participants estimated in the 2021 LOF would earn an average of \$155 each, which is a decrease of \$27, or 15 percent, from the status quo (Table 19). If the territorial government does decide to implement complementary management, fishing for and possession of bottomfish would also be restricted in both territorial and Federal waters in subsequent years under the rebuilding plan due the application of the performance standard after the ACL is attained in the first fishing year. If total catch is 0 lb in this scenario, revenue would also be \$0. This is a decrease of 100 percent relative to the status quo (Table 19), which would represent a significant impact to the fishing community considering the loss of locally sourced bottomfish for subsistence, cultural, and religious purposes as well as the elimination of revenue for commercial fishermen.

Offshore banks in Federal waters do not have shallow coral reef habitat, so these areas may produce more deep water snappers for the fishery. However, NMFS does not possess detailed information on whether catch for commercial or non-commercial purposes comes disproportionately from territorial or Federal waters or the proportions of BMUS that are caught in these waters. NMFS expects that the amount of fish caught for sustenance and cultural purposes would be affected similarly to fish caught for commercial purposes under the management provisions of the proposed alternative. Specifically, there may be a decrease in available fish and revenue of 9.1 to 15 percent under Alternative 4 relative to the status quo in the absence of complementary management, and a reduction in available fish and revenue of 60.6 to 100 percent if complementary management is enacted by the territorial government.

NMFS intends the proposed management provisions of Alternative 4 to provide for continued availability of bottomfish resources to the American Samoa fishing community while ending overfishing and rebuilding the fishery, as this catch level is the highest possible amount of catch that would allow for rebuilding within statutory requirements (i.e., 10 years, the regulatory maximum time under the Magnuson-Stevens Act) in consideration of the fishing community. However, NMFS does not expect overfishing to be prevented or rebuilding to be promoted to occur within 10 years in the absence of complementary management by the territory because bottomfish fishing is likely to continue in territorial waters after the ACL has been attained. Under Alternative 4, bottomfish would be available in slightly or substantially lower quantities than under the status quo depending on the implementation of complementary management. The decrease in catch under Alternative 4 is less than would be expected under Alternatives 2 and 3 for the first year of the rebuilding plan, but each of the action alternatives would likely be comparable after the first year regardless of whether complementary management is implemented. The decrease in revenue and fish available for cultural and subsistence purposes under Alternative 3 would be 15 percent from the status quo without complementary

management or 100 percent with complementary management. This decrease under Alternative 3 is roughly 39 percent larger compared to the first year of Alternative 4 in the absence of complementary management, while the decrease for Alternative 3 in the first year with complementary management in place would be 100 percent.

In summary, NMFS expects the implementation of Alternative 4 to change the American Samoa bottomfish fishery slightly or notably relative to the status quo during the time frame of the rebuilding plan, depending on the implementation of complementary management by the territory. These changes may decrease the amount of fish available to the community and the amount of revenue available to fishermen by 9.1 percent in the first year of the rebuilding plan and by 15 percent for subsequent years of the rebuilding plan in the absence of complementary management. This reduction would be increased to 60.6 percent in the first year and 100 percent in subsequent years if complementary management is enacted by the American Samoa Government. Thus, revenue and fish available for sustenance and cultural purposes would be either slightly or notably decreased relative to the status quo. NMFS does not anticipate a disruption to the fishery that would result in any substantial social or economic effects to the American Samoa fishing community if complementary management is not implemented by the territory, but if complementary management is implemented, there could be significant social and economic impacts to the American Samoa fishing community.

### **3.7.2 Potential Effects to Public Health and Safety at Sea**

Considering the past and current operation of the American Samoa bottomfish fishery, there have been no noted adverse effects on public health and no significant concerns with safety at sea. The fishery has not typically fostered a “race to fish”. This is expected to remain consistent under the status quo alternative as the most recent management regime for the fishery would be maintained. Under Alternatives 2 and 4, the fishery would likely exceed the implemented ACL and be subject to a Federal closure in subsequent years of the rebuilding plan under the performance standard. Whether fishing in territorial waters would also occur is dependent on the territory’s decision to implement complementary management with this Federal action. In the absence of complementary management, fishing is expected to continue in territorial waters where the majority of bottomfish habitat occurs (about 85 percent, see Fig. 2), so a race to fish is not expected. If complementary management is implemented, a race to fish may occur in the first year of the rebuilding plan before the performance standard is expected to close the fishery in subsequent years. Alternative 3, which would implement a complete closure of Federal waters to bottomfish fishing, is also not expected to result in a race to fish if complementary management is not implemented since territorial waters would remain open and unrestricted to bottomfish fishing. If complementary management is implemented, then a race to fish would similarly not occur because both territorial and Federal waters would be closed to the fishery. Because none of the proposed alternatives are expected to result in drastic changes to fishery operations as they are currently and the majority of bottomfish habitat would remain unrestricted with respect to the harvest of BMUS if complementary management is not implemented, none of the proposed alternatives are expected to result in an increased likelihood for impacts to public health, issues associated with safety at sea, or a race to fish for bottomfish fishermen in American Samoa. If complementary management is implemented, Alternatives 2 and 4 may result in a race to fish in the first year of the rebuilding plan, but there would be no changes due to this action that would increase the likelihood for impacts to public health or issues associated with safety at sea.

### 3.7.3 Potential for Controversy

The Council developed the proposed action for implementation by NMFS via a public process in accordance with the Magnuson-Stevens Act, implementing regulations, the American Samoa Archipelago FEP, and other applicable statutes. NMFS and the Council's SSC determined the results of the 2019 stock assessment (Langseth et al. 2019) to be BSIA (Section 1.5), which allows the stock assessment to be used in the setting of ACLs for the American Samoa bottomfish stock complex consistent with National Standard 2 and the American Samoa Archipelago FEP. The Council immediately began work towards this proposed rebuilding plan, as required by the Magnuson-Stevens Act, in consultation with its advisory bodies, PIFSC fishery scientists and managers, and the American Samoa DMWR. The Council used BSIA in the development of this proposed action alongside input from the public during publicly noticed Council meetings. This public coordination has not revealed significant controversy regarding impacts to the quality of the human environment from this action (Section 3.4.1). However, American Samoa bottomfish fishermen, members of the Council, and members of the Council's SSC have all expressed concerns at SSC and Council meetings regarding the social, cultural, and economic effects of taking action to end overfishing and rebuild the American Samoa bottomfish fishery using a relatively low catch limit or closure of Federal waters. Fishermen have expressed concerns about the data used in the stock assessment, which produced results leading to the proposed action, and regarding the implementation of a much lower catch limit than the one offered in the interim measure developed by NMFS (i.e., the status quo). A letter to NMFS from the American Samoa DMWR on June 15, 2020 also indicated that DMWR opposed the catch limit implemented by the interim measure, and they would not implement complementary management measures with that Federal action. The negative reaction to a relatively higher interim catch limit than proposed under the alternatives for this action indicates that the catch limits and closure proposed under the action alternatives would likely illicit similar responses.

