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

July 15, 2024

Prepared by the Western Pacific Regional 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 Regional Fishery Management Council (Council) in 1976 to develop management plans for fisheries within the United States Fishery Conservation Zone 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. Exclusive Economic Zone, or EEZ, 3-200 miles from shore) 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 nautical miles (nm) 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 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 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 (2,268 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. 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. 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 is implemented.

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 ($B < 0.7 \times B_{MSY}$) 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. 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 (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 2000, catch has varied from nearly 12,000 pounds (lb) to just under 65,000 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. Catch and coefficient of variation (CV) of Guam BMUS from 2004 to 2023 used in the 2024 stock assessment update (Source: Bohaboy and Matthews 2024).

Year	Catch (lb)	CV
2004	25,236	0.24
2005	29,046	0.32
2006	34,917	0.27
2007	18,186	0.43
2008	34,249	0.14
2009	40,735	0.16
2010	26,544	0.16
2011	54,062	0.18
2012	19,714	0.25
2013	30,243	0.19
2014	20,554	0.19
2015	11,711	0.28
2016	30,192	0.22
2017	15,864	0.22
2018	26,579	0.32
2019	30,791	0.26
2020	17,277	0.20
2021	51,894	0.18
2022	44,265	0.15
2023	23,879	0.18
3 Year Average (2021-2023)	40,013	0.17
10 year Average (2013-2023)	27,301	0.22

As shown in Figure 2, the best information currently available shows that the majority of bottomfish habitat is in territorial waters (73.6 percent), and the rest is in the 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. 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 DAWR through the boat-based and shore-based intercept creel survey programs (see Section 3.4). Additionally, DAWR receives commercial sales data from the voluntary commercial receipt book program.

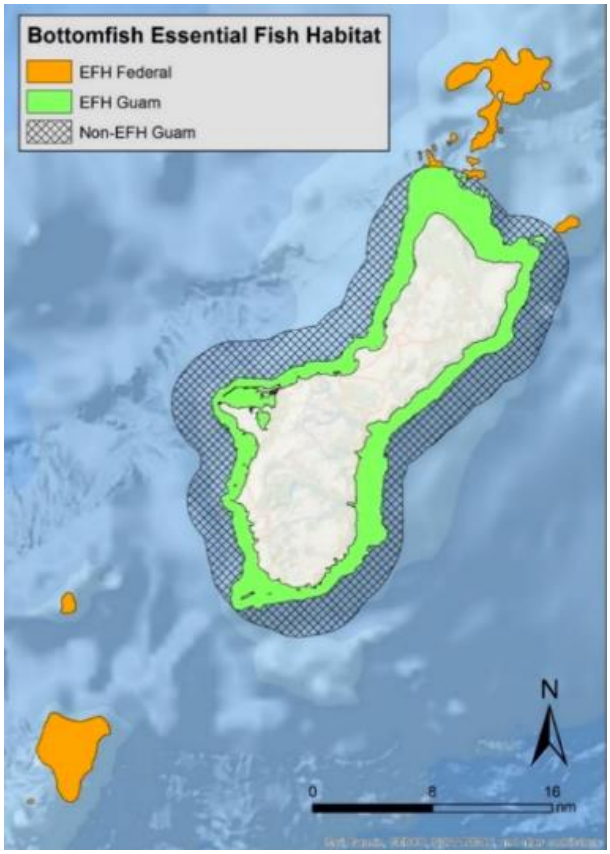

Figure 1. Map of Essential Fish Habitat (EFH) for bottomfish around Guam in Federal and territorial waters. (Source: NMFS PIRO)

1.2 Proposed Action

The proposed action is to modify the ACLs 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).

1.3 Purpose and Need

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, which require NMFS to

evaluate the progress of the rebuilding plan every two years, by implementing 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}, as recommended by the Council. The need for this action is to provide management oversight, prevent overfishing, 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 Mariana Archipelago FEP 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 within 50 nm around Guam (71 FR 64474, November 2, 2006).

