WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

PRELIMINARY DRAFT

Modifying the Annual Catch Limits and Accountability Measures for the Guam Bottomfish Management Unit Species Rebuilding Plan

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Prepared by the Western Pacific Fishery Management Council

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1 Introduction

1.1 Background information

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) established the Western Pacific Fishery Management Council (Council) in 1976 to develop management plans for fisheries within the United States Exclusive Economic Zone, or EEZ, (3 – 200 nautical miles (nmi) from shore) around Hawaii, U.S. Pacific territories, commonwealth, and possessions of the United States in the Pacific Ocean. The bottomfish fishery in Guam primarily harvests bottomfish management unit species (BMUS), an assemblage or complex of 13 species that include emperors, snappers, groupers, and jacks (Table 1). The BMUS complex occurs in waters subject to either territorial or Federal jurisdiction. The Council and the National Marine Fisheries Service (NMFS) manage the bottomfish fishery in federal waters (*i.e.*, the U.S. EEZ) around Guam in accordance with the Fishery Ecosystem Plan for the Mariana Archipelago (FEP), the Magnuson-Stevens Act, and implementing regulations at 50 CFR 665. The Territory of Guam manages the BMUS fishery in territorial waters (*i.e.*, generally 0 to 3 nmi from shore) and has the discretion to implement management in its waters, including measures that complement fishery management in Federal waters. Since 2012, the Council and NMFS have managed the Guam bottomfish fishery in Federal waters with annual catch limits (ACLs) and accountability measures (AMs). The Council and NMFS designed the ACLs and AMs to prevent overfishing and ensure the fishery is sustainably managed (see WPFMC 2011).

Table 1: List of BMUS for Guam in the Mariana Archipelago FEP.

Scientific Name	Common Names	Family
Aphareus rutilans	Red snapper, silvermouth, lehi	Lutjanidae
Caranx ignobilis	Giant trevally, jack, tarakitu	Carangidae
Caranx lugubris	Black trevally, jack, tarakiton attelong	Carangidae
Etelis carbunculus	Red snapper, ehu, buninas agaga’	Lutjanidae
Etelis coruscans	Red snapper, onaga, buninas	Lutjanidae
Lethrinus rubrioperculatus	Redgill emperor, mafuti	Lethrinidae
Lutjanus kasmira	Blueline snapper, funai	Lutjanidae
Pristipomoides auricilla	Yellowtail snapper, buninas	Lutjanidae
Pristipomoides filamentosus	Pink snapper, pakapaka	Lutjanidae
Pristipomoides flavipinnis	Yelloweye snapper, buninas	Lutjanidae
Pristipomoides sieboldii	Pink snapper, kalikali	Lutjanidae
Pristipomoides zonatus	Flower snapper, gindai, buninas	Lutjanidae
Variola louti	Lunartail grouper, lyretail grouper, bueli	Serranidae

On February 10, 2020, NMFS notified the Council that the Guam bottomfish stock complex was overfished but not experiencing overfishing (85 Federal Register (FR) 26940, May 6, 2020), based on the Langseth et al. 2019 benchmark stock assessment. Consistent with section 304(e) of the Magnuson-Stevens Act and implementing regulations at 50 Code of Federal Regulations

(CFR) 600.310(j), the Council prepared, and NMFS implemented, a rebuilding plan under Amendment 6 to the FEP (87 FR 9272, February 18, 2022). The rebuilding plan implemented an ACL of 31,000 lb (14,061 kg) starting in 2022, and harvests from both territorial and Federal waters are counted toward the ACL. The rebuilding plan also includes an in-season AM and a higher performance standard relative to the performance standard in the FEP. As an AM, if NMFS projects that the fishery will reach the ACL in any year, then the fishery will be closed in Federal waters for the remainder of that year. As a performance standard, if the total annual catch exceeds the ACL during a year, NMFS will close the fishery in Federal waters until NMFS and the Territory of Guam implement a coordinated management approach to ensure that catch in Federal and territorial waters is maintained at levels that allow the stock to rebuild.

The rebuilding plan will remain in place 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 (MSY)), which could occur in response to management action or an updated assessment. NMFS and the Council will review and amend the rebuilding plan as necessary using the best scientific information available (BSIA) consistent with 50 CFR 600.310(j)(3)(iv). If the fishery is closed, reopening will occur 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 time frame (T_{target}, or 2031), within the maximum time to rebuild according to regulatory requirements (T_{max}, or 2032) is implemented.

The rebuilding plan is making adequate progress towards rebuilding, as evidenced by the 2024 stock assessment update for Guam BMUS (Bohaboy and Matthews 2024; see below). Notably, although the stock has not yet fully rebuilt, stock biomass increased 36 percent and the stock is no longer overfished. While total catch in the first year NMFS implemented the rebuilding plan was relatively high at 33,499 lb in 2022, catch in the subsequent year decreased by over 23 percent to 25,713 lb (see Table 2). Although the fishery for Guam BMUS exceeded the rebuilding ACL in 2022, NMFS did not implement the in-season AM or higher performance standard to close the fishery in Federal waters for the remainder of the fishing year or close the fishery in Federal waters until such time that a coordinated management approach to restricting fishing mortality at the level necessary to allow for rebuilding within T_{target} is implemented. Due to the lack of reliable real-time data from creel surveys conducted in Guam and related expansions, NMFS was not able to project that the ACL would be reached in 2022; thus, NMFS did not implement the in-season AM. After the conclusion of the 2022 fishing year, NMFS did not confirm that the fishery exceeded the ACL for over a year as it reviewed data reports and parameters in the catch expansion process. Despite this exceedance in 2022, the 2024 stock assessment indicated that the fishery is making adequate progress to rebuilding within T_{target}.

In January 2024, NMFS Pacific Islands Fisheries Science Center (PIFSC) completed a stock assessment update for bottomfish in Guam (Bohaboy and Matthews 2024). The assessment used a Bayesian surplus production model implemented using Just Another Bayesian Biomass Assessment (JABBA), incorporating data from 1982 to 2023 following the same code structure, identical model set-up, and prior parameter specifications as used for the 2019 benchmark stock assessment. Estimates of harvest rate (H), annual biomass (B), the harvest rate associated with overfishing as determined by the harvest control rule (H_{CR}), MSY, and the biomass at maximum sustainable yield (B_{MSY}) were used to determine stock status relative to reference points

determining overfishing ($H/H_{CR} > 1$) and overfished ($B < (1\text{-}M) \times B_{MSY}$, where M equals natural mortality) status. Stock projections and corresponding risk of overfishing were calculated for 2024–2029 over a range of hypothetical eight-year catches for the Guam BMUS complex.

The 2024 assessment update was reviewed by the Western Pacific Stock Assessment Review (WPSAR) panel on February 8–9, 2024. Per the terms of reference for the review, the panel found the assessment update adequate for management use (Chaloupka et al. 2024). The Council's Scientific and Statistical Committee (SSC) received the WPSAR panel reports and the peer-reviewed benchmark stock assessment at its 151st meeting in June 2024. The SSC accepted the 2024 assessment update as BSIA for determining if provisions of the rebuilding plan, such as rebuilding ACLs, should be modified or maintained.

On May 21, 2024, PIFSC sent a memorandum to the Council stating that NMFS determined the 2024 benchmark stock assessment to be BSIA consistent with National Standard 2. On July 25, 2024, NMFS determined that the Guam BMUS stock complex assessed in the 2024 benchmark assessment was not overfished or subject to overfishing, however, the stock has not reached its rebuilt state. On July 25, 2024, 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 that the fishery was not overfished or experiencing overfishing in 2023. Based on this determination, NMFS conducted a review on the progress of the rebuilding plan and notified the Council that they may modify the ACLs and AMs in the Guam BMUS rebuilding plan to rebuild the stock by 2031 (50 CFR 600.310(j)(3)(iv)).

The Guam bottomfish fishery consists of approximately 63 fishermen (2024 List of Fisheries (LOF); 89 FR 12257, February 16, 2024). The majority of vessels used in the fishery are less than 25 feet (ft) in length and primarily target shallow-water bottomfish species in territorial waters. Larger commercial vessels target deep-water bottomfish species at the offshore banks in Federal waters (Brodziak et al. 2012). Since 2004, catch has varied from nearly 11,000 lb to just over 52,000 lb (Table 2). The high variability observed in catches is likely due to high liners (*i.e.*, commercial fishermen who are highly motivated and skilled) entering and exiting the fishery (Allen and Bartram 2008). Existing data reporting systems do not differentiate catch from territorial versus Federal waters. Therefore, it is not possible to know how much of the catch is harvested in Federal waters and how much catch is harvested from territorial waters.

Table 2. Total catch of Guam BMUS from 2004 to 2023 based on catch estimates provided in the 2023 Mariana Archipelago Annual SAFE Report (WPFMC 2024).

Year	Total Estimated Catch (lb)	Three Year Running Average of Total Estimated Catch (lb)
2004	25,253	25,042
2005	29,089	27,949
2006	33,417	29,253
2007	22,579	28,362
2008	31,107	29,034
2009	35,075	29,587
2010	24,139	30,107
2011	52,280	37,165

Year	Total Estimated Catch (lb)	Three Year Running Average of Total Estimated Catch (lb)
2012	17,522	31,314
2013	27,495	32,432
2014	20,711	21,909
2015	10,855	19,687
2016	24,480	18,682
2017	14,735	16,690
2018	28,727	22,647
2019	28,992	24,151
2020	16,953	24,891
2021	46,388	30,778
2022	33,499	32,280
2023	25,713	35,200
Three-Year Average (2021-2023)	35,200	-
10 year Average (2014-2023)	25,105	-

As shown in Figure 1, the best information currently available shows that the majority of bottomfish habitat is in territorial waters (73.6 percent), and the rest is in Federal waters located on and around offshore banks both to the northeast and southwest of Guam (26.4 percent). NMFS uses the amount of habitat as a proxy for estimating the amount of catch harvested in Federal and territorial waters. NMFS requires large vessels (>50 ft) fishing for bottomfish in Federal waters to have a permit and report their catch. Large vessels are also prohibited from fishing or anchoring within 50 nm around Guam (71 FR 64474, November 2, 2006). Small vessels (<50 ft) fishing in federal waters are not required to report their bottomfish catch to NMFS. There is no territorial catch limit set by the Guam Government nor are any vessels fishing in territorial waters required to have a permit or report their catch. The Guam bottomfish fishery is monitored using data voluntarily provided by fishermen to the Department of Aquatic and Wildlife Resources (DAWR) through the boat-based and shore-based intercept creel survey programs (see Section 3.3.1 and 3.3.2). Additionally, DAWR receives commercial sales data from the voluntary commercial receipt book program.

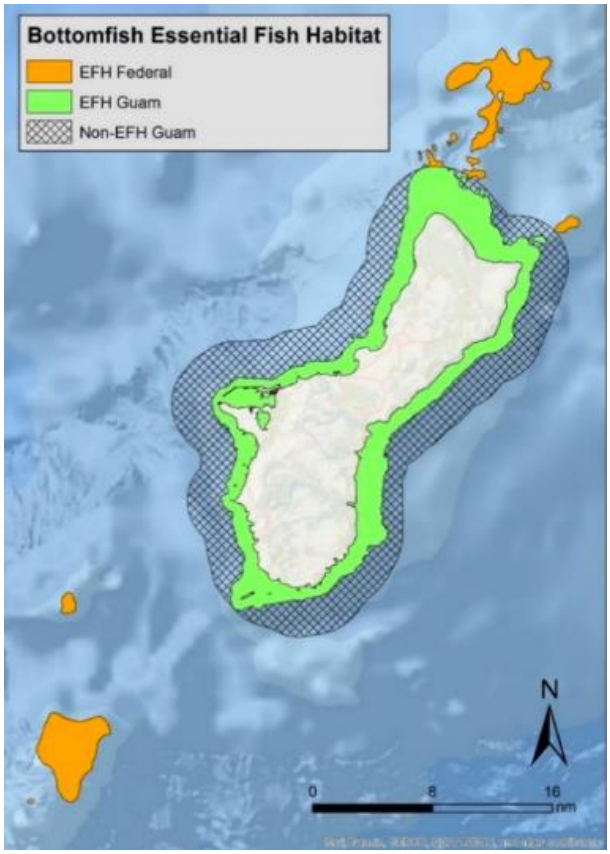

Figure 1. Map of Essential Fish Habitat (EFH) for bottomfish around Guam in federal and territorial waters. (Source: NMFS PIRO)

1.2 Proposed Action

The proposed action is regulatory amendment to modify the ACL and AMs in the Guam BMUS rebuilding plan under the FEP, based on the results of the 2024 update stock assessment (Bohaboy and Mathews 2024). There are no proposed changes to the rebuilding reference points (*i.e.*, T_{min}, T_{target}, and T_{max}) originally specified in the current rebuilding plan.

1.3 Purpose and Need for the Action

The purpose of the proposed action is to comply with the requirements of the Magnuson-Stevens Act and the provisions of the FEP and implementing regulations. These requirements require NMFS to evaluate the progress of the rebuilding plan every two years, implement management that aligns with the best scientific, commercial, and other information available about the fishery, and allows for the maximum amount of bottomfish resources be made available to Guam fishing communities while rebuilding the Guam BMUS stock complex to its biomass at MSY within T_{target}. The need for this action is to provide management oversight, prevent overfishing and rebuild the stock, and to provide for long-term sustainability of fishery resources while allowing fishery participants to continue to benefit from their use.