The concerns regarding the negative effects of immediately overfishing were reflected in the Council's request for NMFS to implement an interim measure while a rebuilding plan was developed. The interim measure recommended a catch limit during the interim measure of 13,000 lb, which is the largest catch level that would allow stock biomass to increase as required by 50 CFR 600.310(j)(4) but does not end overfishing. The proposed action presents ACLs of 1,500 lb and 5,000 lb, which are intended to both prevent overfishing and promote rebuilding of the bottomfish stock complex in accordance with Magnuson-Stevens Act requirements, as well as a Federal fishery closure, which is the action that could be taken by NMFS to best restrict overfishing and achieve rebuilding in the shortest possible amount of time. Alternative 2 for this action represents an increased consideration for the fishery and fishing community (inclusive of cultural fishing practices), as it would allow the most possible bottomfish catch while also promoting rebuilding in the shortest possible time (i.e., the same amount of time as in absence of fishing). Alternative 4 addresses impacts to the fishery and associated fishing communities to the greatest extent permitted by the requirements of the Magnuson-Stevens Act and implementing regulations, as it would allow the highest possible level of bottomfish catch while allowing for rebuilding to occur in the regulatory maximum timeframe. The proposed action alternatives would reduce overfishing relative to the status quo, and Alternatives 2 and 4 would mitigate socioeconomic impacts to the fishing community relative to the Alternative 3. The presented alternatives satisfy regulatory requirements to set an authorized catch level that would end overfishing and rebuild the fishery within 10 years, though their ability to do so is dependent

on whether the territory implements management in its waters to complement Federal management. The Council and NMFS will solicit additional public comments on the potential effects of the proposed action over a 60-day public comment period associated with this rulemaking.

### **3.8 Scientific, Historic, Archaeological, or Cultural Resources**

Historical and archaeological resources may be found in Federal waters of American Samoa in the future, but 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 in the areas that the Federal bottomfish fishery operates. Shipwrecks may exist in areas where the fishery operates, but the fishery is not known to adversely affect shipwrecks. Bottomfish fishermen tend to avoid fishing in, anchoring on, and anchoring near known shipwrecks to avoid losing gear.

Sites with unique scientific resources have not been identified in American Samoa, apart from those protected as MPAs (Section 3.6.10.2). Fishing is generally restricted in these areas, including fishing for bottomfish, so this fishery would not affect MPAs. NMFS does not expect the proposed rebuilding plan to have an effect on objects or places listed in the National Register of Historic Places as no such areas exist in the U.S. EEZ around American Samoa. While fishing may occur in areas of potential scientific, cultural, or historical interest, the fishery is not currently known to cause loss or destruction to any such resources. In the absence of complementary management, fishing operations are not expected to significantly change under the implementation any of the alternatives for the proposed rebuilding plan. Because management under the action alternatives is not expected to result in significant changes to the conduct of the fishery in this scenario (Sections 2.4 through 2.6), none of the action alternatives are expected to result in large adverse impacts to resources of scientific, historic, cultural, or archaeological importance. If complementary management is implemented, then fishery activity may be drastically reduced. NMFS does not expect that a fishery with minimal or zero activity would result in large adverse impacts to resources of scientific, historic, cultural, or archaeological importance.

### **3.9 Potential Effects on the Fishery Management Setting**

Under the authority of the Magnuson-Stevens Act, the Council is responsible for developing management plans and NMFS is responsible for implementing regulations to manage the BMUS fishery in Federal waters surrounding American Samoa. The NOAA OLE and the USCG enforce Federal fisheries rules. They may conduct enforcement activities through patrols both on and off the water, and they also conduct criminal and civil investigations. The Enforcement Section of the NOAA Office of General Counsel provides legal support to the NOAA OLE and other NOAA offices and prosecutes cases.

To prevent and minimize adverse bottomfish fishing impacts to EFH, each western Pacific FEP prohibits the use of explosives, poisons, bottom trawl, and other non-selective and destructive fishing gear. Federal law also requires the Council-appointed American Samoa FEP team to prepare an annual report on the performance of all Federal fisheries, including American Samoa bottomfish fishery, by June 30 of each year (e.g., WPRFMC 2021). These activities and responsibilities would continue under all alternatives, and catches would continue to be

monitored through the territorial fishery monitoring program under DMWR with assistance from NMFS.

### **3.9.1 Federal Agencies and the Council**

#### **Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)**

Under Alternative 1, the Council would submit and NMFS would implement the same ACL and AM for the fishery as the interim measure. The fishery is expected to perform similarly as under the interim measure, slightly less than previous averages of fishery performance, and no substantial changes are expected relative to recent catches or fishing activity (Section 2.3.1). Administrative efforts would be required to track the fishery catches in-season relative to the ACL regardless of whether the territory government decides to implement complementary management or not. While the closure of Federal waters would not require an additional rule, it would require more administrative resources to close the fishery and enforce the closure. Although this would be the just the second time an in-season AM would be used in American Samoa, NMFS has utilized an in-season closure as an AM in the Hawaii Deep 7 bottomfish fishery since 2007. The Deep 7 fishery reached the catch limit each year from 2007 to 2010, so NMFS has experience with this type of action. If the fishery were closed in Federal waters around American Samoa, NMFS OLE and the USCG would be responsible for enforcing the closure. Enforcement of the bottomfish fishing closure in Federal waters would not be difficult because the 3-mile limit is easily determined using GPS. Overall, administrative and enforcement efforts would be required under the status quo, but activities and costs would not be expected to change relative the preceding management action because this alternative would apply the same management measures as previously implemented.

#### **Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard**

Under Alternative 2, the performance of the fishery is dependent on the territory's decision to implement complementary management with this Federal action or not. In the absence of complementary management, it is expected that the fishery would perform similarly to the status quo alternative, though BMUS catch may be slightly reduced from the recent average, and catch is expected to be between 10,784 lb and 12,687 lb (Section 2.4.1). If complementary management is implemented, annual BMUS catch would be notably reduced to 0 to 1,500 lb. The fishery is expected to reach the authorized catch of 1,500 lb early in the first fishing year, which would require that NMFS close the fishery in Federal waters in accordance with the in-season AM. This would not require an additional rule but would require more administrative resources to close the fishery and enforce the closure, similar to the status quo. Although this would be the just the second time an in-season AM would be used in American Samoa, NMFS has utilized an in-season closure as an AM in the Hawaii Deep 7 bottomfish fishery since 2007. The Deep 7 fishery reached the catch limit each year from 2007 to 2010, so NMFS has experience with this type of action. If the fishery were closed in American Samoa, NMFS OLE and the USCG would be responsible for enforcing the closure in Federal waters. Enforcement of the bottomfish fishing closure in Federal waters would not be difficult because the 3-mile limit is fairly easily determined using GPS. The application of the performance standard to close the Federal fishery in subsequent years until a new management approach is developed similarly would not require an additional rule but would require resources to enact and enforce the closure. The new regulations would not cause substantial costs to fishermen. Fishermen would continue

to comply with existing laws, and they would need to learn about the potential for an in-season closure under the new ACL and comply with the no-retention regulation for BMUS caught in Federal waters if a closure is implemented.