1.5 Stock Status

The Magnuson-Stevens Act requires that a fishery management plan (or 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 (WPFMC 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, then the threshold decreases proportionally to B/MSST. 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 or experiencing 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. As required by Magnuson-Stevens Act Section 304(e)(3) and implementing regulations at 50 CFR 600.310(j)(2), upon notification of a stock undergoing overfishing, the Council should immediately begin working with its SSC to ensure that the Acceptable Biological Catch (ABC) is set appropriately to end overfishing. The Council must prepare and implement an FEP, plan amendment, or proposed regulations for the fishery within two years to end overfishing and rebuild affected stocks. Council actions should also be submitted to NMFS within 15 months of the initial notification to ensure there is sufficient time to enact the measures. If the Council does not submit one of these items to the Secretary within two years, the Secretary will prepare an FEP or plan amendment and any accompanying regulations to stop overfishing and rebuild affected stocks of fish within nine months.

A rebuilding plan must specify a time period for rebuilding the 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 BMSY (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 end overfishing and rebuild a stock must allocate both overfishing restrictions and recovery benefits fairly and equitably among sectors of the fishery and, for a fishery managed under an international agreement, reflect traditional participation in the fishery, relative to other nations, by fishermen of the United States.

The Secretary will review rebuilding plans at least every two years to determine whether the plan has resulted in adequate progress towards ending overfishing and rebuilding the affected fish stock. The Secretary may find that adequate progress is not being made if $F_{rebuild}$ 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 Overview of ACL and AM Development Process

Federal regulations at 50 CFR 665.4 (76 FR 37285, June 27, 2011) require NMFS to implement an ACL and AM(s), as recommended by the Council, based on the best scientific, commercial, and other information available for the fishery. In accordance with the Magnuson-Stevens Act and the Mariana Archipelago FEP, three elements are required in the development of an ACL, as shown in Figure 3: calculating the ABC, determining an ACL that may not exceed the ABC, and developing AMs.

In the first step, the Council's SSC calculates an ABC that is set at or below the stocks overfishing limit (OFL). The OFL is an estimate of the catch level above which overfishing is occurring and corresponds with the MFMT. In accordance with Federal regulations at 50 CFR 600.310 implementing National Standard 1 of the Magnuson-Stevens Act, the probability of overfishing (P*, pronounced P-star) cannot exceed 50 percent and should be a lower value. Thus, the ABC is the maximum amount the fishery can catch that provides at least a 50 percent chance, or better, of not overfishing the stock.

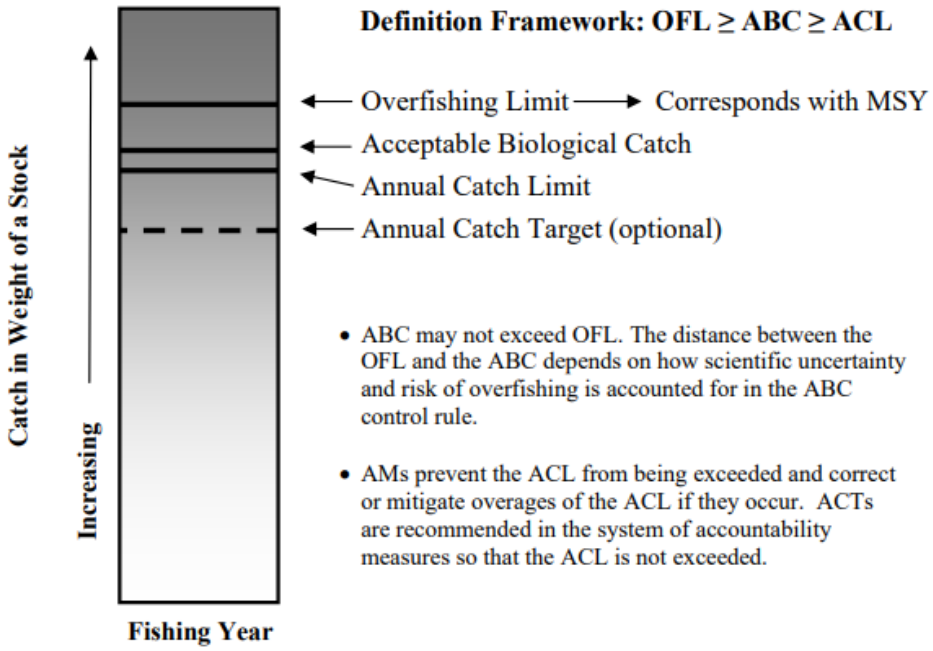

Figure 2. Relationship between OFL, ABC, ACL, and ACT.