1.4 Action Area

The fishery management area for the bottomfish fishery in Guam includes the U.S. EEZ around the Island of Guam (Figure 1). The U.S. EEZ around Guam is approximately 221,504 km^2. It is truncated by common borders with the U.S. EEZs of the Commonwealth of the Northern Mariana Islands (CNMI) and the EEZ of the Federated States of Micronesia, and about 20 percent of the perimeter borders international waters. Roughly half of Guam's shoreline is surrounded by well-developed fringing coral reefs, though these reefs are accompanied by a notable offshore slope and several offshore banks including Galvez Bank, 11-Mile Bank, and Santa Rosa Reef. As of June 3, 2013, commercial fishing is prohibited in the Marianas Trench Marine National Monument (78 FR 32996), which is just over 50 nm east of Guam. Additionally, large vessels (*i.e.,* greater than 50 ft in length) are prohibited from fishing for bottomfish in Federal waters in the Guam large vessel bottomfish prohibited area, generally within 50 nmi around Guam (50 CFR 665.403(a)).

1.5 Stock Assessment Update and Stock Status

The Magnuson-Stevens Act requires that an FEP specify objective and measurable criteria, or reference points, for determining when a stock is subject to overfishing or is overfished (50 CFR 600.310(c)). The FEP includes status determination criteria (SDC) that specify when a bottomfish stock is considered overfished or when overfishing is occurring (WPFRMC 2009). A stock is a considered to be overfished when biomass declines below the level necessary to produce the MSY on a continuing basis (B_{MSY}). This threshold is termed the minimum stock size threshold (MSST) and is expressed the relationship $B/B_{MSY} < 1\text{-}M$, where M is the natural mortality of the stock. Thus, if the B/B_{MSY} ratio is less than 1-M, the stock complex is considered overfished.

If the stock is not overfished, overfishing occurs when the fishing mortality rate (F) is greater than the fishing mortality rate that produces MSY (F_{MSY}) for one year or more. This threshold is termed the maximum fishing mortality threshold (MFMT) and is expressed as a ratio, $F_{year}/F_{MSY} = 1.0$. Thus, if the F_{year}/F_{MSY} ratio is greater than 1.0 for one year or more, overfishing is occurring. If a stock is overfished, the overfishing threshold declines in proportion to the $MSST/B_{MSY}$ ratio.

Estimates of annual fishing mortality (F_{year}) relative to MFMT and annual biomass (B_{year}) relative to MSST were used to evaluate stock status for the Guam BMUS complex. Stock projections and corresponding probability of overfishing were calculated for 2023–2029 over a range of hypothetical eight-year catches for the BMUS complex. In addition, the stock assessment found that the BMUS stock complex was not overfished and the fishery was not subject to overfishing in 2023.

A timeline regarding the Guam BMUS overfished stock status in 2020 is outlined in Section 1.1. Relatedly, Section 1.1 also details the communication between PIFSC, PIRO, and the Council after the 2024 stock assessment update led to the updated stock status determination, concluding that the Guam BMUS stock complex is not overfished but not rebuilt to B_{MSY}.

1.6 Magnuson-Stevens Act Criteria for Rebuilding Overfished Fisheries

Pursuant to Section 304(e)(2) of the Magnuson-Stevens Act and implementing regulations at 50 CFR 600.310(j)(1), 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. The Council must prepare and implement an FEP, plan amendment, or proposed regulations for the fishery within two years to end overfishing and rebuild affected stocks.

A rebuilding plan must specify a time period for rebuilding the stock that is as short as possible and generally 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 biomass at MSY (B_{MSY}) in the absence of any fishing mortality, where "expected" refers to a 50 percent chance of attaining B_{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_{MSY} (T_{max}) is 10 years. The target time to rebuild a stock (T_{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}. The fishing mortality associated with achieving T_{target} is known as $F_{rebuild}$. However, this T_{min} value assumes no harvest of the stock complex in either Federal or territorial waters, and this scenario is not realistically achievable if the Government of Guam does not take action to restrict fishing mortality in its waters. Additionally, an action prepared to rebuild a stock must allocate both 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. Such reviews could include the review of recent stock assessments, comparisons of catches to the ACL, or other appropriate performance measures. The Secretary may find that adequate progress is not being made if $F_{rebuild}$ 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 or $F_{rebuild}$ is not necessary unless the Secretary determines adequate progress is not being made. If a stock is not rebuilt by T_{max}, then the fishing mortality rate should be maintained at its current $F_{rebuild}$ 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.

1.7 Public Review and Involvement

NMFS and the Council provided several opportunities to the public to provide input on the development of the proposed ACL and AMs. At its 151st meeting in June 2024, the SSC considered and discussed the outcomes of the peer-review from the report of the WPSAR Panel Chair, Dr. Milani Chaloupka (89 FR 4593, January 24, 2024). At the same meeting, PIFSC presented the final 2024 benchmark stock assessment update for the Guam BMUS (Bohaboy and Matthews 2024), incorporating the recommendations from the WPSAR review. The SSC considered this benchmark assessment as BSIA for the Guam BMUS complex for the purposes of determining stock status and setting harvest limits. At its 198th meeting in March 2024, the Council received a presentation from PIFSC on the benchmark assessment, accepted the SSC BSIA recommendation, and directed staff to develop options to modify the Guam BMUS rebuilding plan. Further, the Council requested PIFSC provide catch projections that would rebuild the stock and for PIRO to provide a review of the progress of the rebuilding plan.

At its 152nd and 199th meeting, the SSC and Council heard an update on the Council request to PIFSC to provide catch projections to rebuild the stock and review of the progress of the rebuilding plan from PIRO. For more information on the catch projects and review of the rebuilding plan refer to Section 2.

All Council and SSC meetings were open to the public and advertised through notices in the *Federal Register* (89 FR 14444, February 27, 2024; 83 FR 45849, May 24, 2024; 89 FR 165, August 26, 2024) and on the Council's website. The public had an opportunity to comment at the meetings on the stock assessment update and the Council's proposed action to modify the Guam BMUS rebuilding plan. There were no public comments.

1.8 NEPA Compliance

This Environmental Assessment (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 (50 CFR §§ 1506.13, 1507.3(a)). This EA began after June 30, 2021, and accordingly proceeds under the 2020 regulations.

1.9 List of Preparers

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2 Descriptions of the Alternatives and Overview of the Rebuilding Plan

The Council developed the alternatives for modifying the Guam BMUS rebuilding plan, pursuant to Magnuson-Stevens Act requirements, in response to the notification by NMFS that the Guam bottomfish fishery is not overfished and not experiencing overfishing, but not rebuilt (Bohaboy and Matthews 2024). Based on this determination, NMFS conducted a review on the progress of the rebuilding plan and found that it was making adequate progress. NMFS further notified the Council that they may modify the ACL and AMs in the Guam BMUS rebuilding plan providing that revisions to management measures would allow the stock rebuild by the T_{target} of 2031.

The Council generated alternatives to evaluate a range of management options from a baseline of not modifying the rebuilding plan (Alternative 1) to Federal action that would rebuild the bottomfish stock complex in the shortest time possible (*i.e.*, closing the bottomfish fishery in federal waters, Alternative 2c). Alternative 2 would modify the rebuilding plan and implement a range of ACLs and AMs that would rebuild the stock and prevent overfishing. Alternative 2a and 2b would implement ACLs for the bottomfish fishery at 31,000 lb and 34,500 lb to rebuild the stock in four and seven years, respectively. Additionally, these alternatives would modify the current AMs and higher performance standard to end in-season monitoring and implement a post-season overage adjustment based on the most recent three year catch average. Alternative 2c would implement a closure of Federal waters to bottomfish fishing, which would allow rebuilding in two years. Each alternative would have at least a 50 percent chance of rebuilding within the estimated timeframes assuming catches in both territorial and Federal waters are limited to the amount authorized. If the territory does not implement complementary management with this Federal action to limit catch in its waters to the authorized catch levels, rebuilding could still occur within $T_{rebuild}$, but the time in which it takes to attain the rebuilding target would be delayed. These alternatives are described in detail below.

2.1 Development of the Alternatives

The process of developing alternatives to modify the rebuilding plan ACL and AMs and analyzing potential impacts biomass projections from PIFSC based on the 2024 stock assessment update (Bohaboy and Matthews 2024) and the catch times series included in the Council's annual SAFE Report (WPFMC 2024), which are used by NMFS to compare catch to catch limits for fisheries in the Pacific Islands Region.

2.1.1 *Calculation of ACLs*

At its 198th meeting on March 27, 2024, the Council requested PIFSC to provide projections for the catch levels that would rebuild the stock using information provided by the final 2024 stock assessment update (Bohaboy and Matthews 2024). The Council also requested PIRO to conduct a review of the rebuilding plan to determine if adequate progress towards rebuilding is being made and if the Council can revise the current conservation and management measures of the rebuilding plan.

On June 4, 2024, PIFSC provided the Council with projections for the Guam BMUS stock based on the 2024 stock assessment update (Appendix). PIFSC scientists developed projections for a

range of ACLs beginning in year 2025 in 500 lb increments from 0 to 50,000 lb, assuming that the ACL would be caught in-full each year. The year 2025 is considered year three of rebuilding because NMFS implemented the rebuilding plan in 2022 and projections represent estimated values at the beginning of each year. Although specified ACLs would apply during the 2025 fishing year, the effects on stock biomass, including the probability of the stock being rebuilt, would not be observable until the start of 2026. According to the updated projections, the Guam BMUS could rebuild to $B>B_{MSY}$ in 2026 if total catch was limited to zero in 2025. Under the current ACL of 31,000 lb, the stock would rebuild by 2028, three years earlier than T_{target}. The maximum catch the fishery could land each year and rebuild in T_{target} of nine years (*i.e.*, by 2031) is 34,500 lb (Figure 2; Table 3).

Based on this determination, the Council received a stock status determination memo from PIRO on July 29, 2024, where NMFS determined that the 2024 stock assessment update represents BSIA and the fishery is not overfished nor subject to overfishing, but not rebuilt in 2023. In addition to this memo, PIRO provided a letter stating that, based on BSIA and associated rebuilding projections from PIFSC, the Council may consider modifications within the scope and parameters of the current rebuilding plan (Appendix). Thus, the Council may consider a regulatory action that revises the rebuilding ACL, AMs and/or performance measures, providing the revisions would continue to prevent overfishing and achieve rebuilding by the established target time to rebuild (*i.e.*, T_{target}, or 2031) specified in the rebuilding plan by Amendment 6 to the Mariana Archipelago FEP (NMFS 2021).

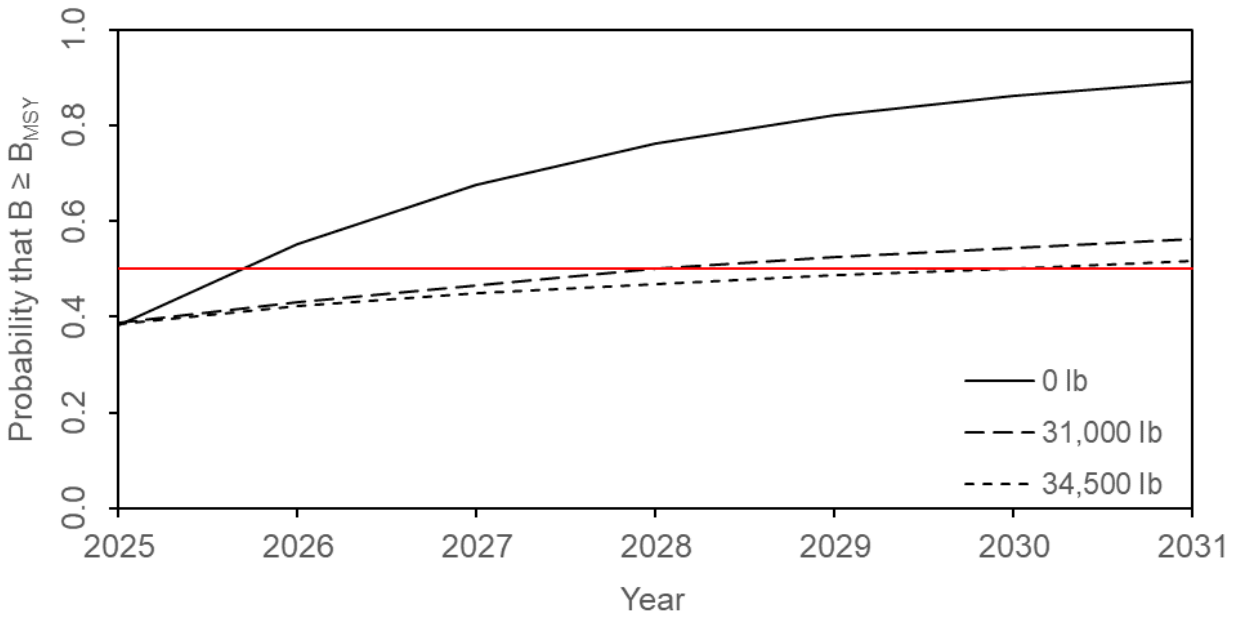

Figure 2. Projected probabilities that biomass is greater than or equal to biomass at MSY for the Guam BMUS stock complex from 2025 to 2031 with annual catch levels authorized under each of the propsed alternatives. The red line represents a 50 percent probability that biomass is greater than or equal to the biomass at MSY. Projected probabilities for each year represent estimates for the beginning of the year.