### **Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters**

Under Alternative 3, the fishery would be closed in Federal waters over the course of the rebuilding plan, so it would not be necessary to evaluate catch relative to an ACL and a subsequent administrative action by NMFS would not be necessary to close the fishery. This alternative would not require more administrative resources than the status quo, but resources from NOAA OLE and the USCG would be needed to enforce a closure of Federal waters to bottomfish fishing. Enforcement of the bottomfish fishing closure in Federal waters would not be difficult because the 3-mile limit is easily determined using GPS. Fishermen would continue to comply with existing laws, and they would need to learn about the complete closure and comply with the no-retention regulation for BMUS caught in Federal waters. Compliance would be easier for fishermen under Alternative 3 compared to Alternatives 2 and 4 because the closure of Federal waters would not change over the course of the rebuilding plan.

### **Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard**

Under Alternative 4, the extent of management and administrative effort by NMFS and the Council is dependent on fishery performance, which, in turn, is dependent on the territory's decision to implement complementary management with this Federal Action. In the absence of complementary management, NMFS expects that the fishery would perform similarly to the status quo alternative with a slight reduction in catch (Section 2.4.1). If complementary management is implemented, annual catches of BMUS would be substantially reduced relative to the status quo. In either case, NMFS anticipates implementing the in-season AM and performance standard approximately halfway through the first fishing year under the rebuilding plan given recent average fishery performance. The in-season AM would require that NMFS close the fishery in Federal waters, which would not require an additional rule but would require more administrative resources to close the fishery and enforce the closure, similar to the status quo and Alternative 2. This would represent just the second effort that NMFS would employ an in-season AM in American Samoa, however, NMFS has utilized an in-season closure as an AM in the Hawaii Deep 7 bottomfish fishery (see Alternative 2 above), so NMFS has experience with this type of action. If the fishery were closed in American Samoa, NMFS OLE and the USCG would be responsible for enforcing the closure in Federal waters. Enforcement of the bottomfish fishing closure in Federal waters would not be difficult because the 3-mile limit is fairly easily determined using GPS. The application of the performance standard to close the Federal fishery in subsequent years until a new management approach is developed similarly would not require an additional rule but would require resources to enact and enforce the closure. The new regulations would not cause substantial costs to fishermen. Fishermen would need to continue to comply with existing laws, learn about the potential for an in-season closure under the new ACL, and comply with the no-retention regulation for BMUS caught in Federal waters if a closure is implemented.

#### **3.9.1.1 All Alternatives**

None of the alternatives would establish a precedent for future actions with significant effects or represent a decision in principle about future actions with potentially significant environmental

effects. NMFS has specified ACLs and post-season AMs for American Samoa bottomfish from 2012 through 2017 as required by the Magnuson-Stevens Act, and the recent interim measure implemented a catch limit with an in-season AM in 2020. The proposed action is a long-term management action that consists of an ACL, AM, and performance standard for Alternatives 2 and 4 and a complete closure for Alternative 3. ACLs have been implemented in the fishery since 2012 and would not generate substantial impacts to administrative efforts. The proposed action is a long-term action but is of limited duration, and each of the action alternatives would reduce fishery impacts on target bottomfish species compared to the status quo. The action alternatives are also intended to mitigate effects of a new fishery management need (i.e., ending overfishing and rebuilding the stock) on the American Samoa fishing community. Because of the limited nature of the management, none of the actions would have large effects in terms of increasing or decreasing future management options available to NMFS and the Council after the duration of the rebuilding plan is complete. However, in accordance with the Magnuson-Stevens Act, if rebuilding plan is not making adequate progress towards ending overfishing and rebuilding the stock within its duration, different or additional management measures may be implemented by the Secretary as necessary to ensure rebuilding is achieved.

### **3.9.2 Territorial Management Agency**

#### **Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)**

In the absence of complementary management, the implementation of the status quo alternative with an ACL and in-season AM for the fishery would not change responsibilities for DMWR, as it would continue to collect catch data through the creel survey program and commercial receipt system and provide this information to NMFS. Because of the need for timely data to support an in-season AM, NMFS would coordinate with DMWR to provide timely and effective monitoring. Thus, under this scenario, implementation of a 13,000 lb ACL and potential Federal closure would not affect fishing in territorial waters and therefore not lead to added burden on territorial management agencies. If complementary management is implemented by the territory and the in-season AM is applied, there may be an additional burden on the territory to both close territorial waters to bottomfish fishing and enforce the closure in its territorial waters. Fishermen would continue to comply with existing laws, and they would need to learn about the potential for an in-season closure under the ACL and comply with the no-retention regulation for BMUS caught in territorial waters if a closure is implemented with complementary management.

#### **Alternative 2: 1,500 lb ACL with In-Season AM and Higher Performance Standard**

The use of an ACL, AM, and performance standard for the bottomfish fishery of American Samoa is not expected to change fishery monitoring by the local resource management agencies. NMFS would continue to monitor catch data as it becomes available in collaboration with local resource management agencies and the Council. Because of the need for timely data to support an in-season AM, NMFS would coordinate with DMWR to provide timely and effective monitoring. If complementary management is applied to this Federal action by the territory, implementation of a 1,500 lb ACL and potential Federal closure would not affect fishing in territorial waters and thus not lead to added burden on territorial management agencies. If complementary management is implemented, there may be an added burden on territorial management agencies to close territorial waters to the fishery and enforce the closure if the in-season AM is applied as NMFS expects to happen early in the first fishing year under the



proposed rebuilding plan. Fishermen would continue to comply with existing laws, and they would need to learn about the potential for an in-season closure under the ACL and comply with the no-retention regulation for BMUS caught in territorial waters if a closure is implemented with complementary management.

### **Alternative 3: Temporary Moratorium on Bottomfish Fishing in Federal Waters**

The effects of Alternative 3 on the DMWR are expected to be the same as Alternative 2. Although an in-season AM is not part of Alternative 3, the DMWR would continue to monitor catch in collaboration with NMFS and the Council. Similar to the other action alternatives, the DMWR would not be required to implement a complementary closure in territorial waters in the absence of complementary management. If complementary management is implemented by the American Samoa Government, then there would be added burden to territorial management agencies to close territorial waters to the fishery and enforce the closure. Fishermen would continue to comply with existing laws, and they would need to learn about the fishery closure and comply with the no-retention regulation for BMUS caught in territorial waters if a closure is implemented with complementary management.