Second, the Council must recommend an ACL that does not exceed the ABC recommended by the SSC. An ACL set below the ABC further reduces the probability that the actual catch will

exceed the ABC or OFL, resulting in overfishing. The SSC may reduce the ABC below the OFL considering factors evaluated in a P* analysis. The Council may then reduce the ACL below the ABC in consideration of social, economic, ecological, and management (SEEM) factors in a SEEM analysis (see Hospital et al. 2019 for SEEM considerations.). While the P* analysis considers management uncertainty arising from underreporting and misreporting of catch, the SEEM analysis is more forward-looking and considers uncertainty arising from compliance and management capacity concerns.

The third and final element in the ACL process is the inclusion of AMs. There are two categories of AMs: in-season AMs and post-season AMs. In-season AMs prevent an ACL from being exceeded. They may include closing the fishery, closing specific areas, changing bag limits, setting an annual catch target (ACT), or other methods to reduce catch. Post-season AMs reduce the ACL and/or ACT in subsequent years if the ACL is exceeded in order to mitigate potential impacts on fish stocks. National Standard 1 and the FEP also describe performance standards that identify conditions when a system of ACLs and AMs should be reevaluated. Generally, if any fishery exceeds an ACL more than once in a four-year period, as a performance standard, the Council is required to re-evaluate the ACL process for that fishery and adjust the system as necessary to improve its performance and effectiveness in ensuring the sustainability of the fishery. The Council can also choose a higher performance standard to provide more conservative management for vulnerable stocks.

1.8 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 NMFS PIFSC to provide catch projections to rebuild the stock and review of the progress of the rebuilding plan from PIRO.

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) 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.

1.9 Decisions to be Made

The Council and SSC's task is to recommend whether modifications to the ACL or AMs of the current rebuilding plan for Guam BMUS to rebuild the stock by 2031 are warranted, given new information on fishery harvest, stock status, and progress of the rebuilding plan since its implementation in 2022.

1.10 List of Preparers

Western Pacific Regional Fishery Management Council
Zach Yamada, Fishery Analyst, WPRFMC, Preparer
Felix Reyes, Guam Island Coordinator, WPRFMC, Preparer
Thomas Remington, Council Contractor, Lynker, Preparer

NMFS PIRO Sustainable Fisheries Division
Heather Nelson, Fishery Management Specialist, PIRO SFD, Preparer
Keith Kamikawa, Fishery Management Specialist, PIRO SFD, Preparer
Brett Schumacher, Fish and Wildlife Administrator, PIRO SFD, Reviewer

2 Descriptions of the Options

2.1 Development of the Options

2.1.1 *Calculation of ACLs*

At its 198th meeting on March 27, 2024, the Council requested PIFSC to provide catch and time 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. PIFSC scientists developed projections for a range of ACLs beginning in year 2025 in 500 lb increments from 0 to 50,000 pounds, 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 because 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 NMFS PIRO July 29, 2024, where NMFS determined the 2024 stock assessment update represent BSIA and determined that the fishery was not overfished, not subject to overfishing, but not rebuilt. In addition to this memo, NMFS 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. This means the Council may consider a regulatory action that revises the 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., 2031) specified in the rebuilding plan by Amendment 6 to the Mariana Archipelago FEP NMFS 2022).