Table 3. Summary of the probability of overfishing (pOFL) (the probability that B is greater than or equal to B_{MSY}) for catch levels under consideration for the Guam BMUS stock complex (2025-2035). For each catch level under consideration, the grey cells indicate the earliest date rebuilding is projected to occur (*i.e.*, when there is a 50 percent probability that B is greater than or equal to B_{MSY}) and the associated B and F value. The value of pOFL is at the end of the year after fishing has occurred, while the values for biomass-related quantities are reported for the beginning of the year.

Year	Year of Rebuilding	0 lb		31,000 lb		34,500 lb	
		pOFL	Prob. $B \geq B_{MSY}$	pOFL	Prob. $B \geq B_{MSY}$	pOFL	Prob. $B \geq B_{MSY}$
2025	3	0	0.383	0.355	0.388	0.433	0.382
2026	4	0	0.552	0.339	0.431	0.42	0.417
2027	5	0	0.675	0.324	0.467	0.407	0.445
2028	6	0	0.762	0.312	0.5	0.4	0.464
2029	7	0	0.821	0.305	0.524	0.394	0.479
2030	8	0	0.862	0.296	0.544	0.39	0.492
2031	9 (T_{target})	0	0.893	0.291	0.562	0.382	0.506
2032	10 (T_{max})	0	0.915	0.284	0.578	0.38	0.514
2033	11	0	0.93	0.28	0.591	0.378	0.521
2034	12	0	0.941	0.277	0.602	0.376	0.529
2035	13	0	0.95	0.276	0.61	0.376	0.534

2.2 Features Common to All Alternatives

Each alternative assumes that all existing Federal and local resource management laws and regulations will continue, as will non-regulatory monitoring of catch by the Guam DAWR with assistance from WPacFIN. These programs include boat-based and shore-based creel survey programs (Table 4).

Alternatives that retain the current in-season AM and higher performance measure have the potential to result in a closure of Federal waters to the Guam BMUS fishery. In this scenario, a coordinated closure of both Federal and territorial waters would improve the likelihood of management to limit catch at a level that would allow for the stock complex to rebuild. However, Guam does not have in place regulations that provide for a closure of bottomfish fishing in territorial waters if the Federal catch limit is reached. For this reason, the following environmental and fishery outcome analyses of the alternatives accounts for the actions that

NMFS can take within its regulatory authority. Where applicable, each assumes that only Federal waters would be closed as an outcome of the in-season AM or higher performance standard. If complementary management were to be implemented, catches of BMUS would be completely restricted in both territorial and Federal waters throughout each fishing year until the measure is rescinded or replaced.

Prior to implementing future ACLs, the Council and its SSC would review the fishery performance and other factors and make a recommendation to NMFS. NMFS would conduct additional environmental analyses, if necessary, and the public would have the opportunity to provide input and comment on the ACL specification at that time. If an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness.

Table 4. Summary of alternatives to modify the Guam BMUS rebuilding plan and associated ACL, AM, and $T_{rebuild}$

Alternatives	ACL	AMs	Year Rebuilt
A1) No Action	31,000 lb	In-season monitoring and fishery closure in Federal waters for the remainder of the fishing year if NMFS projects the ACL would be exceeded (*i.e.*, in-season AM). Higher performance standard to close the fishery in Federal waters if the ACL is exceeded until a coordinated management approach is developed with the Government of Guam to ensure BMUS catches remain at a level that would allow the stock to rebuild by the T_{target} of 2031 (*i.e.*, higher performance standard).	2028
2) Modify the ACL and/or the AMs of the Original Rebuilding Plan	a) 31,000 lb	If the average catch from the most recent three-year period exceeds the ACL, the ACL will be reduced in the subsequent fishing year by the amount of the overage (*i.e.*, post-season AM).	2028
	b) 34,500 lb	If the average catch from the most recent three-year period exceeds the ACL, the ACL will be reduced in the subsequent fishing year by the amount of the overage.	2031
	c) Federal Moratorium (0 lb)	Closure in federal waters around Guam.	202??

2.3 Description of Alternatives

2.3.1 Alternative 1: No Action/Status Quo – Do Not Modify the Guam Rebuilding Plan or Implementing Regulations

Under Alternative 1, the Council would not recommend to modify the ACL or AMs of rebuilding plan, and the fishery would continue to operate under a 31,000 lb ACL with an in-season AM and higher performance standard to allow the Guam BMUS stock complex to rebuild by 2028 according to updated projections. While NMFS would count catches from both Federal and territorial waters towards the ACL, NMFS only has authority to manage the fishery in Federal waters. Based on the updated catch projections provided by PIFSC in June 2024, the stock would rebuild by 2028, three years ahead of T_{target}.

Expected Fishery Outcome

Given the levels of recent catch in the fishery relative to the proposed ACL, there is a higher chance that annual catch would exceed the 31,000 lb ACL than the 34,500 lb ACL under Alternative 2b, which makes application of the in-season AM and higher performance standard more likely under the Status Quo Alternative than the action alternatives. Annual catches for just two of the past 10 years have exceeded the existing ACL of 31,000 lb, but the recent three-year average catch of 35,200 lb is approximately 13.5 percent greater than this due to elevated catch estimates in 2021 and 2022. Total estimated catch in 2023 returned to levels more consistent with those observed in recent history at a level 17 percent lower than the ACL under Alternative 1. However, due to the variability in annual catches of Guam BMUS, it remains possible that the ACL could be exceeded in a year with relatively high fishing activity.

In the event of a Federal closure, NMFS expects that fishing would continue in territorial waters. Overall, Alternative 1 would aid in rebuilding the Guam fishery within T_{target}, albeit in a longer timeframe than under a scenario with no fishing mortality, while reducing fishery disruptions and allowing bottomfish resources to be available to the Guam fishing community. Similar to Alternatives 2a through 2c, fishing cannot necessarily be constrained in territorial waters, but this alternative would restrict catches to a lesser extent than Alternative 2c such that there would likely be fewer short-term impacts to Guam's fishing community.

2.3.2 Alternative 2: Modify Implementing Regulations of the Guam Bottomfish Rebuilding Plan

Under Alternative 2, the Council would recommend modifying components of the regulations implemented in the rebuilding plan for the Guam bottomfish stock complex to achieve rebuilding according to the parameters defined in the original plan (*i.e.*, T_{min}, T_{max}, T_{target}). The proposed action would revise the AMs, and potentially the ACL, to prevent overfishing and rebuild the stock complex by 2031. The provided sub-alternatives utilize the results of the 2024 bottomfish stock assessment update (Bohaboy and Matthews 2024) that found the fishery is currently not overfished nor experiencing overfishing but not rebuilt in 2023.

Expected Fishery Outcome

Under Alternative 2, the Council would recommend modifying the rebuilding AMs, and possibly the ACL, based on the 2024 assessment update as well as catch projections provided by PIFSC to rebuild the stock by 2031. Based on PIFSC catch projections, the fishery could catch up to 31,000 lb annually to rebuild the stock by 2028, catch up to 34,500 lb annually to rebuild the stock by 2031, or the stock could rebuild by 2026 if there is no harvest of Guam BMUS.

2.3.2.1 Alternative 2a: Modify Implementing Regulations of the Guam Bottomfish Rebuilding Plan to Revise the AMs

Under Alternative 2a, the Council would recommend modifying the AMs of the rebuilding plan for the Guam bottomfish stock complex but maintain the current ACL of 31,000 lb. Based on the updated catch projections provided to the Council by PIFSC in June 2024, if the 31,000 lb ACL is caught in its entirety each year, the stock would rebuild by 2028, three years ahead of T_{target}. Under this alternative, the Council would also recommend modifying the current in-season AM and higher performance standard consistent with the PIRO rebuilding plan review (NMFS 2024). Specifically, this alternative would remove the requirement for in-season monitoring since the monitoring approach is not feasible given the lack of real-time fishery data, and Alternative 2a would implement a post-season AM with an overage adjustment based on a running average of the three most recent years' annual catch values relative to the ACL. This alternative would also discontinue the higher performance standard, and management of the Guam bottomfish stock complex would revert to the standard performance standard in the FEP for which the Council and NMFS would re-evaluate management if catch exceeds the ACL twice or more in a four-year period. Given the available data systems and the high interannual variability in catch, this suite of AMs is most realistic for implementation.

Expected Fishery Outcome

Under Alternative 2a, the Guam bottomfish fishery is not expected to change the way it fishes or where it fishes relative to the Status Quo Alternative, unless catch exceeds the proposed ACL. Under the status quo, an exceedance of the ACL would result in a closure of Federal waters until an approach that can ensure harvest remains at a level at which rebuilding would occur within T_{target} is implemented. Under this alternative, if the ACL is attained, the fishery would remain open and an overage adjustment would be applied to adjust the ACL for the subsequent fishing year downward. Catch has exceeded the ACL under this alternative the last two years (Table 2).

Overall, Alternative 2a would aid in rebuilding the Guam fishery in a shorter timeframe than Alternative 2b and a longer timeframe than 2c. This alternative would have reduced potential for fishery disruptions relative to Alternative 1 while allowing the same amount of BMUS resources to be available to the Guam fishing community. The Council and NMFS would continue to monitor the Guam bottomfish fishery through the annual SAFE reports. If the fishery continues to operate similarly to 2022 and catches exceed the proposed ACL, the Council may ask PIFSC to rerun the stock assessment model to understand how the fishery performance under Alternative 2a has affected the progress of the stock relative to rebuilding targets.

2.3.2.2 Alternative 2b: Modify the Guam Bottomfish Rebuilding Plan Annual Catch Limit and specify AMs

Under Alternative 2b, the Council would recommend modifying the ACL and AMs of the Guam bottomfish rebuilding plan. Under this alternative, NMFS would modify the ACL of the current rebuilding plan to 34,500 lb, which would rebuild the stock complex by the T_{target} of 2031. NMFS would also modify the AM and higher performance standard of the current rebuilding plan consistent with the PIRO rebuilding plan review (NMFS 2024). As under Alternative 2b, this alternative would remove in-season monitoring due to its impractical nature and would implement a post-season AM with an overage adjustment based on a running average of the three most recent years' annual catch values relative to the ACL. This alternative would also discontinue the higher performance standard, and management of the Guam bottomfish stock complex would revert to the standard performance standard in the FEP for which the Council and NMFS would re-evaluate management if catch exceeds the ACL twice or more in a four-year period. Similar to alternative 2a, this suite of AMs is practicable and appropriate for the fishery. Based on the updated catch projections provided to the Council by PIFSC in June 2024, if the 34,500 lb ACL was caught in its entirety each year, the Guam bottomfish stock complex would rebuild by 2031, which is the original T_{target} defined in Amendment 6 to the FEP that established the rebuilding plan.

Expected Fishery Outcome

Under Alternative 2b, the Guam bottomfish fishery is not expected to change the way it fishes or where it fishes relative to the Status Quo Alternative, except in situations where catch is greater than 31,000 lb over the course of a fishing year. This level of catch would result in a closure of the fishery in Federal waters until an approach that can ensure harvest remains at a level at which rebuilding would occur within T_{target} is implemented under Alternative 1. However, under Alternative 2b, an exceedance of the ACL would result in a downward adjustment to the ACL in the subsequent fishing year based on the amount of overage if the recent three-year running average catch is greater than 34,500 lb. This alternative would also utilize the typical performance standard in the FEP instead of the higher performance standard implemented in the original rebuilding plan. Given the levels of recent catch in the fishery relative to the proposed ACL under Alternative 2b, there is a lower chance that annual catch would exceed the ACL than under Alternatives 1 and 2a. Running three-year averages of annual catch exceeded the proposed ACL of 34,500 lb once in the last 10 years (*i.e.*, in 2023; see Table 2. Total catch of Guam BMUS from 2004 to 2023 based on catch estimates provided in the 2023 Mariana Archipelago Annual SAFE Report (WPFMC 2024). However, the inherent variability of the Guam BMUS fishery and the uncertainty in the data collected makes it possible that the ACL could be exceeded if there are multiple years with high fishery catch estimates.

Overall, Alternative 2b would aid in rebuilding the Guam fishery in a longer timeframe than Alternatives 1, 2a and 2c, but still within the T_{target} of 2031. The proposed rebuilding ACL allows the fishery to harvest the largest possible amount of BMUS while allowing the stock to rebuilding within T_{target}. The Council and NMFS would continue to monitor the Guam bottomfish fishery through the annual SAFE report. If the fishery continues to operate similar to its performance in fishing years 2021 through 2023 and average catch exceeds the ACL, the

Council may request PIFSC to rerun the stock assessment model to understand how fishery performance under Alternative 2b has affected the progress of the rebuilding plan.

2.3.3 Alternative 2c: Modify the Guam Bottomfish Rebuilding Plan and establish a fishing moratorium on bottomfish fishing in Federal waters around Guam

Under Alternative 2c, the Council would recommend implementing a fishing moratorium for and possession of BMUS caught in Federal waters around Guam. This action would be equivalent to implementing a rebuilding ACL of 0 lb in Federal waters around Guam. In the absence of fishing mortality, Alternative 2c provides the shortest timeframe to rebuild the Guam BMUS stock complex. A catch level of 0 lb would be predicted to rebuild the stock biomass to B_{MSY} by 2026 (Table 3; Figure 2). Whether this timeline is maintained is dependent on Guam's decision to implement complementary management alongside this Federal action, as NMFS does not have authority to restrict harvest of these species in territorial waters. If complementary management were to be implemented, BMUS harvest would be completely restricted in both territorial and Federal waters each fishing year until the measure is rescinded or replaced. There are no AMs associated with this alternative because there would be no need to track catch against an ACL.