### **Alternative 4: 5,000 lb ACL with In-Season AM and Higher Performance Standard**

NMFS does not expect that implementing an ACL, AM, and performance standard under Alternative 4 for the American Samoa bottomfish fishery would change fishery monitoring by the local resource management agencies. NMFS would continue to monitor catch data as it becomes available in collaboration with local resource management agencies and the Council. Because of the need for timely data to support an in-season AM, NMFS would coordinate with DMWR to provide timely and effective monitoring. If complementary management is applied to this Federal action by the American Samoa Government, implementation of a 5,000 lb ACL and potential Federal closure would not affect fishing in territorial waters and, thus, not lead to added burden on territorial management agencies. If complementary management is implemented, there may be an added burden on territorial management agencies to close territorial waters to the fishery and enforce the closure if the in-season AM is applied, as NMFS expects to happen nearly halfway through the first fishing year under the rebuilding plan. Fishermen would need to continue to comply with existing laws, to learn about the potential for an in-season closure under the ACL, and to comply with the no-retention regulation for BMUS caught in territorial waters if a closure is implemented under complementary management by the territory with this Federal action.

### **3.9.3 Implementation of ACLs and AMs for other Pacific Island Fisheries**

The proposed implementation of a rebuilding plan for American Samoa would not conflict with or reduce the efficacy of existing bottomfish resource management by any local resource management agency, NMFS, or the Council. Additionally, the proposed management measures would also not conflict with ACL and AM implementations for the other Western Pacific bottomfish fisheries in the CNMI, Guam, or Hawaii because these fisheries are geographically separated and bottomfish fishery participants do not fish in different territories such that management in one island area (e.g., American Samoa) would adversely affect the stock status of bottomfish in another island area (e.g., Guam, CNMI, or Hawaii).

### **3.10 Other Potential Effects**

#### **3.10.1 Biodiversity and Ecosystem Function**

To date, there have been no identified effects to marine biodiversity and/or ecosystem function from the American Samoa bottomfish fishery. Bottomfish species are not known to have critical ecosystem roles, such as other tropical species such as parrotfishes or reef-building corals (Bozec et al. 2013; Wild et al. 2011), and the fishery is not known to have large effects on biodiversity or ecosystem function. In the absence of complementary management by the American Samoa Government, none of the alternatives under consideration would result in substantial changes to the fishery with respect to gear, effort, participation, or areas fished (Sections 2.3 through 2.6); therefore, implementation of the proposed rebuilding plan would not affect marine biodiversity and/or ecosystem function. If the territory does implement complementary management, there may be substantial changes to the fishery, but it is not immediately clear what impacts this may have on marine biodiversity and/or ecosystem function. Because fishery activity would be further limited under complementary management, NMFS expects that the effect of the rebuilding plan under this scenario would result in additional bottomfish biomass.

Bottomfish fishing is not known to be a potential vector for spreading alien species as none of the bottomfish vessels fish outside of their respective archipelagic waters. Because fishing would not change in this regard under any of the alternatives in the absence of complementary management (Sections 2.3 through 2.6), the proposed rebuilding plan would not have the potential to spread invasive species into or within the waters of American Samoa. In the scenario where complementary management is implemented by the territory, NMFS does not expect the proposed rebuilding plan to have increased potential to spread invasive species into or within the waters of American Samoa because fishery activity would be substantially reduced.

#### **3.10.2 Highly Uncertain Effects, Unique or Unknown Risks**

As authorized by the Magnuson-Stevens Act, the Council and NMFS have managed the bottomfish fishery in American Samoa since 1986 (WPRFMC 1986), and fishery managers and scientists involved in developing the proposed action are highly experienced in terms of understanding the way the fishery operates and the likely outcomes of the proposed measure. No catch limits were specified in 2018 and 2019, so fishery performance is known under a no action scenario. Similarly, the management applied to the fishery in 2020 gives insight into fishery impacts under the status quo. The proposed action under is part of continued management of the fishery under a system of catch limits and AMs that was first used in 2012. Effects on the human environment of operation and management of the fishery under a catch limit and AM are generally known and have been considered in the development and recommendation of management alternatives.

Analysis of the proposed management action includes consideration of BSIA and expected levels of catch under scenarios where complementary management by the American Samoa Government either is or is not implemented. Some uncertainty exists in the potential response of fishermen to a closure of Federal waters in the absence of complementary management. However, because a small proportion of bottomfish habitat in American Samoa lies in Federal waters, the difference between the maximum possible effect (i.e., proportional reduction in catch), and minimum possible effect (i.e., no reduction in catch) is relatively small. However,

neither outcome is expected to comply with the statutory requirement to end overfishing without complementary management, as it is expected there would be only a slight reduction in catch under the action alternatives compared to the status quo alternative in this scenario. Similarly, neither outcome is expected to comply with the statutory requirement to rebuild the fishery without complementary management. If complementary management is implemented by the territory, fishery activity could be notably restricted and there may be a substantial or complete reduction in bottomfish catch. There exists some uncertainty as to whether bottomfish fishermen may opt to target a different fishery species if they are disallowed from harvesting BMUS in waters surrounding American Samoa. The effects of continued fishing for BMUS within these limited constraints under either scenario of complementary management for the duration of the rebuilding plan are understood based on the stock assessment and are not highly risky. Risks associated with proposed management are therefore not unique or unknown, and potential outcomes are informed by available scientific information.

### **3.10.3 Environmental Justice**

The effect of the alternatives on environmental justice communities that include members of minority and low-income groups was considered. Overall, the fishery is not having a large adverse effect on subsistence harvests of marine resources or on the environment or human health in a way that disproportionately affects members of environmental justice communities. The fishery does not pollute marine waters and, thus, does not have adverse effects to human health or on marine life. The ACL or Federal closure would apply to everyone that catches bottomfish, so it would not disproportionately affect any particular subset of the bottomfish fishery. The environmental review in this EA shows that the fishery would continue to be conducted similar to recent years under the status quo alternative and that Alternatives 2 through 4 may slightly decrease catch compared to the status quo without complementary management. These alternatives could decrease the amount of bottomfish available to fishing communities in this scenario, though none of the effects are expected to be substantial (Section 3.7.1). If complementary management were to be implemented by the territory for any action alternative, NMFS expects the decrease in bottomfish available to the fishing community to result in significant impacts. The ACL, AM, and performance standard under Alternatives 2 and 4, closure under Alternative 3, monitoring, and other fishery management measures are intended to end overfishing, rebuild the fishery, and mitigate impacts to fishing communities, including minority and low-income groups such that communities that rely on their harvest can continue to benefit from the fishery in the future. Because the fishery is not expected to change its conduct substantially under any alternative in the absence of complementary management, implementation of these management measures is not anticipated to result in substantial changes to the fishery, regardless of which alternative is being considered. As a result, no adverse effects to the environment were found that could have disproportionately high or adverse effects on members of environmental justice communities in American Samoa. However, in the scenario where complementary management is implemented by the territorial government, there may be substantial changes to fishery activity and performance. This may have notable impacts to members of environmental justice communities in American Samoa that are reliant on locally-source bottomfish for subsistence, cultural, or religious purposes as well as revenue.