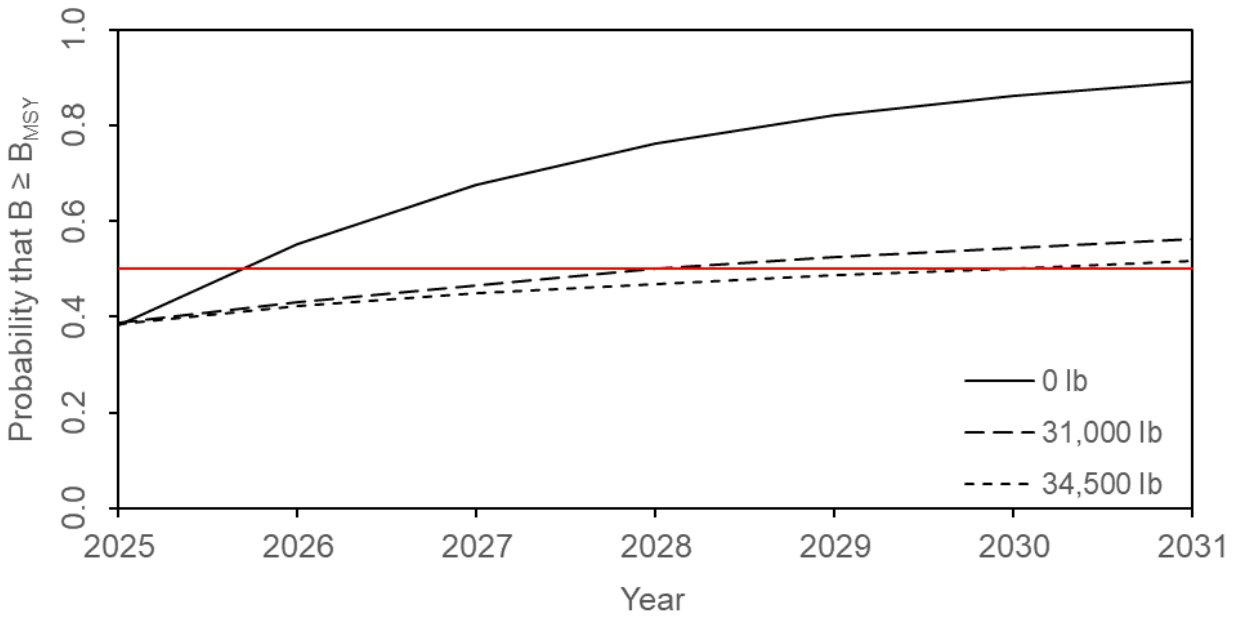

Figure 3. Projected probabilities that biomass is greater than or equal to biomass at MSY for the Guam BMUS stock complex from 2025 to 2031 with annual catch levels authorized under each of the presented options. The red line represents a 50 percent probability that biomass is greater than or equal to 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 biomass (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 BMSY) and the associated B and F value.

Year	Year of Rebuilding	0 lb		31,000 lb		34,500 lb	
		pOFL	Prob. B≥BMSY	pOFL	Prob. B≥BMSY	pOFL	Prob. B≥BMSY
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

3 Current Task for the SSC and Council

Modify the ACLs and/or AMs of the Guam BMUS rebuilding plan to reflect the BSIA (Bohaboy and Matthews 2024)

The Council's previous recommendation to establish a rebuilding plan for Guam bottomfish included an ACL of 31,000 lb, an in-season AM to close the fishery in federal waters for the remainder of the year if NMFS projects that it would exceed the ACL, and a higher performance standard to close the fishery in federal waters until such time that a coordinated management approach could be developed with the territorial government to ensure bottomfish catch remained at a level that would allow the stock to rebuild by 2031. At its 153rd and 200th meetings in September 2024, the SSC and Council will consider options to modify the Guam BMUS rebuilding plan given progress made by the stock complex over the past two years to rebuild the stock complex within the identified timeframe.

3.1 Features Common to All Options

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 the Western Pacific Fisheries Information Network (WPacFIN). These programs include boat-based and shore-based creel survey programs.

Options 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 a

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.

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 options to modify the Guam BMUS rebuilding plan and associated ACL, AM, and $T_{rebuild}$

Options	ACL	AMs	Year Rebuilt
1) No Action	31,000 lb	In-season monitoring and fishery closure in federal waters if NMFS projects the ACL will be attained (i.e., in-season AM). Higher performance standard to close the fishery in federal waters if the ACL is attained 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 2031 (i.e., higher performance standard).	2028
2) Modify the Rebuilding Plan	a) 31,000 lb	If the ACL is attained based on a three-year running average, reduce the ACL in the subsequent fishing year by the amount of the overage (i.e., post-season AM).	2028
	b) 34,500 lb	In-season AM and higher performance standard.	2031
		Post-season AM.	
	c) Moratorium (0 lb)	No AMs.	2026

3.2 Options to Modify the ACL and AMs under the Guam Rebuilding Plan

3.2.1 *Option 1: No Action/Status Quo – Do Not Modify the Guam Rebuilding Plan*

Under Option 1, the Council would not recommend to modify the 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 and the

Territory of Guam may implement management measures in territorial waters to complement federal rebuilding management at its discretion. 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

Under Option 1, the expected outcome under this alternative is not necessarily dependent on Guam's decision to implement complementary management with this federal action, though complementary management would be relevant in the event that the ACL is attained. 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 ACL than under Option 2b, which makes application of the in-season AM and higher performance standard more likely. 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 40,013 lb is approximately 129 percent of this ACL 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 77 percent of the ACL under Option 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 without complementary management, NMFS expects that fishing would continue in territorial waters. If complementary management is implemented, the fishery would experience large impacts to operations and associated harvests if fishing for BMUS is prohibited in both federal and territorial waters (either through the in-season AM being triggered or the higher performance standard being implemented). It is less likely that catch would exceed the proposed ACL if a complementary closure is implemented in territorial waters at the same time NMFS implements any necessary in-season AM. This would also reduce the likelihood that NMFS would need to implement the higher performance standard after the fishing year has ended.