Expected Fishery Outcome

Under Alternative 2c, the Guam BMUS fishery would be expected to change more than any of the other proposed alternatives. A moratorium on the harvest of BMUS in Federal waters around Guam would restrict fishing activity at many of the offshore banks utilized by local fishers to target these species.

Though a closure of Federal waters around Guam to bottomfish fishing would effectively be the same as setting an ACL of 0 lb, in the absence of complementary management, the Council expects that fishing effort could be displaced to territorial waters. Therefore, Alternative 2c could result in a moderate reduction in catch if complementary management is not enacted, but catch would not be completely eliminated. The Council does not possess data indicating the level of displacement that could occur. A moratorium on bottomfish fishing in both Federal and territorial waters would result in an annual catch of 0 lb for the duration of the rebuilding plan and facilitate rebuilding in the shortest time possible. Regardless, this alternative would constrain catch and promote rebuilding to a greater extent than all other alternatives.

3 Description of the Affected Environment

We incorporate by reference the descriptions of the affected environment in Section 3 of the 2021 EA (NMFS 2021). We summarize the baseline information presented in the 2021 EA here and describe any new information and its relevance to the environmental effects analysis.

3.1 Overview of the Bottomfish Fishery

Though indigenous peoples of Guam are known to have been highly skilled fishermen throughout their history, the bottomfish fishery as it currently exists was developed in the late 1980s (Allen and Bartram 2008). There are two distinct sectors of the Guam bottomfish fishery that can be identified by both depth fished and species targeted: the shallow water component and the deep water component. The shallow water component (*i.e.*, those fishing at depths of < 500 ft) has historically comprised the largest portion of total bottomfish catch and effort due to lower associated expenses and relative ease of fishing close to shore. In recent years, the deep water component (*i.e.*, those fishing at depths of > 500 ft) has made up a notable portion of the total expanded bottomfish catch (WPFMC 2024). Smaller fishing vessels (*i.e.*, < 25 ft in length), which comprise a majority of the Guam bottom fishing fleet, tend to target shallow-water bottomfish species for recreational, subsistence, and small-scale commercial purposes, while the few relatively large vessels in the fishery (*i.e.*, > 25 ft in length) target the deep water bottomfish complex at offshore banks (*e.g.*, Galvez, Santa Rosa, and Rota Banks) and primarily fish for commercial reasons (WPFMC 2009; Langseth et al. 2019); however, some recreational vessels less than 25 ft in length have also been known to target deep water bottomfish at the offshore banks and other offshore areas where bottomfish habitat occurs (Bohaboy and Matthews 2024).

Bottomfish fishing around Guam typically occurs using vertical lines with electric or spin-casting reels depending on the fishing depth being targeted (Langseth et al. 2019). Shallow water fishermen, harvesting at depths of 100 to 500 ft, typically use two to four spinning reels with several size 8/0 circle hooks and a weighted fishing line (NMFS 2015). Commercial fishermen fishing in deep water generally operate between two and six electric reels with a 6-lb weight on the end. The long vertical main line has several 1.5 ft branch lines with hooks attached at 1.5 to 3 ft intervals above the weight, although this configuration may vary. Fishermen may also suspend a light or chum bag with chopped squid or fish as bait above the highest hook (NMFS 2015; Allen and Bartram 2008). It is not uncommon for fishermen to combine bottomfish fishing with other methods of harvest such as trolling, spearing, and jigging, to maximize their catch (WPFMC 2024).

Guam's bottomfish fishery is highly seasonal, with fishing effort notably increasing during the summer months when weather and sea conditions are relatively calm. During these periods of favorable conditions, bottomfish fishing tends to increase on the offshore banks in Federal waters as well as on the east side of the island in territorial waters (WPFMC 2009). It is likely that some fishing vessels that harvest bottomfish on the offshore banks around Guam land their catches in the CNMI (WPFMC 2002). However, it is prohibited for Guam bottomfish vessels to commercially harvest bottomfish in the CNMI management subarea, which is the EEZ seaward of CNMI territorial waters, without a valid CNMI commercial bottomfish permit (50 CFR 665.404(a)(2) and 665.405(e)).

The Guam bottomfish fishery consists of approximately 63 fishermen (LOF); 89 FR 12257, February 16, 2024). Since 2001, the boat-based segment of the fishery landed between 10,855 and 52,280 lb of BMUS annually (Table 2). In 2017 and 2018, approximately 25 and 10 percent of that catch had been commercially sold, respectively (WPFMC 2024). Participants in the shallow water component of the fishery, which comprises a large portion of the fishery, rarely sell their catch and fish instead for recreational or subsistence purposes, so the fishery is primarily non-commercial (WPFMC 2009). Though bottomfish fishing has only accounted for 10 to 15 percent of Guam's long-term boat-based fisheries harvest, bottomfish hold fundamental dietary and cultural importance for the people of Guam (Allen and Bartram 2008). Fishing grounds in Federal waters around Guam remain important for the harvest of deep water snappers at offshore banks to provide locally sourced bottomfish to the island's inhabitants, and the extensive community networks for sharing locally caught fish suggest that it is likely that the social benefits of fishing are widely shared by many of Guam's long-term residents (WPFMC 2009).

3.2 Overview of Bottomfish Biology and Distribution

The biological information for the bottomfish stock complex in Guam is limited. To date, we have local life history studies for Guam or other areas of the Marianas for four species out of the 13 species (Matthews and Bohaboy, in prep). The bottomfish fishery in Guam primarily harvests 13 species that include emperors, snappers, groupers, and jacks (Table 1). All species have a wide Indo-Pacific distribution and their range generally extends east to Hawaii, north to Japan, south to Australia, and, for some, as far west as East Africa. Most species prefer rocky bottom substrates or rocky reefs; however, in Hawaii the blueline snapper (*Lutjanus kasmira*) prefers schooling on sandy substrates in the juvenile stage while adults inhabit reefs across a range of wide range of depths. The majority of the stock complex can be found at depths between 10 and 350 m (33 and 1,150 ft), but some species, such as the red snapper (*Etelis carbunculus)* and pink snapper (*Pristipomoides sieboldii)* can occur at depths up to 400 and 500 m, respectively (1,310 and 1,640 ft). All species in the complex are predatory fish and feed on fish, squid, molluscs, crustaceans, and zooplankton.

Spawning has been recorded nearly year-round for most species, but is more common in warmer months and with peak activity occurring in some species around November and December. Spawning aggregations have been reported for red snapper (*Etelis carbunculus*) and lunartail grouper (*Variola louti*). While most groupers are protogynous hermaphrodites (*i.e.*, animals that are born female and at some point in their lifespan change sex to male), it has yet to be confirmed in the lunartail grouper. Sexual maturity and life span varies greatly among the stock complex. *Pristipomoides sieboldii* reaches sexual maturity at three years old and has a lifespan of not more than eight years. In contrast, *Pristipomoides filamentosus* is a slow growing long-lived species, with the oldest fish recorded at 44 years old.

3.3 Overview of Fishery Management and Data Collection

The Council and NMFS manage the BMUS fishery in Federal waters around Guam in accordance with the FEP for the Mariana Archipelago, the Magnuson-Stevens Act, and implementing regulations at 50 CFR 665. Federal regulations prohibit bottom trawls, bottom gillnets, explosives, and poisons (50 CFR 665.406). Territorial regulations also prohibit the use

of explosives, poisons, and electrical devices (5 Guam Code Annotated (GCA) § 63104 through 63110). Additionally, large vessels (> 50 ft in length) may not fish for bottomfish in the Guam large vessel bottomfish prohibited area (50 CFR 665.403(a)) and must obtain a permit to fish in the remainder of Guam territorial waters (50 CFR 665.402 and 665.404(a)).

The Territory of Guam manages the BMUS fishery in territorial waters (*i.e.*, generally 0 to 3 nm from shore) and has discretion to implement management in its waters, including measures that compliment fishery management in Federal waters. The management structure of the FEP emphasizes community participation and increased consideration of the surrounding habitat and ecosystem during management decision making. A joint Federal-territorial partnership enforces Federal fishery regulations, and the FEP requires the Council to produce an annual stock assessment fishery evaluation (SAFE) report for the fishery (*e.g.*, WPFMC 2024).

The Guam bottomfish fishery is monitored using data voluntarily provided by fishermen to DAWR through the boat-based and shore-based creel survey programs. Additionally, DAWR receives voluntary commercial sales data from the commercial receipt book program. The Sportfish Restoration Grant from the U.S. Fish and Wildlife Service (USFWS) provides funding for the shore-based creel survey while PIFSC Western Pacific Fishery Information Network (WPacFIN) provides funding for the commercial receipt book collection and the boat-based creel surveys.

3.3.1 *Boat-Based Creel Survey Program*

The boat-based creel survey program is a long-term program that collects information from fishermen on catch, effort, and participation for offshore fishing activities conducted by commercial and non-commercial fishing vessels. A detailed description of the boat-based creel survey program on Guam is available in Jasper et al. (2016). The boat-based creel surveys are comprised of two survey methods, a roving survey, and an access point survey. Access point surveys are conducted at Agana Boat Basin, Agat Marina, and Merizo Pier and focus on fishermen interviews, while the roving surveys collect participation data. Participation counts are done by recording the number of boats departing or returning from the assigned port during a survey shift and noting the gear type used. The fishermen interviews document catch rates per trip, gear type, species composition, and length/weight measurements of the catch. Survey days are split evenly between weekdays and weekends eight days per month, with both morning and late-afternoon shifts. The creel survey data are transcribed into the WPacFIN database where catch expansion algorithms are applied to the data to generate annual estimates of total boat-based landings.

3.3.2 *Shore-Based Creel Survey Program*

The shore-based creel survey program is a long-term program that collects information from fishermen on catch, effort, and participation for inshore fishing activities. A detailed description of the shore-based creel survey program on Guam is available in Jasper et al. (2016). Roving survey methods are used to sample inshore fishing using land-based and aerial surveys. The land-based surveys are comprised of both participation counts and fishermen interviews. Participation counts are conducted by driving along the shoreline of a designated region in search of fishermen and data collectors record fishing effort by gear type. The fishermen interviews

document catch rates of shore-based fishermen. The aerial survey is used to help estimate fishing activity across the whole island of Guam, including in areas that are inaccessible by road. There are four island-wide sample days per month, with two sample days occurring during the week and two sample days occurring on weekends. On each sample day there is a morning and evening shift, during which pre-defined coastal routes are traversed until the route has been completed. 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 into the WPacFIN database where catch expansion algorithms are applied to the data to generate annual estimates of shore-based landings.

3.3.3 *PIFSC WPacFIN Catch Expansion Algorithm*

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 (Figure 3).

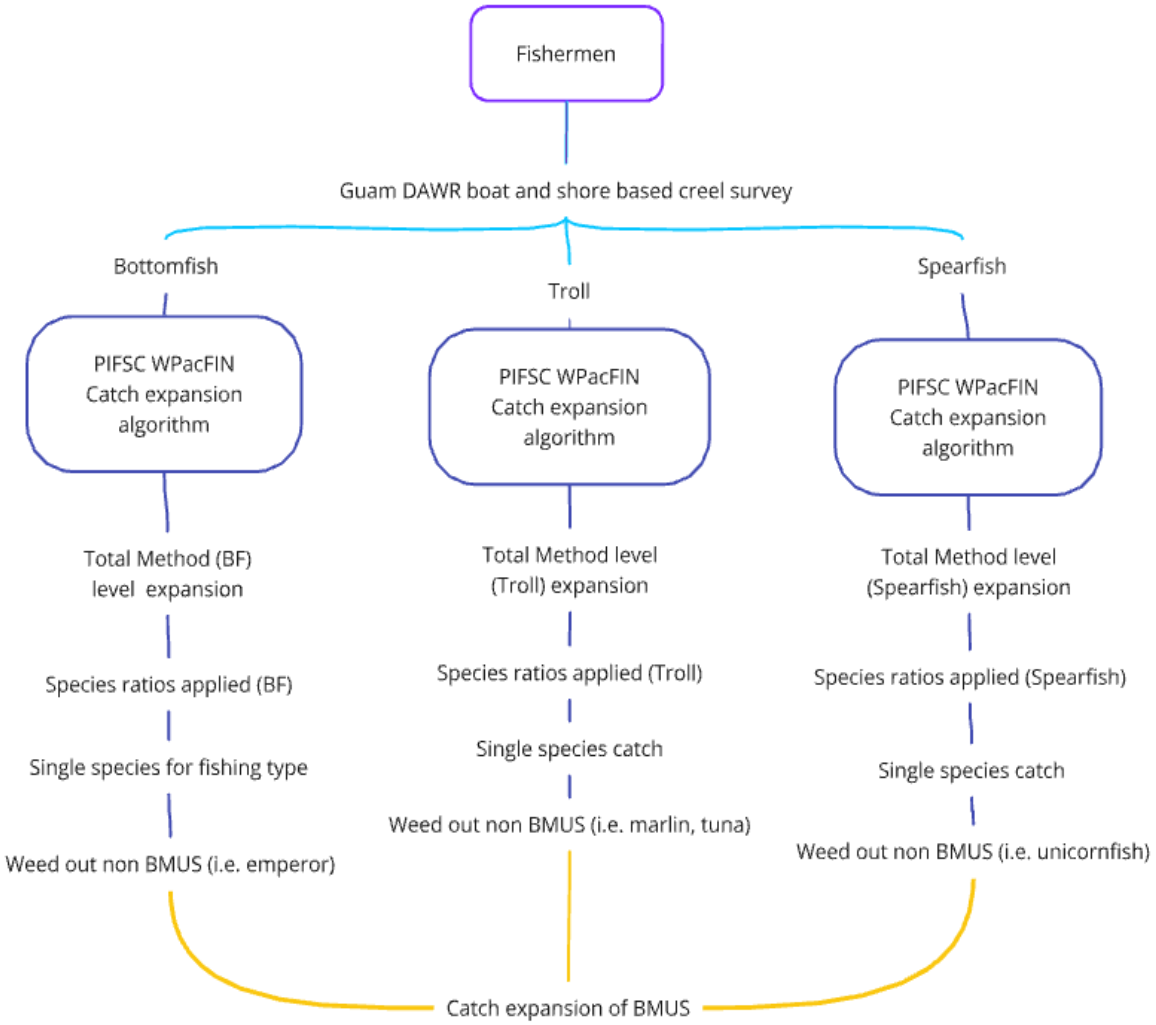

Figure 3: Flowchart of the catch expansion process of BMUS catch from the creel data survey.