### **3.11 Additional Considerations**

#### **3.11.1 Climate Change**

Although there are no specific studies examining the potential effects of climate change on Pacific Island bottomfish, changes in the environment from global climate change have the potential to affect 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 temperature mediated responses in some marine species (IPCC 2007). The effects from climate change may occur slowly and be difficult to discern from other effects. Climate change has the potential to adversely affect some organisms, while others could benefit from changes in the environment. Increased carbon dioxide uptake can increase ocean acidity which can disrupt calcium uptake processes in corals, crustaceans, mollusks, 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 (Buddemeier 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.

The efficacy of the proposed alternatives for the rebuilding plan in providing for sustainable levels of fishing for bottomfish is not expected to be adversely affected by climate change. Recent catches and biological status of the species complex informed the development of the alternatives, and climate change effects, if any, would be indirectly reflected in those statistics. Monitoring of bottomfish catches and stocks would continue, regardless of which alternative is selected, and if environmental factors were found to be affecting the stocks, management could be adjusted in the future.

##### **3.11.1.1 Consideration of Greenhouse Gas Emissions**

The fishery relies on vessels that are powered by fossil fuels and emit greenhouse gases from fossil fuel combustion. Management under the alternatives considered would not result in a change in fishing in any way that would have large effects on vessel use or fuel consumption or greenhouse gas emissions except if complementary management were to be implemented by the territory for Alternative 3. In this scenario, catch, and thus vessel activity, would be reduced to zero, which would be likely to result in a decrease of fossil fuel consumption for the fishery. Similarly, a coordinated closure associated with the application of the in-season AM for Alternatives 2 and 4 may also notably reduce vessel usage for the fishery and related fossil fuel consumption. It is not clear, however, if bottomfish fishermen would opt to target a different fishery species and potentially offset this anticipated reduction in fossil fuel usage. In the absence of complementary management, if the fishery were to be subject to a closure of Federal waters to bottomfish fishing, some fishing activity may move from offshore banks in Federal waters to closer habitats in territorial waters that require less transit (Fig. 2). However, NMFS does not have detailed information on the current level of fishing effort in Federal versus territorial waters. The closure would affect a small proportion of bottomfish habitat, so fishing activity is not expected to change substantially relative to the status quo, and any potential decreases in fossil fuel consumption are expected to be minor. For these reasons, none of the

action alternatives is expected to result in substantial changes to the way vessels are used except for Alternatives 2 through 4 associated with complementary management, so there would be no change in greenhouse gas emissions if complementary management is not implemented.

**Table 20. Environmental effects of the alternatives.**

Topic	Alt. 1 – ACL of 13,000 lb with In-Season AM (Status Quo)	Alt. 2 – ACL of 1,500 lb with In-Season AM and Higher Performance Standard	Alt. 3 – Closure of Fishery in Federal Waters	Alt. 4 – ACL of 5,000 lb with In-Season AM and Higher Performance Standard
Overview of the alternatives	Existing fishery under interim measure in 2020 and 2021. ACL of 13,000 lb with an in-season AM to close the fishery in Federal waters once the ACL is attained. Rebuilding would likely take 30 to 32 years.	<p>Fishery operating under proposed ACL of 1,500 lb of BMUS, in-season AM, and performance standard. Authorized catch level would rebuild fishery in eight years assuming complementary management by American Samoa, but rebuilding would occur in 19 to 20 years due to continued catch in territorial waters in the absence of complementary management.</p> <p>Likely subject to an in-season Federal fishery closure in the first fishing year of the rebuilding plan, followed by a complete Federal closure in subsequent years until a new coordinated management approach is developed in accordance with the performance standard.</p>	Federal waters closed for the duration of the rebuilding plan. This is functionally equivalent to an ACL of 0 lb in Federal waters. Authorized catch level would rebuild fishery in eight years assuming complementary management, but rebuilding would occur in 19 years due in the absence of complementary management due to continued catch in territorial waters. No AMs.	<p>Fishery operating under proposed ACL of 5,000 lb of BMUS, in-season AM, and performance standard. Authorized catch level would rebuild fishery in 10 years assuming complementary management by American Samoa, but rebuilding would occur in 19 to 21 years due to continued catch in territorial waters in the absence of complementary management.</p> <p>Likely subject to an in-season Federal fishery closure in the first fishing year of the rebuilding plan, followed by a complete Federal closure in subsequent years until a new coordinated management approach is developed in accordance with the performance standard.</p>