Overall, Option 1 provides a federal action that 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 Options 2a through 2c, fishing cannot necessarily be constrained in territorial waters without complementary management, but this option would restrict catches to a lesser extent than Option 2c such that there would likely be fewer short-term impacts to Guam's fishing community.

3.2.2 *Option 2: Modify the Guam Bottomfish Rebuilding Plan*

Under Option 2, the Council would recommend to modify the Guam bottomfish rebuilding plan and specify an ACL, AMs, and/or performance metrics that would prevent overfishing and rebuild the stock by 2031. The provided suboptions would utilize the results of the 2024 bottomfish stock assessment update that found the fishery is currently not overfished or experiencing overfishing, but not rebuilt in 2023.

Expected Fishery Outcome

Under Option 2, the Council may recommend modifying the rebuilding ACL and AMs based on the 2024 assessment update and catch projections provided by PIFSC to rebuild the stock by 2031. Based on the PIFSC catch projections, the fishery could catch 31,000 lb annually to rebuild the stock by 2028, catch 34,500 lb annually to rebuild the stock by 2031, or implement a moratorium on harvesting BMUS in federal waters around Guam to rebuild the stock by 2026.

3.2.2.1 Option 2a: Modify the Guam Bottomfish Rebuilding Plan and specify AMs

Under Option 2a, the Council would modify the AMs of the Guam rebuilding plan but maintain an ACL of 31,000 lb to rebuild the stock by T_{target} of 2031. Under this option, the Council would modify the current rebuilding plan AMs and performance standard consistent with the NMFS PIRO rebuilding plan review (NMFS 2024). Based on the updated catch projections provided by PIFSC in June 2024, if the 31,000 lb ACL was caught in its entirety each year, the stock would rebuild by 2028, three years ahead of T_{target}.

Expected Fishery Outcome

Under Option 2a, the fishery is not expected to change the way it fishes or where it fishes except in years when catch is relatively high (e.g., 2011, 2021). Unlike Option 1, the expected outcome is not necessarily dependent on Guam's decision to implement complementary management with this federal action because the modified AM does not include the potential for a fishery closure. Given the levels of recent catch in the fishery relative to the proposed ACL, there is an identical chance that annual catch would exceed the ACL under Option 1.

If the fishery were to attain the ACL, NMFS could implement one or more AMs, as outlined in Section 3.2.2.3. For more information on the expected fishery outcomes of the in-season and post-season AM options, please refer to Section 3.2.2.3.

Overall, Option 2a provides a federal action that would aid in rebuilding the Guam fishery, albeit in a shorter timeframe than Option 2b and longer than 2c, while further reducing potential fishery disruptions possible under Option 1 and allowing the same amount of BMUS resources to be available to the Guam fishing community.

3.2.2.2 Option 2b: Modify the Guam Bottomfish Rebuilding Plan Annual Catch Limit and specify AMs

Under Option 2b, the Council would recommend to modify the Guam rebuilding plan to an ACL of 34,500 lb that would rebuild the stock by the T_{target} of 2031. Under this option, the Council would modify the current rebuilding plan AMs and performance standard consistent with the PIRO rebuilding plan review (NMFS 2024). Based on the updated catch projections provided by PIFSC in June 2024, if the 34,500 lb ACL was caught in its entirety each year, the stock would rebuild by 2031, T_{target}.

Expected Fishery Outcome

Under Option 2b, the fishery is not expected to change the way it fishes or where it fishes except in situations where the ACL is exceeded or projected to be exceeded if the in-season AM and

higher performance standard are implemented. The expected outcome would dependent on Guam's decision to implement complementary management with this federal action in this scenario, as a fishery closure would be implemented for the fishery if the ACL is attained. Given the levels of recent catch in the fishery relative to the proposed ACL under Option 2b, there is a lower chance that annual catch would exceed the ACL than under Options 1, 2a, and 2c. As noted under Option 2a, annual catches for just two of the past 10 years have exceeded the existing proposed ACL of 34,500 lb. However, the variability inherent in the fishery for Guam BMUS makes it possible that the ACL could be exceeded in years with high fishery catches (e.g., 2021, 2022).