3.3.4 *Commercial Receipt Book Program*

The commercial receipt book program monitors fish sold locally in Guam and collects information from dealers and/or vendors who purchase fish directly from fishermen. Commercial reports are typically collected monthly and are tallied at the end of the year after being adjusted based on coverage estimates provided by the vendors, dealers, and/or DAWR. However, data reporting for the program is not mandatory in Guam, and there have frequently been fewer than three dealers providing information on an annual basis.

3.4 Target and Non-Target Stocks

BMUS managed under the FEP include several species of snappers, jacks, an emperor and a grouper. Recent catch levels since 2004 are described in Table 2. These and other catch statistics for the Guam bottomfish fishery can be found in the 2023 Annual SAFE Report for the Mariana Archipelago (WPFMC 2024). For a comprehensive discussion of the biology, life history, factors that affect distribution and abundance of BMUS, and other information, see the FEP (WPFMC 2009) or search the NMFS Species Directory for a summary of species-specific information. Recent target and non-target catch data for the Guam bottomfish fishery is available in the 2023 annual SAFE report, along with a detailed summary of the environment affected by this action.

The Magnuson-Stevens Act defines bycatch as "fish" 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. Since almost all fishes caught in Guam are considered food fishes, the few discards that occur may be due to regulatory requirements or economic discards that result from shark depredation.

The 2024 stock assessment (Bohaboy and Matthews 2024) updated estimated the long-term MSY for the bottomfish stock complex to be 42,400 lb and the six-year OFL proxy at 37,000 lb for 2024 to 2029. The assessment update concluded that the Guam bottomfish stock complex is neither overfished nor experiencing overfishing, but it also has not rebuilt to B_{MSY}. Between 2004 and 2023, the fishery harvested an average of 25,105 lb (Table 2), which is approximately 59 percent of the MSY and 68 percent of the OFL from the 2024 stock assessment update.

3.5 Protected Resources

Section 3.8 of the 2021 EA, "Protected Species in Guam and Potential Effects of the Alternatives," describes the baseline with respect to potential interactions between the Guam bottomfish fishery and protected species including marine mammals, sea turtles, and seabirds, and this information is incorporated by reference and summarized there. The section generally describes ESA requirements and consultations, ESA-listed species with the potential to interact with vessels in the fishery (Table 15, in the 2021 EA), valid biological opinions (BiOps), and ongoing Section 7 consultations for the fishery. The section continues with information about the Marine Mammal Protection Act (MMPA) including the potential for interactions with the fishery.

Following are highlights of other information incorporated by reference from the 2021 EA and updated information that support this EA:

- Sea Turtles: The 2021 EA concluded that the rebuilding plan would not substantially change fishing activity in the Guam 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.

- Marine Mammals: NMFS previously evaluated the potential impacts of the Guam 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 BiOp for bottomfish fisheries on March 8, 2002 and a Letter of Concurrence for bottomfish fisheries on June 3, 2008 (NMFS 2002; NMFS 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). Additionally, the ESA lists five whale species known to occur in the EEZ around Guam (see note under Table 16 in the 2021 EA). Additionally, a single ESA-listed dugong that was observed in Cocos Lagoon in 1975 (Randall et al. 1975). There have been no reports of dugong sightings since then.

- Oceanic whitetip shark: On January 30, 2018, NMFS published a final rule listing oceanic whitetip sharks as threatened species under the ESA (83 FR 4153). Logbooks and voluntary reports have documented rare interactions with this species by the fishery. The 2021 EA concluded that the fishing under the rebuilding plan 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 (NMFS 2018).

- Giant manta ray: On January 22, 2018, NMFS published a final rule listing giant manta rays as threatened species under the ESA (83 FR 2916). There are no recorded interactions with the fishery and giant manta rays, and NMFS expects the bottomfish fishery to have discountable or insignificant effects on the giant manta ray population. The 2021 EA concluded that the rebuilding plan 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 appreciably reduce the likelihood of both survival and recovery of the species in the wild (NMFS 2018).

- Seabirds: Most of the seabirds found in Guam forage far from the islands and are unlikely to interact with the bottomfish fishery because of the methods used to deploy and retrieve fishing tackle. There have been no reports of interactions between the Guam bottomfish fishery and seabirds; therefore, it is unlikely that the fishery, as currently conducted under the recommended action, would affect seabirds. There was no ESA new listing for seabirds since the 2021 EA.

- ESA-Listed Reef Building Corals: On September 10, 2014, NMFS listed 20 species of reef-building corals as threatened under the ESA (79 FR 53851). Four species of listed corals are known to occur in waters around Guam from 0-40 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. On November 30, 2023, NMFS published a new proposed rule (88 FR 83644) replacing the 2020 proposed rule due to substantial revisions based on public comments and new information regarding the interpretation of the records of the listed corals and application to critical habitat. At this point in time, there is insufficient information to determine the proposed designation's potential impacts on the Guam 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.

- On August 26, 2022, NMFS published a BiOp (NMFS 2022) finding that the Guam bottomfish fishery is not likely to adversely affect giant manta rays, or chambered nautilus. For oceanic whitetip sharks, NMFS determined that the continued operation of Guam bottomfish activities is likely to adversely affect the threatened sharks but are not likely to jeopardize their continued existence. The Guam bottomfish fishery does incidentally take oceanic whitetip sharks, and to monitor the amount of take, NMFS established an Incidental Take Statement (ITS) of two interactions over any five consecutive calendar years. If the ITS is exceeded, NMFS will reinitiate formal consultation.

- On July 19, 2023, NMFS and USFWS published a proposed rule (88 FR 137) to designate 14 habitat units for a total of 125 acres of critical habitat designation for green sea turtles in Guam. The proposed rule called for comments to be received by October 17, 2023. At this point in time, there is insufficient information to determine the proposed designation's potential impacts on the Guam 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.

- On July 25, 2024, NMFS published a proposed rule (89 FR 143) to list six species of giant clams as endangered and four species as threatened. Three of the proposed endangered species (bear paw clam, true giant clam, smooth giant clam) and four of the proposed threatened species (small giant clam, fluted giant clam, boring giant clam, and Noah's giant clam) are known to occur in waters around Guam. At this point in time, there is insufficient information to determine the proposed listings of giant clam potential impacts on the Guam 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.

- The proposed action under consideration would not change the manner in which the fishery operates with respect to areas fished, gear used, or methods employed, so interactions with protected species are not anticipated to change in frequency or intensity from those analyzed in the 2021 EA. None of the alternatives under consideration are expected to change the fishery in a way that would result in new or additional effects, so effects on protected resources are expected to continue to be insignificant under all management alternatives.

3.6 Physical Resources

The Mariana archipelago, roughly oriented north-south and approximately 425 miles long, includes the island of Guam and the CNMI, which consists of 14 main islands (Farallon de Pajaros, Maug, Asuncion, Agrihan, Pagan, Alamagan, Guguan, Sarigan, Anatahan, Farallon de Medinilla, Saipan, Tinian, Aguigan, and Rota). Guam is the southernmost island of the archipelago and 30 miles (48 km) long and 4 mi (6 km) to 12 mi (19 km) wide and is also the largest island in Micronesia with an area of 209 miles^2 (541 km^2).

Physical features of the affected environment in the action area include a range of habitats including sandy coastal areas, coral reefs, seagrass beds, lagoons, open ocean waters, and the features of those habitats such as circulation, temperature, salinity. For more information on the physical setting of the fisheries, see the Mariana Archipelago FEP (WPFMC 2009).

3.7 Socioeconomic Setting

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)."

In 1998, the Council identified Guam as a fishing community and requested the Secretary concur with this determination. Guam 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, through opportunities for public input during the Council's deliberations, and through public comment periods during NMFS rulemaking processes.

The most recent SAFE report (WPFMC 2024) was the just the second iteration of the report to present sales data after the ecosystem component species (ECS) amendment that revised the list of BMUS in the Mariana Archipelago from 17 to 13 species, so estimates of commercial sales of just the 13 species that remain categorized 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 most reported sales prior to the ECS amendment.

This section evaluates the effect management alternatives may have on the economy, way of life, and traditions of human communities, including fishing communities. For the purposes of describing the affected socioeconomic environment and developing related impact analyses (see Section 4), we utilize commercial catch and revenue data available in the 2023 Annual SAFE Report for the Mariana Archipelago (WPFMC 2024). Table 2 shows that in between 2021 and 2023, Guam bottomfish fishermen caught an average of 35,202 lb of BMUS annually over the last three years (*i.e.*, 2021–2023).

In 2020 and 2021, an average of 6,522 lb of BMUS was sold (*i.e.*, an average of 19 percent of the total estimated catch) (Table 5). Data in 2022 and 2023 were confidential because there were less than three dealers and/or vendors reporting for the commercial receipt book program in Guam. Based on the commercial estimate of pounds sold (4,482 lb) and the commercial value ($24,869) of the fishery in 2021, the average price per pound was $5.55. The 2024 LOF estimated there was about 63 participants in the fishery (89 FR 12257, February 16, 2024).

Table 5. Commercial landings, revenue, and price information of Guam bottomfish fishery (WPFMC 2024).

Year	Estimated catch (lb)	Estimated catch sold (lb)	Percent of catch sold	Estimated revenue ($)	Adjusted estimated revenue ($)	Fish price ($/lb)	Adjusted fish price ($/lb)	CPI
2004	25,232	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	2.127
2005	29,087	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.975
2006	33,413	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.771
2007	22,577	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.659
2008	31,103	6,293	20%	26,094	40,759	4.15	6.48	1.562
2009	35,029	9,467	27%	38,267	58,740	4.04	6.20	1.535
2010	23,929	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.492
2011	52,230	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.444
2012	17,517	4,745	27%	20,599	28,859	4.34	6.08	1.401
2013	27,276	2,529	9%	10,707	15,001	4.23	5.93	1.401
2014	20,687	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.390
2015	10,783	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.403
2016	24,480	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.324
2017	14,652	4,002	27%	17,434	22,525	4.36	5.63	1.292
2018	28,365	3,029	11%	15,290	19,265	5.05	6.36	1.260
2019	28,849	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.238
2020	16,953	8,562	51%	45,264	55,086	5.29	6.43	1.217
2021	46,387	4,482	10%	24,869	29,146	5.55	6.50	1.172
2022	33,154	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.087
2023	25,712	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.000

Notes: ‘n.d.’ = Confidential (fewer than 3 participating vendors. ‘CPI’ = Consumer Price Index.
Data source: PIFSC Fisheries Research and Monitoring Division-WPacFIN.

3.8 Management Setting

The Council currently manages fisheries in Federal waters in accordance with the approved FEPs, and PIRO is responsible for implementing fishery regulations that implement the FEPs. PIFSC conducts research and reviews fishery data provided through logbooks and fishery monitoring systems administered by territorial resource management agencies such as DAWR. The Council, PIRO, and PIFSC collaborate with local agencies in the administration of fisheries of the Western Pacific through other activities including coordinating meetings, conducting research, developing information, processing fishery management actions, training fishery participants, and conducting educational and outreach activities for the benefit of fishery communities.

NOAA's Office of Law Enforcement (OLE) is responsible for enforcement of the nation's marine resource laws, including those regulating fisheries and protected resources. OLE Pacific Islands Division oversees enforcement of Federal regulations in Guam and enters into Joint Enforcement Agreements with the territory.

The U.S. Coast Guard's (USCG) Fourteenth District (Honolulu) jurisdiction is the EEZ and high seas in the western and central Pacific. At over 10 million square miles, its area of responsibility is the largest of any USCG District. The USCG patrols the region with airplanes, helicopters, and surface vessels.