<p>Expected fishery outcome</p>	<p>Continuation of fishery as operated under the interim measure. A Federal fishery closure would not be implemented if catch remains consistent with recent annual averages.</p> <p>Catch expected to exceed OFL, so overfishing would not be prevented, and rebuilding projected to take 30 to 32 years.</p>	<p>Federal fishery may close in as early as January or as late as March in the first fishing year; Federal fishery closure expected for the full year in subsequent years due to the performance standard; catch expected to be less than Alt. 1 if complementary management is not implemented, or substantially less if it is.</p> <p>Desired reduction in harvest of BMUS could be offset by fishing in territorial waters where the majority of bottomfish habitat is located, as some fishing effort may redistribute there if complementary management is not implemented.</p> <p>Overfishing would be reduced, but not ended, and rebuilding likely to take 19 to 20 years because of fishing in territorial waters if complementary management is not implemented. If it is, overfishing would be ended, and rebuilding would be achieved in eight years.</p>	<p>Catch expected to be less than Alt. 1 for the duration of the rebuilding plan and less than Alt. 2 and 4 in the first year.</p> <p>Desired reduction in harvest of BMUS could be offset by fishing in territorial waters where the majority of bottomfish habitat is located, as some fishing effort may redistribute there if complementary management is not implemented.</p> <p>Overfishing would be reduced, but not ended, and rebuilding likely to be delayed to 19 years because of fishing in territorial waters if complementary management is not implemented. If it is, overfishing would be ended, and rebuilding would be achieved in eight years.</p>	<p>Federal fishery in May of the first fishing year; Federal fishery closure expected for the full year in subsequent years due to the performance standard; catch expected to be slightly less than Alt. 1 if complementary management is not implemented, or substantially less if it is.</p> <p>Desired reduction in harvest of BMUS could be offset by fishing in territorial waters where the majority of bottomfish habitat is located, as some fishing effort may redistribute there if complementary management is not implemented.</p> <p>Overfishing would be reduced, but not ended, and rebuilding likely to take 19 to 21 years because of fishing in territorial waters if complementary management is not implemented. If it is, overfishing would be ended, and rebuilding would be achieved in 10 years.</p>
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<p>American Samoa bottomfish fishery</p>	<p>No change from interim measure. Fishing may be restricted in Federal waters in years of high catch due to the in-season AM.</p> <p>BMUS available to community as under the interim measure.</p> <p>Overfishing reduced but not ended. Rebuilding under this level of catch would take 30 to 32 years.</p>	<p>Slight change. A closure of Federal waters for most of the first year and the entirety of subsequent years would affect fishermen who customarily fish in Federal waters. The closure may be extended to territorial waters if complementary management is implemented.</p> <p>Fishermen could fish year round in territorial waters in the absence of complementary management, so BMUS available to community as in previous years with possible reduction in catch when the Federal fishery is closed. If complementary management is implemented, substantial reduction in fishery effort.</p> <p>Reduced catch and overfishing, and some conservation benefit to the stock complex relative to Alt. 1 and 4.</p>	<p>Slight but largest potential change. Federal waters would be closed for the duration of the rebuilding plan. This may adversely affect fishermen who customarily fish in Federal waters. The closure may be extended to territorial waters if complementary management is implemented.</p> <p>Fishermen could fish year round in territorial waters in the absence of complementary management, so BMUS available to community as in previous years with possible reduction in catch when the Federal fishery is closed. If complementary management is implemented, fishery effort would be reduced to zero.</p> <p>Reduced catch and overfishing, and some conservation benefit to the stock complex relative to Alt. 1, 2, and 4.</p>	<p>Slight change, but less than Alt. 1. A closure of Federal waters roughly half of the first year and the entirety of subsequent years would affect fishermen who customarily fish in Federal waters. The closure may be extended to territorial waters if complementary management is implemented.</p> <p>Fishermen could fish year round in territorial waters in the absence of complementary management, so BMUS available to community as in previous years with possible reduction in catch when the Federal fishery is closed. If complementary management is implemented, substantial reduction in fishery effort.</p> <p>Reduced catch and overfishing, and some conservation benefit to the stock complex relative to Alt. 1.</p>
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<p>Fishery operation in terms of location, gear, participation, effort, seasonality</p>	<p>The fishery operates around American Samoa and its offshore banks. Distribution of harvest in Federal and territorial waters is unknown. 85 percent of bottomfish habitat is in territorial waters; most catch is assumed to be from these waters. There is no detailed analysis on seasonality, but the fishery operates year round.</p> <p>Alt. 1 would not change the fishery with respect to catch, location, areas fished, gear, seasonality, participation, or intensity relative to the interim measure.</p> <p>(Section 2.3, Section 3.4)</p>	<p>Dependent on the implementation of complementary management by the territory. No large change from Alt. 1 in the absence of complementary management. Some fishing may be displaced into territorial waters over the duration of the rebuilding if Federal waters close. Since most fishing occurs in territorial waters, this would not result in a large change.</p> <p>Large change from Alt. 1 with complementary management since both territorial and Federal waters would be closed to the fishery if the ACL is attained.</p> <p>Overall, NMFS expects effort to be reduced or eliminated during the rebuilding plan because of a fishery closure in Federal waters, and possibly territorial waters, for most of the first year and in subsequent years of the rebuilding plan.</p> <p>(Section 2.4, Section 3.4)</p>	<p>Dependent on the implementation of complementary management by the territory. No large change from Alt. 1 in the absence of complementary management. Federal waters would be closed for the duration of the rebuilding plan, so all fishing would occur in territorial waters during this time. Since most fishing occurs in territorial waters, this would not result in a large change.</p> <p>Large change from Alt. 1 with complementary management since both territorial and Federal waters would be closed for the duration of the plan.</p> <p>Overall, effort is expected to be reduced or eliminated during the rebuilding plan because of the complete closure to fishing in Federal and possibly territorial waters for the duration of the rebuilding plan.</p> <p>(Section 2.5, Section 3.4)</p>	<p>Dependent on the implementation of complementary management by the territory. No large change from Alt. 1 in the absence of complementary management. Some fishing may be displaced into territorial waters over the duration of the rebuilding if Federal waters close. Since most fishing occurs in territorial waters, this would not result in a large change.</p> <p>Large change from Alt. 1 with complementary management since both territorial and Federal waters would be closed to the fishery if the ACL is attained.</p> <p>Overall, NMFS expects effort to be reduced or eliminated during the rebuilding plan because of a fishery closure in Federal waters, and possibly territorial waters, for most of the first year and in subsequent years of the rebuilding plan.</p> <p>(Section 2.6, Section 3.4)</p>
<p>Effects on the Physical Environment</p>				

Effects on air and water quality, noise, and view planes	No effect, not considered further.	No change from status quo.	No change from status quo.	No change from status quo.
Effects on unique features of the geographic environment	The fishery does not affect unique features of the geographic environment. (Sections 3.3, 3.6.10 and 3.8)	No change from status quo.	No change from status quo.	No change from status quo.
Effects on the Biological Environment				
Estimated annual catch of BMUS	12,687 lb regardless of whether complementary management is implemented.	With complementary management: 1,500 lb in the first year, and 0 lb in subsequent years. Without complementary management: Between 10,784 lb and 12,687 lb.	With complementary management: 0 lb. Without complementary management: Between 10,784 lb and 12,687 lb.	With complementary management: 5,000 lb in the first year, and 0 lb in subsequent years. Without complementary management: Between 10,784 lb and 12,687 lb.