If the fishery were to attain the ACL, NMFS could implement one or more AMs, as outlined in Section 3.2.2.3. For more information on the expected fishery outcomes of the in-season and post-seam AM options, please refer to Section 3.2.2.3.

Overall, Option 2b provides a federal action that would aid in rebuilding the Guam fishery, albeit in a longer timeframe than Options 1, 2a and 2c, but still within T_{target}. The proposed rebuilding ACL allows the fishery to harvest the largest possible amount of BMUS while allowing the stock to rebuilding within T_{target}.

3.2.2.3 Accountability Measures

AMs are management controls to prevent ACLs from being exceeded and to correct or mitigate overages of the ACL if they occur. AMs should address and minimize both the frequency and magnitude of overages, and correct the problems that caused the overage in as short a time as possible. There are two categories of AMs that the Council will consider: 1) in-season AMs and higher performance standards, and 2) post-season overage adjustments.

In-Season Accountability Measure

The Council could recommend the use of the creel survey data to conduct in-season monitoring until a more reliable catch monitoring system is in place. Although NMFS would not be able to track catches for the fishery in near-real time, NMFS would review in-season progress of the catches relative to the implemented ACL based on data reports from DAWR, which monitors the bottomfish fishery through its creel survey program. The alternatives would use a predetermined method to allow for in-season monitoring of the fishery over the course of each fishing year. The in-season monitoring plan would rely on the use of expanded estimates from the creel survey program in Guam.

At the point in a fishing year that the Guam DAWR has conducted sufficient creel survey interviews to allow for appropriate expansion of the available data based on scientific uncertainty, NMFS would estimate the total catch for the fishing year up to that point. NMFS expects the first expansion to take place roughly halfway through the fishing year. However, since fewer interviews increases the uncertainty in the expanded catch estimates, it is also expected that this semi-annual expansion would have high uncertainties associated with the data. After the initial expansion, NMFS would then perform additional expansions for the entire year on a month-to-month basis. 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. Additionally, as a

higher performance standard, if the total annual catch exceeds the ACL during a year, NMFS will close the fishery in federal waters until the end of the fishing year 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 by 2031.

Expected Fishery Outcome

Under this AM, if the fishery were to attain the ACL or if NMFS projects that the fishery would attain the ACL before the end of the fishing year, NMFS would implement a closure of the Guam BMUS fishery. If this occurs, Guam does not have regulations in place for a complementary fishery closure in territorial waters, thus territorial waters would still be open to fishing. The resulting fishery closure of the proposed in-season AM and higher performance standard would keep total estimated catch of BMUS below the OFL and prevent overfishing. When the fishery was identified as overfished and experiencing overfishing in 2019, the Council and NMFS were prompted to reconsider the use of creel survey data for in-season monitoring despite the associated uncertainties because tracking the fishery throughout the fishing year is necessary to ensure that the fishery is adhering to the proposed timelines of the rebuilding plan. With new data indicating that the Guam BMUS stock complex are overfished or experiencing overfishing, monitoring total estimated catch against the ACL may not be useful to inform management given the substantial scientific uncertainties associated with the creel survey expansions utilizing a relatively low amount of raw data.

Post-Season Accountability Measure

Higher Performance Standard

The Council could recommend a higher performance standard as a post-season AM. As a higher performance standard, if the ACL is exceeded, NMFS would close the fishery in Federal waters until a coordinate management approach is developed that ensures catch in both federal and territorial waters can be maintained at levels that allow the stock to rebuild. If the fishery is closed, reopening would occur consistent with rebuilding requirements specified under NS1 of the Magnuson-Stevens Act such that a reasonable method of restricting mortality at the level needed to rebuild the stock by 2031.

Expected Fishery Outcome

Under this AM, if the fishery were to attain the ACL or if NMFS projects that the fishery would attain the ACL in a fishing year, NMFS would implement a closure of the Guam BMUS fishery. If this occurs, Guam does not have regulations in place for a complementary fishery closure in territorial waters, thus territorial waters would still be open to fishing. The resulting fishery closure of the proposed post-season higher performance standard would keep total estimated catch of BMUS below the OFL and prevent overfishing.