Federal regulations at 50 CFR 665.4 require NMFS to specify ACLs and AMs for each stock or stock complex of MUS identified in an FEP, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex (76 FR 37285, June 27, 2011). This fishery has been managed by NMFS and the Council through the specification of ACLs and AMs since 2012, in coordination with the Guam DAWR. Since February 2022, the fishery has been subject to an ACL of 31,000 lb under a rebuilding plan (87 FR 9272). For information regarding data collection, see section 3.3 of the FEP.

3.8.1 Implementation of ACLs and AMs for other Pacific Island Fisheries

The proposed modification to the ACL and AMs for the Guam bottomfish fishery 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 would also not conflict with ACL and AM implementations for the other Western Pacific bottomfish fisheries in American Samoa or Hawaii because these fisheries are geographically separated and bottomfish fishery participants do not fish in different territories. As such, management in one island area (*e.g.*, Guam) would not adversely affect the stock status of bottomfish, fishery operations, or management in another island area (*e.g.*, American Samoa or Hawaii).

3.9 Resources Eliminated from Detailed Study

[Reserved]

4 Potential Effects of the Alternatives

This section describes the potential environmental and management effects that could result from the Alternatives considered and described in Section 2 (**Error! Reference source not found.**). The analysis relies on the information described in Section 3 as the baseline to evaluate the potential impacts of the management. The resources that are included for analysis are: physical resources; protected resources; public health and safety; biodiversity and ecosystem function; scientific, historic, archeological, and cultural resources; target and non-target species; socioeconomic setting; and management setting. Cumulative effects and effects from climate change are also considered in Section 4.6.

4.1 Effects Common to All Alternatives

All alternatives under consideration pertain to the amount of allowable harvest of bottomfish species to rebuild the stock by 2031. Decisions to establish an ACL and AMs under any of the alternatives would not establish precedence or narrow decisions about future specifications. None of the proposed alternatives would affect the Council or NMFS' ability to establish effective ACLs and AMs for federally managed fisheries in the future.

Therefore, the effects described in sections 4.1.1 through 4.1.3 are considered to be the same under all alternatives. Subsequently, effects that may differ between Alternatives are considered separately for each alternative in Sections 4.2 through 4.4.

4.1.1 *Effects on Bycatch Species*

There were four individual BMUS reported as being released by the Guam boat-based bottomfish fishery and zero non-BMUS individuals were discarded or released in the boat-based fishery (*i.e.*, not exclusive to bottomfish) in 2023, for a total bycatch rate of 0.37 percent (see Table 35 in WPFMC 2024). Given the low bycatch rate in the most recent fishery performance data available, there is no current concern regarding effects of the bottomfish fishery on bycatch species. NMFS does not expect fishery performance to change under any of the proposed alternatives in a way that would influence bycatch rates.

4.1.2 *Effects on Physical Resources*

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 Guam. 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 Section 3.6). Given the characteristics of the fishing fleet and the general offshore nature of the fishing activity, none of the alternatives would result in impacts to air quality, noise, water quality, view planes, or terrestrial resources.

4.1.3 *Effects on Protected Resources*

Bottomfish fishing around Guam typically occurs using vertical lines with electric or spin-casting reels depending on the fishing depth being targeted. None of the alternatives would fundamentally change the way the fishery is conducted with respect to areas fished, gear used, or methods employed. Alternative 1 and Alternative 2c may change the areas fished by the fishery in the event of a Federal fishery closure, though the fishery would not be expected to operate in new areas for which impacts on protected resources had not been previously evaluated.

Therefore, no alternative is expected to result in adverse impacts on marine mammals, sea birds, species protected under the ESA or critical habitat for ESA-listed species in a manner that has not been previously considered.

Table 6 lists the consultation history for all ESA-listed species that occur in the area of operation for the fishery. All recent, valid consultations for the fishery have determined that the Guam bottomfish fishery is not likely to adversely affect any ESA-listed species. The 2021 EA also addressed the new ESA listings of the oceanic whitetip shark, giant manta ray, and chambered nautilus and determined that the Guam bottomfish fishery is not likely to adversely affect these species.

The Guam bottomfish fishery is also not known to affect marine mammal or seabird species through gear interactions or disruptions in or adverse effects on prey (NMFS 2021). Furthermore, NMFS classifies the Guam bottomfish fishery as a Category III fishery under Section 118 of the MMPA (89 FR 77789, September 24, 2024) because it has no known incidental takings of marine mammals.

The Guam bottomfish fishery is not known to adversely affect habitat. Similar methods are used to fish for bottomfish in American Samoa, CNMI and Hawai‘i, and studies of bottomfish habitat in Hawai‘i 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 of the Council’s FEPs 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 fishers conduct the bottomfish fishery in Guam; therefore, the alternatives are not expected to result in adverse effects on bottomfish EFH or HAPC.

Harvesting bottomfish is prohibited in the territorial marine preserves where and/or when fishing is prohibited, such as the Achang Reef Flat or Tumon Bay Marine preserves, though these areas are typically nearshore. Bottomfish fishing is Federally managed in the Marianas Trench Marine National Monument (Monument), where commercial fishing is prohibited in the Islands Unit of the Monument and non-commercial fishing must be authorized under a permit. These marine protected areas (MPA) would not be affected by the proposed action, so adverse effects to them would be unlikely under all alternatives considered. 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 status quo or action alternatives would not result in adverse impacts to the Monument or other MPAs.

The bottomfish fishery operating under the FEP is not known to experience or cause other public health or safety-at-sea issues. The proposed ACLs and AMs would not result in any change to the fishery that would pose an additional risk to human safety at sea.

Table 6. ESA-listed species and their determinations under the relevant ESA consultations for the Guam bottomfish fishery. See Appendix A of the NMFS 2022 BiOp on the bottomfish fishery of Guam for the consultation history by ESA-listed species that occur in the area of operation for the fishery.

Consultation	Species	Determination
NMFS 2002	Loggerhead sea turtle, Leatherback sea turtle, Olive ridley sea turtle, Green sea turtle, Hawksbill sea turtle, Blue whale, Fin whale, Sei whale, Sperm whale, Northern right whale	Not likely to adversely affect
NMFS 2015	Scalloped hammerhead sharks and five coral species with no common name (Acropora globiceps, A. retusa, A. speciosa, Euphyllia paradivisa, Isopora crateriformis)	Not likely to adversely
NMFS 2022	Giant manta ray, Chambered nautilus, Oceanic Whitetip shark	Not likely to adversely

4.1.4 Effects on Biodiversity and Ecosystem Functions

There are no identified effects to marine biodiversity and/or ecosystem function from the Guam bottomfish fishery to date. 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. None of the alternatives under consideration would result in substantial changes to the fishery with respect to gear, effort, or participation, but there may be slight changes in areas fished if Federal waters are closed to the fishery (Sections 4.2 and 4.4). Alternative 1 and Alternative 2c could result in changes to the fishery with respect to effort, participation, catch, and areas fished if a Federal fishery closure is implemented but would not do so in a way that would create additional impacts to fishery species. Thus, implementation of the proposed revisions to the rebuilding plan would not affect marine biodiversity and/or ecosystem function.

4.1.5 Effects on Scientific and History, Archeological, and Cultural Resources

Historical and archaeological resources may be found in Federal waters of Guam 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 Guam, apart from those protected as MPAs (Section 3.9.2 in the 2021 EA). Fishing is generally restricted in these areas, including fishing for bottomfish, so this fishery would not affect MPAs. 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, and fishing operations are not expected to significantly change under the implementation any of the alternatives for the proposed modifications to the ACL and/or AMs of the rebuilding plan (Sections 2.2). Because management under the alternatives is not expected to result in changes to the conduct of the fishery that would affect resources of scientific, historic, cultural, or archaeological importance, none of the alternatives are expected to result in large adverse impacts to these resources.

4.2 Potential Effects of Alternative 1

Under Alternative 1, the Council would not take action to modify the ACL or AMs of the rebuilding plan. The fishery would continue to operate under a 31,000 lb ACL with in-season monitoring and a higher performance standard, which is expected to prevent overfishing while rebuilding the Guam BMUS by 2028.

Under the in-season AM, NMFS would monitor the fishery in both Federal and territorial waters. If the ACL is projected to be reached, NMFS would notify fishers that Federal waters would be closed to bottomfish fishing at the projected date through the remainder of the year, or immediately if it is determined the ACL has already been attained. As a higher performance standard, if the ACL is exceeded in any year of the rebuilding plan, Federal waters would be closed until a coordinated management approach is developed and regulations are implemented that ensures catch in both Federal and territorial waters can be maintained at levels that allow the stock to rebuild.

4.2.1 *Effects on Target and Non-Target Stocks*

The recent average catch from 2014 through 2023 is 25,105 lb (see Table 2). Based on this level of annual catch, it is unlikely that the fishery would exceed the proposed ACL; however, the fishery reaching the ACL is possible given that total estimated catch for two of the past 10 years exceeded the proposed ACL. The implementation of the in-season AM, if triggered, would likely be late in the fishing year if catches continue as they have in recent years. If the fishery were to perform similar to 2022 at 33,499 lb, then NMFS would monitor the fishery through the creel survey and would close the fishery at the projected date (*i.e.*, likely by the end of November) for the remainder of the year before it exceeds the ACL. However, if the fishery exceeds the ACL, then as a higher performance standard, NMFS would close Federal waters until a new management approach to control catch at a level that would allow for rebuilding by T_{target} is implemented.

If Federal waters are closed to fishing, NMFS expects that there would be displacement of fishing effort to territorial waters where the majority of bottomfish habitat around Guam is situated. It is possible that not all fishing effort would be displaced as those fishers who prefer to fish in Federal waters (*i.e.*, on the offshore banks, see Figure 1) for deepwater species may choose not to fish in territorial waters for shallow water bottomfish species. Therefore, there may be beneficial effects for fish populations at offshore banks in Federal waters relative to the Status Quo Alternative if a Federal closure is implemented, even though bottomfish harvested in territorial waters would continue experiencing consistent fishing. While any displacement of fishing effort could delay the proposed rebuilding timeline, the application of the in-season AM

or the higher performance standard under this alternative, if triggered, would restrict overfishing and promote rebuilding.

4.2.2 *Effects on Socioeconomic Setting*

Under Alternative 1, Guam bottomfish catch may be moderately reduced relative to recent fishery performance. NMFS expects annual catch to be approximately 25,105 lb based on recent 10-year average catch as provided in the Mariana Archipelago 2023 Annual SAFE Report.

No available information indicates that commercial sales would change, so NMFS anticipates that an average of 24.5 percent of catch would be sold at $6.23 per pound (based on available data from 2014 through 2023; WPFMC 2024). If total bottomfish catch is 25,105 lb and fishers sell 24.5 percent of the catch commercially at $6.23 pound, then 6,151 lb would be sold for $41,671.

25,103 lb of expected catch * 24.5% estimated commercial sales = ~6,151 lb of bottomfish sold

6,151 lb * $6.23/lb = ~$38,319 in revenue

In years of high fishery catch, however, harvest could be restricted in Federal waters through the use of the in-season AM. It is possible that catch could exceed the proposed ACL even after NMFS implements the in-season AM (*i.e.*, closes Federal waters for the remainder of the fishing year) due to continued fishing in territorial waters if complementary management is not implemented as well as displacement of any fishing effort from Federal to territorial waters. If the ACL is exceeded and the higher performance standard is implemented without complementary management in territorial waters, the expected catch from territorial waters in those fishing years of the rebuilding plan where Federal waters are closed could be 18,477 lb or possibly higher, due to displacement of any fishing effort from Federal to territorial waters. At this level of expected catch, NMFS anticipates that 4,527 lb would be sold for a total of $28,203 This is a decrease of $10,116, or 26.4 percent from the status quo alternative (Table 7).

18,477 lb of expected catch * 24.5% estimated commercial sales = ~4,527 lb of bottomfish sold

4,527 lb * $6.23/lb = ~$38,203 in revenue

If complementary management is implemented, catch would be limited to 31,000 lb, which would be associated with a total revenue of $47,317. This level of revenue would continue unless the fishery exceeds the ACL and the higher performance standard is implemented. If the higher performance standard was applied, catch and revenue would both be reduced to zero since bottomfish fishing would be prohibited in both territorial and Federal waters.

Table 7. Estimated revenues in the Guam bottomfish fishery under Alternatives 1 – 2c and under the scenarios if complementary management is implemented in territorial waters.
All estimates assume 24.5 percent of the expected catch is sold, a price per lb of $6.23. For Alternatives 1 – 2c, the table also compares revenue if the higher performance standard (HPS) is not implemented (*i.e.*, the ACL is not exceeded and Federal waters are not closed for the duration of the rebuilding plan), which is expected early on in the rebuilding plan, and if the HPS is implemented, which could occur only after the first year of the rebuilding plan and through subsequent years. 2022 is the first fishing year of the rebuilding plan. Revenue is rounded to the nearest dollar.