<p>Effects on target species (BMUS)</p>	<p>Stock would be managed under an authorized catch consistent with the interim measure but would take 30 to 32 years to rebuild. Overfishing would not be reduced from recent years. Impacts to BMUS would be expected to be the same as under the interim measure.</p>	<p>Catch would be authorized at a level that is intended to end overfishing and rebuild the fishery in eight years. A reduction in overfishing is expected, but overfishing would not be prevented without a complementary closure in territorial waters.</p> <p>In the absence of complementary management, there would be a reduction in harvest from offshore areas due to a closure of Federal waters to bottomfish fishing expected early in the first year and for the full year in subsequent years of the rebuilding plan, which would reduce overfishing but not end it. There may be less displacement into territorial waters than Alt. 3, but more than Alt. 4, in the first year due to Federal waters being open to bottomfish fishing until the ACL is reached. If complementary management is implemented, catch would be limited to 1,500 lb in the first year, and then likely be 0 lb in subsequent years due to the application of the performance standard, with comparable impacts as Alt. 3.</p>	<p>Authorized catch would be functionally equivalent to zero in Federal waters, which is intended to end overfishing and rebuild the fishery in eight years. However, whether this would be achievable would be dependent on the territory implementing complementary management. Without it, fishing would not be limited in territorial waters. Reduction in overfishing is expected, but effects would not be completely mitigated without complementary management.</p> <p>There would be a reduction in harvest of BMUS from offshore areas due to the closure of Federal waters, but overfishing would be eliminated with the implementation of complementary management.</p>	<p>Catch would be authorized at a level that is intended to end overfishing and rebuild the fishery in 10 years, the regulatory maximum time. A reduction in overfishing is expected, but it would not be prevented without a complementary closure in territorial waters.</p> <p>In the absence of complementary management, there would be a reduction in catch from offshore areas due to a Federal closure expected halfway through the first year and in subsequent years of the rebuilding plan, which would reduce but not end overfishing. There may be less displacement to territorial waters than Alt. 1 and 3 in the first year due to Federal waters being open until the relatively higher ACL is reached. If complementary management is implemented, catch would be limited to 5,000 lb in the first year, and then likely be 0 lb in subsequent years due to the performance standard, with comparable impacts as Alt. 3.</p>
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Effects on non-target species and bycatch	Fishery effects on non-target stocks are expected to continue at low levels because bottomfish fishing is target-specific, and there has been no recorded bycatch in the fishery in recent years.	No change from status quo.	No change from status quo.	No change from status quo.
Effects on protected species	<p>The fishery is known to have limited level of interactions with protected species and operates within existing ESA and MMPA authorizations.</p> <p>The fishery is a Category III fishery under the MMPA (remote likelihood or no known incidental mortality and serious injury of marine mammals).</p> <p>The fishery is not adversely interacting with seabirds.</p>	No change from status quo.	No change from status quo.	No change from status quo.
Effects on critical habitat	Currently, there is no designated critical habitat in the action area.	No change from status quo.	No change from status quo.	No change from status quo.
Effects on habitats and vulnerable ecosystems	The fishery is not known to have adverse effects on habitats including EFH or HAPC, coral reefs, or vulnerable ecosystems.	No change from status quo.	No change from status quo.	No change from status quo.

Effects on other vulnerable marine or coastal ecosystems	The fishery is not known to be adversely affecting other vulnerable coastal ecosystems including deep coral ecosystems.	No change from status quo.	No change from status quo.	No change from status quo.
Effects on the Socioeconomic Setting				

Effects on fishing communities	<p>The affected fishing community is comprised of people from the American Samoa Archipelago, which includes fishermen, vendors, and consumers. BMUS are important for social and cultural uses, and the fishery supports jobs and provides revenue for fishermen. Impacts to the fishing community would be the same as under the interim measure.</p>	<p>Slight or substantial change. Without complementary management, commercial fishermen would see a 13.2 percent reduction in revenues for the first year and a 15 percent reduction in subsequent years of the rebuilding plan relative to the status quo due to the expected closures of Federal waters. There would be a similar reduction in BMUS for the community. Effects on non-commercial, sustenance, and cultural fishing would be similar to commercial fishing. Fishing in territorial waters would still be available and would partially offset the effects.</p> <p>With complementary management, there would be an 88.2 percent reduction in revenue in the first year and a 100 percent reduction in subsequent years due to the closure of territorial and Federal waters to the fishery.</p> <p>Long-term, the management measure would improve conservation of BMUS over Alt 1 and 4.</p>	<p>Slight or substantial change. Without complementary management, revenue would be reduced about 15 percent for fishermen each year for the duration of the rebuilding plan relative to the status quo as the fishery would be closed in Federal waters. A similar reduction is expected in BMUS for the community. Effects on non-commercial, sustenance, and cultural fishing would be similar to commercial fishing. Fishing in territorial waters would still be available and would partially offset the effects.</p> <p>With complementary management, there would be a 100 percent reduction in revenue for all years under the rebuilding plan.</p> <p>Long-term, Alt. 3 would improve conservation of BMUS over the status quo and slightly more than Alt. 2 and 4 in the first year but would provide less mitigation of management impacts on the fishing community.</p>	<p>Slight or substantial change. Without complementary management, commercial fishermen would see a 9.1 percent reduction in revenues for the first year and a 15 percent reduction in subsequent years of the rebuilding plan relative to the status quo due to the expected closures of Federal waters. There would be a similar reduction in BMUS for the community. Effects on non-commercial, sustenance, and cultural fishing would be similar to commercial fishing. Fishing in territorial waters would still be available and would partially offset the effects.</p> <p>With complementary management, there would be a 60.6 percent reduction in revenue in the first year and a 100 percent reduction in subsequent years due to the closure of territorial and Federal waters to the fishery.</p> <p>Long-term, the management measure would improve conservation of BMUS over Alt 1.</p>
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Effects on fishery revenue	Fishing is expected to continue at levels similar to the interim measure, and fishermen would realize \$3,645 in total revenue if they catch 12,687 lb and 7.2 percent is sold.	In the absence of complementary management, revenue under this alternative is expected to be slightly less than the status quo at \$3,163 in the first year of the rebuilding plan since catch is expected to be reduced due to a closure of Federal waters if the ACL is reached. Revenue in subsequent years is expected to be \$3,098 since catch is expected to be further reduced due to a complete closure of Federal waters in accordance with the performance standard. If complementary management is enacted, revenue is expected to be \$431 in the first year followed by \$0 for subsequent years of the rebuilding plan.	In the absence of complementary management, revenue under this alternative is expected to be slightly less than the status quo at \$3,098 each year of the rebuilding plan since catch is expected to be reduced relative to recent levels due to a complete closure of Federal waters. If complementary management is enacted, revenue is expected to be \$0 for the duration of the rebuilding plan.	In the absence of complementary management, revenue under this alternative is expected to be slightly less than the status quo at \$3,313 in the first year of the rebuilding plan since catch is expected to be reduced due to a closure of Federal waters if the ACL is reached. Revenue in subsequent years is expected to be \$3,098 since catch is expected to be further reduced due to a complete closure of Federal waters in accordance with the performance standard. If complementary management is enacted, revenue is expected to be \$1,436 in the first year followed by \$0 for subsequent years of the rebuilding plan.
Effects on public health or safety	The fishery is not causing an adverse effect on public health or safety.	No change from status quo.	No change from status quo.	No change from status quo.
Potential for controversy	There is no potential for controversy from fishermen since the same management would be implemented as 2020 and 2021.	There may be potential for controversy with fishermen due to the implementation of a relatively low ACL compared to the status quo.	There may be the potential for controversy with fishermen due to the fishing grounds in the offshore banks being completely restricted for the duration of the rebuilding plan.	Same as Alt. 2, though the proposed ACL represents the maximum level of catch that would allow for rebuilding within statutory requirements.