Post-Season Overage Adjustment

The Council could recommend to modify the higher performance standard and set post-season AM where, if the total landings of Guam BMUS exceeds the ACL based on a three-year running

average, then the Regional Administrator would reduce the Guam BMUS ACL for the subsequent year by the amount of the overage in a separate rulemaking. Under the Magnuson-Stevens Act, NMFS and the Council would review the rebuilding plan every two years and amend it as necessary using BSIA.

Expected Fishery Outcome

Compared to the higher performance standard, the use of a three-year average in applying the overage adjustment would allow the fishery to continue operating in the subsequent year and account for inherent variability in the fishery and its estimates of total annual catch.

Annual catch estimates for Guam BMUS are reliant on the creel surveys and are highly variable ranging in a standard deviation between 15-32 percent (. To account for annual fluctuations in catch, NMFS would utilize the most recent three-year average and compare that catch to the ACL. In the event that the three-year average exceeded the ACL, the amount of overage will be deducted from the ACL the following fishing year. Conversely, 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 it fishes or where it fishes and provides the management approach that is least likely to result in fishery disruptions. Although the most recent three year average was 40,013 lb, the long term 10 year average of Guam BMUS catch was 27,568 lb which is about 3,500 lb below catch limits under Option 1 and 2a and about 7,000 pounds below option 2b. If the fishery were to perform similar to 2021 and 2022, then there would be an expected overage adjustment to prevent overfishing and rebuild the stock by 2031.

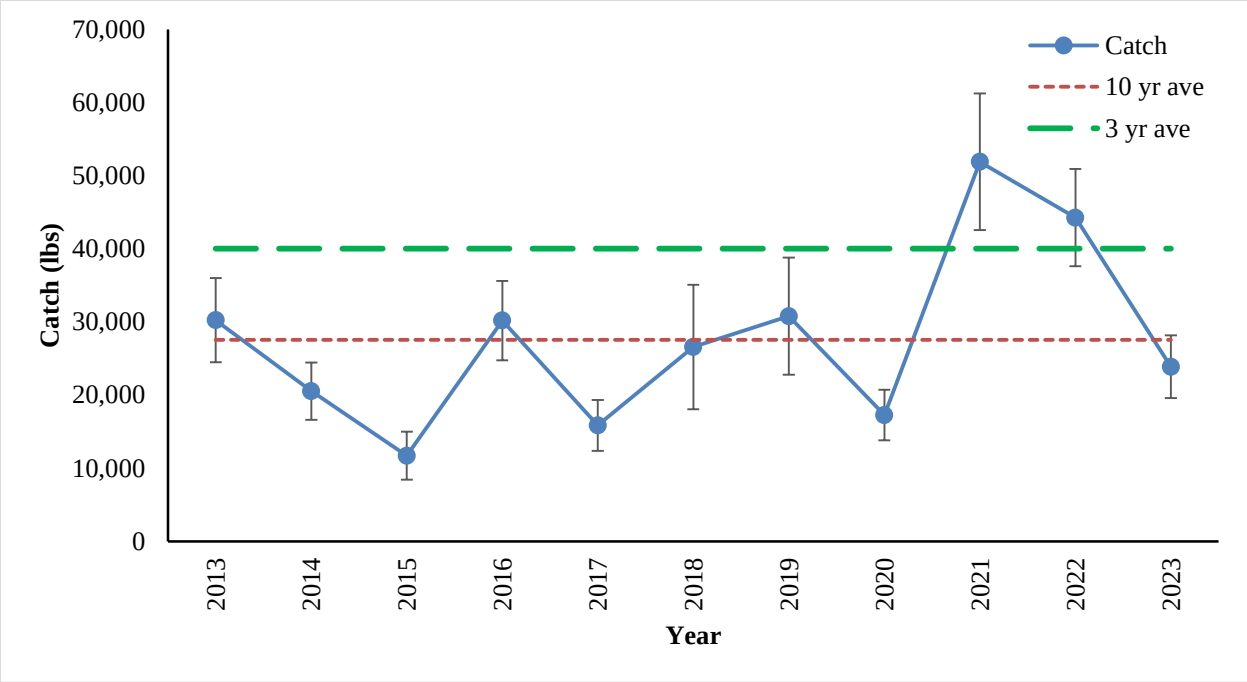

Figure 4. Total catch and coefficient of variation of Guam BMUS from 2013 to 2023 with short term and long term average catch values.