Alternative	Alt. ACL (lb)	Expected catch (lb)	Expected lb sold	Total catch revenue ($)	Total ACL revenue ($)	$ difference in revenue from Alt. 1 w/o HPS implemented	% difference in revenue from Alt. 1 w/o HPS implemented	$ difference in revenue from Alt. 1 w/ HPS implemented	% difference in revenue from Alt. 1 w/ HPS implemented
1. HPS not implemented	31,000	25,105	6,151	$38,319	$47,317	-	-	-	-
1. HPS implemented w/o comp. management	0	18,477	4,527	$28,203	$0	-	-	-	-
2a. Modify AM	31,000	25,105	6,151	$38,319	$47,317	$0.00	0.00%	$10,116.22	35.87%
2b. Modify ACL and AM	34,500	25,105	6,151	$38,319	$52,659	$0.00	0.00%	$10,116.22	35.87%
2c. Federal moratorium	0	18,477	4,527	$28,203	$0	-$10,116.22	-26.40%	$0.00	0.00%

4.2.3 *Effects on Management Setting*

Under Alternative 1, NMFS and the Council would continue to monitor catches of all 13 BMUS against the complex-level ACL. NMFS will continue to monitor catch data as it becomes available, in collaboration with local resource management agencies and the Council (Section 1.6).

The in-season AM would require NMFS to close the fishery in Federal waters if the ACL is projected to be reached. NMFS would not require an additional action by the Council to close Federal waters, but a closure would require administrative resources by NMFS to implement and enforce the closure. If the fishery were closed in Guam, NMFS OLE and the USCG would be responsible for enforcing the closure in Federal waters. The application of the higher performance standard to close the fishery in Federal waters in subsequent years until a new management approach is developed would similarly require resources by NMFS to enact and enforce the closure.

Without sighting a vessel that is actively fishing for bottomfish in Federal waters, NMFS and the USCG may be unable to determine if BMUS were harvested in territorial or Federal waters, so effective enforcement may require increased effort by USCG, NMFS OLE, or territorial agencies. This would require significant time and investment by NMFS and/or the USCG.

The development of a new coordinated management approach to allow the reopening of the fishery under the higher performance standard would also require additional administrative resources to generate and implement the measures. The new regulations would not cause substantial costs to fishers. Fishers would continue to comply with existing laws, and they would need to learn about the potential for an in-season closure and comply with the no-retention regulation for BMUS caught in Federal waters if a closure is implemented.

4.3 Potential Effects of Alternative 2a and 2b: Modify the Rebuilding Plan AMs

The analysis in this subsection presents the anticipated effects of Alternative 2a and Alternative 2b, which would modify the rebuilding plan to set an ACL to rebuild the stock by 2031, discontinue the in-season monitoring AM and higher performance standard, and implement a post-season overage adjustment AM based on the most recent running three-year average catch. Alternative 2a would retain the current ACL of 31,000 lb that would rebuild the stock by 2028, whereas Alternative 2b would implement an ACL of 34,500 lb to rebuild the stock by 2031 (T_{target}). Given that these alternatives are similar with respect to implementing ACLs and AMs, many of the subsections below present uniform effect. When different effects were determined during analysis, they are documented separately.

4.3.1 *Effects on Target and Non-Target Stocks*

The recent average catch from 2014 through 2023 is 25,105 lb (see Table 2). Based on this level of annual catch, it is unlikely that the fishery would exceed the proposed ACL; however, the fishery reaching the ACL is possible given that total estimated catch for two of the past 10 years exceeded the proposed ACL. Under the post-season AM, if the most recent three-year running average catch exceeds the ACL, NMFS would decrease the ACL for the subsequent fishing year by the amount of the overage. If annual catch occurs at levels higher than the recent average,

implementing a post-season AM would prevent overfishing by reducing the ACL in the subsequent year.

Annual catch estimates for Guam BMUS are reliant on the creel surveys and are highly variable, ranging from 10,855 lb (2015) to 52,280 lb (2011) (Table 2). To account for the inherent variability in the fishery and uncertainty in the catch data, NMFS would compare the most recent three-year running average of total estimated catch to the ACL instead of annual catch values. A post-season overage adjustment that would reduce the ACL and limit the amount of Guam BMUS available for harvest in the subsequent fishing year would not be expected to change the way the fishery operates or where it fishes and provides a management approach that is less likely to result in fishery disruptions than implementing AMs that could result in a Federal fishery closure. Given the limited capability of real-time in-season monitoring, only post-season AMs are practicable in the Guam bottomfish fishery. In the scenario that the fishery were to perform similar to the year it had the highest catch in the past decade in 2021 at 46,388 lb, then expected catch would estimate a three year average of 35,200, which would reduce the ACL in the subsequent year by 4,200 lb (Alt. 2a) or 700 lb (Alt. 2b) (Table 8). However, in the scenario the fishery were to perform similar to fishing year 2023 at 25,713 lb then there would be no reduction and the three-year average would be 28,308 lb.

Table 8. Scenarios on how the post-season AM would be applied for different catch estimated for 2024 dependent on the highest catch between 2014-2023 and the 2023 fishing year.

Fishing Year	Scenario 1 (lb)	Scenario 2 (lb)
2022	33,499	33,499
2023	25,713	25,713
2024	46,388 (2021)	25,713 (2023)
Expected three-year average	**35,200**	**28,308**
Overage Adjustment (2a/2b)	**-4,200 lb/ -700 lb**	**No adjustment**

Annual catches under Alternative 2a and 2b are expected to be similar to fishing years between 2021 through 2023 and would not change the way the fishery operative. Under Alternative 2a and 2b, the ACLs of 31,000 lb and 34,500 lb would rebuild the stock by 2028 and 2031, respectively. Under the Magnuson-Stevens Act, NMFS and the Council would review the rebuilding plan every two years and amend it as necessary using BSIA.

4.3.2 *Effects on Socioeconomic Setting*

No available information indicates that commercial sales would change, so NMFS anticipates that an average of 24.5 percent of catch would be sold at $6.23 per pound (based on available data from 2014 through 2023; WPFMC 2024). If total bottomfish catch is 25,105 lb (10-year average from 2004-2023) and fishers sell 24.5 percent of the catch commercially at $6.23 pound, then 6,151 lb would be sold for $38,319. Under Alternative 2a and 2b catch would be limited to 31,000 lb, or 34,500 lb which would be associated with a total catch revenue of $47,317 or $52,656, respectively.

25,105 lb of expected catch * 24.5% estimated commercial sales = ~6,151 lb of bottomfish sold

6,151 lb * $6.23/lb = ~$38,319 in revenue

Alternative 2a: 31,000 lb * 24.5% estimated commercial sales * $6.23/lb = ~$47,317 in total catch revenue

Alternative 2b: 34,500 lb * 24.5% estimated commercial sales * $6.23/lb = ~$52,656 in total catch revenue

Since there is no in-season AM under this alternative, the proposed action would not constrain bottomfish fishing activity in Guam, so it is not expected to affect the fishing communities in Guam. Similarly, non-commercial fishing (inclusive of recreational, subsistence, and cultural fishing) would be unaffected relative to recent activity under the status quo alternative.

4.3.3 *Effects on Management Setting*

The proposed ACL and AM under Alternative 2a and 2b would not require a change to monitoring or fishery data collection. NMFS will continue to monitor catch data in collaboration with local resource management agencies and the Council. No changes to the role of law enforcement agents or the USCG would be required in association with implementing the proposed management action. Under this alternative, if the most recent three-year average catch exceeds the ACL, NMFS and the Council would implement the post-season AM. NMFS would not require an additional action by the Council to reduce the ACL by the amount of the overage in a subsequent year, but this action would require administrative resources by NMFS to change the ACL. Alternative 2a would not conflict with, or reduce the efficacy of, existing bottomfish resource management by any local resource management agency. Fishers would need to continue to comply with existing laws under this alternative.

4.4 Potential Effects of Alternative 2c

The analysis presented here reviews the potential effects of Alternative 2c, which would implement a fishing moratorium for, and possession of, BMUS caught in Federal waters around Guam, and discontinue the in-season monitoring AM and higher performance standard. This alternative would be equivalent to implementing a catch limit of 0 lb in Federal waters around Guam and would rebuild the Guam bottomfish stock complex in the shortest time possible. The timeframe in which NMFS anticipates the stock complex to be rebuilt would be dependent on the implementation of complementary management by the Government of Guam. In the absence of catch, the Guam bottomfish stock complex would rebuild by 2026. However, given the likelihood that fishing for bottomfish would continue in the territorial waters around Guam, NMFS expects that 25,907 lb of bottomfish could still be harvested based on the proportional amount of habitat in territorial waters relative to Federal waters and considering the recent three-year average catch. This level of catch would allow the Guam bottomfish stock complex to rebuild within three years according to the updated projections from PIFSC.

4.4.1 *Effects on Target and Non-Target Stocks*

Under Alternative 2c, NMFS would implement a closure of Federal waters to bottomfish fishing. If the Government of Guam implements complementary management and there is a complete moratorium of the bottomfish fishery in both Federal and territorial waters, the bottomfish stock

complex could rebuild within two years from the time of the closure. In the absence of complementary management, NMFS expects that there would be displacement of fishing effort from Federal waters to territorial waters where the majority of bottomfish habitat around Guam exists. It is possible that not all bottomfish fishing effort would be displaced, as those fishers who prefer to fish in Federal waters for deepwater species (*e.g.*, on the offshore banks, see Figure 1) may choose not to fish in territorial waters for shallow water bottomfish species; these fishers may elect not to fish at all or could target other species in Federal waters (*e.g.*, pelagics). Therefore, there may be beneficial effects for bottomfish populations in Federal waters relative to the status quo alternative if NMFS implements a Federal closure associated with reduced harvest, but bottomfish in territorial waters would continue to be subject to consistent or increased fishing pressure if bottomfish fishing remains unrestricted. If Federal and territorial waters are closed to BMUS fishing, beneficial effects would occur for both shallow water species in territorial waters as well as deepwater species at offshore banks in Federal waters.

Regardless if the Government of Guam implements complementary management with the proposed Federal action, Alternative 2c would constrain catch and promote rebuilding to a greater extent than any other alternative. This alternative represents the most restrictive Federal action that NMFS could take within its management authority. In summary, Alternative 2c would provide a greater conservation benefit than all other alternatives and rebuild the Guam bottomfish stock complex in the shortest time possible regardless if fishing effort would be displaced from Federal waters to territorial waters around the island of Guam.

4.4.2 *Effects on Socioeconomic Setting*

Under Alternative 2c, Guam bottomfish catch may be moderately or completely reduced relative to recent fishery performance depending on the implementation of complementary management. With a closure of 26.4 percent of bottomfish habitat and in the absence of complementary management, NMFS expects annual catch to be approximately 25,907 lb based on recent three-year average catch as provided by the 2023 Annual SAFE Report for the Mariana Archipelago.

35,200 lb (average catch from 2021-2023) * 26.4 percent estimated habitat in Federal waters = ~9,293 lb of catch restricted due to closure of Federal waters

35,200 lb - 9,293 lb = 25,907 lb of annual catch expected under Alt. 2c

No available information indicates that commercial sales would change, so NMFS anticipates that an average of 24.5 percent of catch would be sold at $6.23 per pound (based on available data from 2014 through 2023; WPFMC 2024). If total bottomfish catch is 25,907 lb and the fishery sell 24.5 percent of the catch commercially at $6.23 pound, then 6,347 lb would be sold for $39,543. This is a decrease of $14,184, or 26.4 percent from the status quo alternative (Table 7).

25,907 lb of expected catch * 24.5 percent estimated commercial sales = ~6,347 lb of bottomfish sold

6,347 lb * $6.23/lb = ~$39,543 in revenue

NMFS expects that the amount of fish caught for sustenance and cultural purposes would be affected similarly to fish caught for commercial purposes, as described under Alternatives 2a and 2b. Specifically, there may be a decrease in available fish for sustenance and recreational purposes of 26.4 to 100 percent from this alternative relative to the status quo.

In summary, Alternative 2c does not provide authorized catch in Federal waters, but territorial waters would remain open to bottomfish harvest in the absence of complementary management. This would allow for some availability of bottomfish resources to the Guam fishing community for the duration of the rebuilding plan despite the moratorium. Revenue, fishery participation, and availability of bottomfish to the community would be slightly lower or eliminated entirely relative to the status quo, depending on the implementation of complementary management by the Government of Guam. However, if fishers compensated for a closure of Federal waters by displacing their effort into territorial waters, revenue and fish availability could be closer to that expected in the absence of Federal management. If the Guam Government implements complementary management, there would be substantial impacts to the Guam fishing community due to the lack of bottomfish resources and commercial revenue from the fishery.

4.4.3 *Effects on Management Setting*

Under Alternative 2c, the fishery would be closed in Federal waters until the Guam bottomfish stock complex rebuilds, so it would not be necessary for NMFS or the Council to track annual catch relative to an ACL. Subsequent administrative action by NMFS would not be necessary to implement AMs. No changes to data collection or monitoring would be necessary. Alternative 2c would require less administrative resources from NMFS than the status quo, but additional resources from NOAA OLE and the USCG would be necessary to enforce a closure of Federal waters around Guam to bottomfish fishing. Enforcement of the fishery closure in Federal waters would not be difficult because the 3-mile limit is easily determined using GPS. Fishers would need to comply with existing laws and with the no-retention regulation for BMUS caught in Federal waters if NMFS implements the closure. Compliance would be easier for fishers under Alternative 2c compared to the alternatives with changing management provisions (*i.e.*, associated with the prescribed AMs) because the closure of Federal waters would not change during the rebuilding plan.