Safety at sea	There are no known safety-at-sea issues in the fishery.	No change from status quo.	No change from status quo.	No change from status quo.
Scientific, historic, archaeological, or cultural resources	The fishery is not known to be having an adverse effect on historic, archaeological, or cultural resources.	No change from status quo.	No change from status quo.	No change from status quo.
3.5 Effects on the Fishery Management Setting				
3.5.1 NMFS management	<p>NMFS would implement the same management as the interim measure. NMFS would continue to participate in annual fishery monitoring activities with the Council.</p> <p>Additional administrative costs would be required for NMFS to monitor the fishery's progress toward the ACL and to implement an in-season Federal fishery closure, which may occur late in each fishing year.</p>	<p>NMFS would continue to participate in Council fishery monitoring activities.</p> <p>Additional administrative costs would be required for NMFS to monitor the fishery's progress toward the ACL and to implement an in-season Federal fishery closure, which is expected to occur early in the first year of the rebuilding plan under this alternative. Additionally, the performance standard would require administrative costs to implement a Federal closure and develop a new management approach.</p>	Similar to Alternative 2, but there would not be a need to monitor progress toward an ACL or to implement an in-season closure. The closure would be implemented at the start of each fishing year for the duration of the rebuilding plan.	Same as Alt. 2, but NMFS does not expect to apply the in-season AM until roughly halfway through the first fishing year.
3.5.1 Council management activities	The Council would continue to monitor and review annual BMUS catches in the annual SAFE report.	No change from status quo.	No change from status quo.	No change from status quo.



3.5.2 Territorial management activities	American Samoa DMWR would administer the commercial receipt book system and creel survey program and would continue to enforce fishery related laws in territorial waters and on shore.	In the absence of complementary management, no change from status quo.  If complementary management is implemented, there would be additional burden on territorial management agencies to implement fishery closures alongside this Federal action.	Same as Alt. 2.	Same as Alt. 2.
Complementary Federal and territorial management of the fishery	No new Federal action under the status quo alternative relative to the interim measure, so no change to the management relationship. American Samoa is not currently proposing to implement a complementary closure for BMUS in territorial waters if the catch attains the ACL.	American Samoa is not currently proposing to implement a complementary closure for BMUS in territorial waters if the catch is anticipated to reach the ACL. In this scenario, this alternative would result in no change in management by American Samoa in terms of fishery closure regulation or enforcement. However, it remains possible that the territory could decide to implement complementary management with this Federal action, in which the territory would implement fishery closures consistent with the in-season AM and performance standard in this Federal action.	Same as Alt. 2.	Same as Alt. 2.

Fishermen's compliance	Fishermen would continue to comply with closed fishing areas, territorial laws regarding commercial reporting requirements, and Federal rules regarding destructive fishing practices. The same potential for a Federal closure would exist as under the interim measure.	The regulations would not cause substantial costs to fishermen. Fishermen would continue to comply with existing laws, and the mechanism for the potential Federal closure would be the same as the status quo. Fishermen would need to comply with the no-retention regulation for BMUS caught in Federal waters if a closure were to be implemented. If complementary management is implemented, fishermen would also need to learn about and comply with the fishery closure in territory waters.	Same as Alt. 2. Fishermen would need to comply with the no-retention regulation for BMUS caught in Federal waters, and for territorial waters if complementary management is enacted. Compliance for fishermen would be easier than under Alt. 1 or 2 because the closure of Federal waters would not change over the course of the rebuilding plan.	Same as Alt. 2.
Enforcement	NOAA OLE, USCG, and DMWR would continue to enforce fishery regulations around American Samoa and for the Federal closure if needed.	Similar to Alt.1, and enforcement of the bottomfish fishing closure in Federal waters would not be difficult to enforce because the 3 mile limit is easily determined. If complementary management is enacted, the territory would be responsible for enforcing the regulations in territorial waters.	Same as Alt. 2.	Same as Alt. 2.

Violation of Federal, state, or local law or requirements imposed for environmental protection?	No violations are consistently occurring and are not expected.	No change from status quo.	No change from status quo.	No change from status quo.
Would the action under each alternative be expected to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?	No. The Magnuson-Stevens Act and the American Samoa FEP require that NMFS implement ACLs and AMs for all management unit species annually. Implementing the same provisions as the interim measure would not change this requirement.	No. The proposed rebuilding plan, despite being long-term, is a management action of limited duration intended to benefit BMUS by ending overfishing and rebuilding the stock while considering the effects of this new fishery management need on the American Samoa fishing community. This alternative would not narrow future choices having to do with rebuilding the fishery.	Same as Alt 2.	Same as Alt 2.
Other Potential Effects				
Biodiversity and ecosystem function	Other than effects on BMUS stocks, the fishery is not known to be having large adverse effects on biodiversity or ecosystem function. Fishery managers are not aware of imbalances to ecosystem function from the fishery.	No change from status quo.	No change from status quo.	No change from status quo.

Introduction or spread of invasive species	Not occurring as a result of fishery management and not expected to occur.	No change from status quo.	No change from status quo.	No change from status quo.
Likelihood the effects on the human environment would be highly uncertain or involve unique or unknown risks	Unlikely. Catches are monitored, and the characteristics of the fishery are known due to a recent stock assessment. The effects of continued fishing for BMUS under the same provisions as the interim measure are understood and are not highly risky.	Unlikely. The effects of the proposed action are known due to an understanding of the fishery and a recent stock assessment. The effects of continued fishing for BMUS within the limited constraints of this fishery rebuilding plan are understood and are not highly risky.	Same as Alt. 2.	Same as Alt. 2.
Environmental justice	Members of minority and low-income groups may be affected by management decisions. However, the fishery is not having a large adverse effect on subsistence harvests of marine resources, the environment, or human health in a way that disproportionately affects members of environmental justice communities.	Without complementary management, no change from status quo.  With complementary management, there may be a substantial reduction in subsistence harvests of marine resources that could impact members of environmental justice communities.	Same as Alt. 2.	Same as Alt. 2.
Additional Considerations				

Climate change and greenhouse gases	The fishery requires the use of vessels that are powered by fossil fuels. NMFS does not control the amount of vessel use or where vessels are used by the fishery.	<p>No substantial change from the status quo in the absence of complementary management. Even if there is a closure of Federal waters to bottomfish fishing, vessel use could be slightly reduced or remain the same.</p> <p>Larger change from the status quo if complementary management is implemented and a fishery closure occurs in both territorial and Federal waters.</p>	Same as Alt. 2.	Same as Alt. 2.
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## **4 APPLICABLE LAWS**

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## **6 PROPOSED REGULATIONS**

## **7 REGULATORY IMPACT REVIEW**