3.2.2.4 Option 2c: Modify the Guam Bottomfish Rebuilding Plan and establish a fishing prohibition on Bottomfish fishing in Federal waters around Guam

Under Option 2c, the Council would recommend to implement a fishing prohibition 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, and thus, in the absence of fishing mortality, Option 2c provides the shortest timeframe to rebuild the Guam BMUS stock complex. A catch level of zero pounds would be predicted to rebuild the stock biomass to B_{MSY} by 2026 (Table 8; Figure 5). 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 managed by the Government of Guam. 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. There are no AMs associated with this alternative because there would be no need to track catch to against attainment of an ACL.

Expected Fishery Outcome

Under Option 2c, the Guam BMUS fishery would be expected to change more than any of the other proposed options. 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; thus, fishing activity may be displaced into territorial waters, depending on the implementation of complementary management with this federal action by the Government of Guam. The extent of the impacts of this option are heavily dependent on whether the Government of Guam implements complementary management or not.

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 where the bottomfish fishery would likely continue operating normally. Therefore, Option 2c could result in a moderate reduction in fishing if complementary management is not enacted, but catch would not be completely eliminated (i.e., actual 0 lb of catch achieved). The Council does not possess data indicating the level of displacement that could occur. If complementary management is enacted, fishing for BMUS would be restricted in both territorial and federal waters around Guam, and the fishery would experience large impacts to operations and associated harvests. The prohibition of 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 if complementary management is implemented or not, this option would constrain catch and promote rebuilding to a greater extent than all other options.

Overall, Option 2c provides a federal action that would aid in rebuilding the Guam fishery in the shortest timeframe among all presented options. However, this option could increase fishery disruptions and decrease the amount of bottomfish resources available until the stock complex is rebuilt. Similar to the other options considered, fishing cannot necessarily be constrained in territorial waters without complementary management, but this option would rebuild the stock complex in the shortest timeframe with or without complementary management by the Government of Guam.

4 Summary of New Information for the Impact Analysis

Table 5 summarizes the new information, if any, that the Council and its SSC can use to evaluate the impacts of the provided options on the potentially affected environment not otherwise considered in the previous environmental assessment implementing the rebuilding plan for Guam BMUS.

Table 5: Summary of new information on environmental impacts of provided options

New information on physical resources	No new information. The proposed action is not likely to have an adverse impact on the physical environment because bottomfish fishers do not tend to interact with benthic habitats or other facets of the physical environment.
New information on biological resources	Since the publication of the rebuilding plan in 2022, additional fishery-dependent catch data through 2023 is available. A new stock assessment update indicating the status of Guam BMUS was completed in2024 (Bohaboy and Matthews 2024).
● **Target Species**	The 2024 stock assessment update indicated that the Guam BMUS stock complex is not overfished and not experiencing overfishing, but not rebuilt. If the proposed ACLs are exceeded, the conservative catch projections provided in the stock assessment update indicate there will likely adverse effects on the target stocks.

● **Non-target Species**	No new information. The proposed action will not likely change impacts to non-target species given that the highly selective nature of the fishery.
● **Bycatch**	No new information. The proposed action is not likely to change impacts related to bycatch in the Guam bottomfish fishery, as there is no notable bycatch in the fishery given that fishers tend to keep any fish they catch.
● **Protected species**	The Guam BMUS fishery is not likely to adversely affect protected species nor is likely to impact the newly identified green sea turtle critical habitat. Previous consultations provide evaluations of the impacts of the continued operation of the fishery and on ESA-listed species.
● **Biodiversity and eco-function**	No new information. The proposed action is not likely to adversely affect biodiversity and ecosystem function since the 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.
New information on socio-economic setting	No new information aside from the updated fishing participation and cost data provided in the 2023 Annual SAFE Report for the Mariana Archipelago (WPFMC 2024).
New information on management setting	No new information. The proposed action would not impact management in ways not considered in the previous environmental assessment.
● **Marine Protected Areas (MPA)**	No new information. The proposed action is not likely to adversely affect the MPAs or their management, as the fishery generally occurs outside of MPAs.
● **EFH/HAPC**	No new information. The proposed action to modify the rebuilding plan for the fishery would not be likely to impact designated EFH or HAPCs.

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Appendix