NMFS expects the implementation of a Federal closure under Alternative 2c to have similar effects on the Guam DAWR as other alternatives in the absence of complementary management. Although AMs are not part of Alternative 2c, DAWR would continue to collect catch interviews from fishers operating in territorial waters and transmit the data to NMFS. Similar to the other alternatives, DAWR would not be required to implement a closure for the Guam bottomfish fishery in territorial waters alongside a federal closure unless complementary management is implemented by the territory. In this scenario, there would be increased burden on the territorial government and management agencies to enact and enforce a closure in territorial waters.

4.5 Other Potential Effects

4.5.1 *Public Health and Safety*

NMFS is not aware of any adverse effects on public health and there are no significant concerns with safety at sea, considering the past and current operation of the Guam bottomfish fishery. The fishery typically does not foster a "race to fish." NMFS expects this to remain consistent under Alt. 2a and 2b given that there is no potential for fishery closure. Under Alternatives 1 and 2c, the fishery could be subject to a closure of Federal waters; however, in the absence of complementary management, NMFS expects fishing to continue in territorial waters where the majority of bottomfish habitat occurs (*i.e.*, 73.6 percent, see Figure 1) and would not expect a race to fish. In this scenario, territorial waters would remain open and unrestricted to bottomfish fishing. Because none of the proposed alternatives are expected to result in drastic changes to fishery operations, they are not expected to result in an increased impacts to public health, issues associated with safety at sea, or a race to fish. If complementary management is enacted by the Government of Guam, a race to fish may be fostered under the status quo to harvest bottomfish prior to the ACL of 31,000 lb being attained due to the restrictions imposed on the fishery in both territorial and federal waters.

4.5.2 *Invasive Species*

Fishing vessels travel between islands in the Mariana Archipelago, which has potential for the spread of non-native invasive marine and terrestrial species. Of particular concern to the government and people of the CNMI is the unintentional introduction of the brown tree snake from Guam to the CNMI, and there are programs to prevent such introductions (USGS 2020). However, the proposed alternatives would not change fishing practices in the absence of complementary management. The frequency of Guam vessels traveling to the CNMI may increase if a Federal closure is enacted and the Government of Guam implements complementary management closing territorial waters. However, NMFS expects these vessels only to fish in CNMI waters (*e.g.*, around Rota Banks) and not dock in the northern islands. As a result, the proposed action is unlikely to introduce or spread non-native invasive species.

4.5.3 *Climate Change*

The efficacy of the Alternatives considered in providing for sustainable fishing levels for bottomfish is not expected to be adversely affected by climate change. Recent catches and the biological status of the stock complex informed the development of the proposed 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 management could be adjusted in the future if environmental factors were found to be affecting the stocks.

The Guam bottomfish fishery utilizes vessels that are powered by fossil fuels and emit greenhouse gases from fossil fuel combustion. In the absence of complementary management, the alternatives under consideration 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. If the fishery were 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 (Figure 1). However, NMFS does not have detailed information on the current level of fishing effort in Federal versus territorial waters or the amount of displacement that may occur. A Federal fishery closure would affect a small proportion of bottomfish habitat; thus, fishing activity is not expected to change substantially relative to the Status Quo Alternative (Alt. 1), and NMFS expects any potential decreases in fossil fuel consumption to be minor. If the Government of Guam implements complementary management and a closure of both territorial and Federal waters is applied for the fishery under Alternatives 1 or 2c, there may be a substantial or complete reduction in fishing activity that would result in reduced vessel use, fuel consumption, and greenhouse gas emissions if fishers do not opt to target species other than bottomfish. NMFS does not have information on the potential for fishers to switch their target species. For these reasons, none of the action Alternatives are expected to result in substantial changes to the way vessels are used without complementary management, so there would be no change in greenhouse gas emissions. Under complementary management, there exists a possibility that vessel usage and associated fossil fuel consumption for the fishery would decrease.

4.6 Potential Cumulative Effects of the Alternatives

Cumulative effects refer to the combined effects on the human environment that result from the incremental impact of the proposed action, and its alternatives, when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Further, cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. The cumulative effects analysis examines whether the direct and indirect effects of the Alternatives considered on a given resource interact with the direct and indirect effects of other past, present and reasonably foreseeable actions on that same resource to determine the overall, or cumulative, effects on that resource.

4.6.1 *Cumulative Effects Related to Effects on Target and Non-Target Stocks*

Cumulative Effects on Target Species

Under the No Action Alternative, the fishery would continue to operate under the current rebuilding plan ACL and AMs. If the catch limit is reached, or is projected to be reached, NMFS would close the fishery in Federal waters around Guam. If the ACL is exceeded, the fishery would be closed in Federal waters until a coordinated management approach is developed that ensures BMUS in both Federal and territorial waters can be maintained at levels that allow the stock to rebuild. If Federal waters are closed to fishing, in the absence of a complementary closure in territorial waters, NMFS expects that there would be displacement of fishing effort to territorial waters where the majority of bottomfish habitat around Guam is situated.

Under Alternative 2a and 2b, the Council would recommend and NMFS would modify the rebuilding plan by discontinuing the in-season AM, adding a post-season overage AM, and specifying ACLs that would rebuild the stock. A PIFSC memo provided advice on catch projections to use in the rebuilding plan based on the 2024 Guam BMUS stock assessment update (Bohaboy and Matthews 2024). These alternatives focus on retaining the current catch

limit or modifying it to 34,500 lb with a post-season overage AM that would prevent overfishing and rebuild the stock. Based on recent performance of the fishery, these Alternatives would constrain catch and promote rebuilding by 2031.

Under Alternative 2c, the Council would recommend and NMFS would modify management provisions of the rebuilding plan to implement a fishing moratorium for BMUS in Federal waters around Guam to rebuild the stock in the shortest time possible. In the absence of complementary management in territorial waters, NMFS expects that there would be displacement of fishing effort to territorial waters, which has the majority of bottomfish habitat around Guam. Therefore, there may be beneficial effects for fish populations at offshore banks in Federal waters if a Federal closure is implemented, even though bottomfish harvested in territorial waters would continue experiencing fishing effort if a complementary closure is not implemented.

Cumulative Effects on Non-target and Bycatch Species

Bycatch in the Guam bottomfish fishery is negligible (NMFS 2021) and is not believed to adversely affect any non-target fishery species (Section 3.1). It is not expected that substantial changes would occur in the fishery under any proposed Alternative, so effects on other species are not anticipated to change under any Alternative. NMFS and the Council would also continue to monitor catch of ECS and other non-target species to evaluate changes to catch that could indicate management measures are required.

4.6.2 *Cumulative Effects Related to Effects on Protected Resources*

Consultations under the ESA have determined that bottomfish fishing activities in Guam are not likely to adversely affect any ESA-listed species. Under all Alternatives under consideration, fishing is expected to remain within levels considered during these consultations, and no additional effects to protected species are expected (Section 3.5). The fishery would continue to be authorized and conducted in accordance with Section 7 of the ESA and the MMPA (NMFS 2002). The effects analysis of the fishery under each alternative found that the fishing is not likely to have significant effects on the survival or recovery of any listed species, largely because the fishery does not interact with these listed species, and because vessel collisions with sea turtles are far below levels that would jeopardize survival and recovery. NMFS' analysis of effects on ESA- and MMPA-listed species took into consideration outside actions that affect the same species. In general, management of the fishery under the full suite of proposed management measures, including an ACL and AM, would not change the fishery in any way that is likely to have the potential for large and adverse cumulative effects on listed species.

4.6.3 *Cumulative Effects Related to Fishery Participants and Communities*

Under Alternatives 1 through 2b, NMFS intends the proposed ACLs to provide for continued availability of bottomfish resources to the Guam fishing community while also promoting rebuilding of the stock complex. Revenue and availability of Guam bottomfish to the community by be the same or increased from the status quo. Under no action this factor would depend on the application of the higher performance standard and the implementation of complementary management in territorial waters. For Alternatives 1 through 2b, if the ACL is not exceeded, revenue and fish available to the community would be the same if complementary management is implemented in territorial waters. If catch does exceed the ACL, then Federal waters would be closed to the bottomfish fishery and there would be a decrease in revenue and fish availability

whether it is through the implementation of the higher performance standard (Alternative 1) or the post season overage adjustment AM (Alternatives 2b and 2c). Under Alternative 1, NMFS expects that there would be displacement of fishing effort from Federal waters if territorial waters remain open.

Alternative 2c 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 Guam fishing community for the duration of the rebuilding plan. Revenue and availability of bottomfish to the community would be moderately lower or completely reduced relative to the status quo. However, if fishing effort is displaced into territorial waters, revenue and fish availability could be closer to that expected under the status quo. If complementary management is implemented, there would be substantial impacts to the Guam fishing community due to the lack of bottomfish resources and commercial revenue from the fishery. Overall, implementation of Alternative 2c is expected to affect the fishery and associated communities more than the status quo and other action Alternatives.

Table 9. Summary of Effects of Alternatives.

	Alternative 1	Alternative 2a	Alternative 2b	Alternative 2c
Overview	No Action - Do not modify the ACL and/or AMs of the rebuilding plan	Modify the rebuilding plan AMs	Modify the rebuilding plan ACL and AMs	Modify the ACL and AMs of the rebuilding plan to implement a moratorium in Federal waters
Annual Catch Limit	31,000 lb	31,000 lb	34,500 lb	N/A, but effectively 0 lb
Accountability Measures	Monitor catch of the BMUS complex in-season and close the fishery in Federal waters if the ACL is projected to be reached. If the ACL is exceeded, close Federal fishery until coordinated territory-Federal management is established.	Evaluate catch post-season and reduce the ACL by the amount of the overage if the most recent three-year average catch exceeds the ACL.	Evaluate catch post-season and reduce the ACL by the amount of the overage if the most recent three-year average catch exceeds the ACL.	N/A
Physical Resources including habitat	The fishery is not known to affect physical resources.	No change from baseline	No change from baseline	No change from baseline
Protected Resources	The fishery is not likely to adversely affect any endangered species or result in an adverse	No change from baseline	No change from baseline	No change from baseline

	Alternative 1	Alternative 2a	Alternative 2b	Alternative 2c
	modification of critical habitat.			
Target Stocks	Catch would be authorized at a level intended to rebuild the stock in 2024.[1] Overfishing is expected to be prevented.	Catch would be authorized at a level intended to rebuild the stock in four years. Overfishing is expected to be prevented.	Catch would be authorized at a level intended to rebuild the stock in seven years. Overfishing is expected to be prevented.	Authorized catch would be functionally equivalent to zero in Federal waters, which is intended to prevent overfishing and rebuild the stock in two years. However, fishing would not be limited in territorial waters without complementary management. Rebuilding is expected in three years due to continued fishing in territorial waters.
Non-Target Stocks	Catch and retention of non-BMUS stocks in the fishery is expected to continue. Continuing the rebuilding plan is not expected to change the rate or proportion of catch of non-BMUS species from recent years.	Catch and retention of non-BMUS stocks in the fishery is expected to continue. Revising the rebuilding plan AMs is not expected to change the rate or proportion of catch of non-BMUS species from recent years.	Catch and retention of non-BMUS stocks in the fishery is expected to continue. The rate or proportion of catch of non-BMUS is not expected to change from recent years.	Catch and retention of non-BMUS stocks in the fishery is expected to continue. The rate or proportion of catch of non-BMUS is not expected to change from recent years.

[1] Memo from PIFSC to Council on bottomfish catch projections to rebuild the Guam BMUS fishery.

	Alternative 1	Alternative 2a	Alternative 2b	Alternative 2c
			If fishing effort increases due to the higher ACL, catch of non-BMUS is expected to increase proportionally to the increase in effort.	If fishing effort decreases due to the Federal fishery closure, catch of non-BMUS is expected to decrease proportionally to the decrease in effort.
Socio-economic Setting	The current socioeconomic setting in Guam would be maintained.	No change from baseline except in years of high catch where the fishery would be closed under Alt 1. In the event of an overage, then there would be a reduction applied to the subsequent year, decreasing potential fishing activity and revenue.	Potential increased participation and revenue over Alt. 1 and 2a due to the higher ACL.	Potential decreased participation and revenue compared to all other alternatives due to Federal fishery closure.
Management Setting	Continued in-season fishery monitoring and post-season catch accounting against the ACL. Relatively high likelihood of administrative burden to close the fishery in years of high catch.	Lower administrative burden due to removal of potential of Federal fishery closure. Relatively lower burden for implementing post-season overage adjustment.	Similar to Alt. 2a, lower administrative burden due to removal of potential Federal fishery closure. Lower likelihood of administrative burden than Alt. 2a due to higher ACL.	Administrative burden to implement and enforce Federal fishery closure, but no need to monitor catches against an ACL or implement AMs.

	Alternative 1	Alternative 2a	Alternative 2b	Alternative 2c
Public Health and Safety	The fishery is not causing an adverse effect on public health or safety.	No change from baseline.	No change from baseline.	No change from baseline.
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.	No change from baseline.	No change from baseline.	No change from baseline.
Scientific, Historic, Archaeological and Cultural Resources	The fishery is not known to have an adverse effect on historic, archaeological, or cultural resources.	No change from baseline.	No change from baseline.	No change from baseline.

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6 Draft Proposed Regulations

This section contains the regulations necessary to implement the conservation and management measures described in the regulatory amendment, based on the preferred alternative selected by the Council at the 197th meeting in December 2023. Additions to the existing regulatory language are shown in underline, and deletions are shown in strikethroughs.

7 Appendix