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PRELIMINARY DRAFT

**Setting Acceptable Biological Catch for the Bottomfish Management Unit
Species in Guam and the Commonwealth of the Northern Mariana Islands**

Western Pacific Fishery Management Council
1164 Bishop Street, Suite 1400
Honolulu, HI 96813

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1   Introduction

Fisheries for bottomfish management unit species (BMUS) in federal waters of the exclusive economic zone (EEZ; generally 3-200 nmi) around the U.S. Pacific Islands are governed by one of four fishery ecosystem plans (FEP) developed by the Western Pacific Fishery Management Council (Council) and implemented by the National Marine Fisheries Service (NMFS) under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act or MSA). Three of the FEPs are archipelagic-based and include the American Samoa Archipelago FEP, the Hawaii Archipelago FEP, and the Mariana Archipelago FEP (which covers federal waters around Guam and the Commonwealth of the Northern Mariana Islands or the CNMI). The fourth FEP covers federal waters of the U.S. Pacific remote island areas (PRIA) which include Palmyra Atoll, Kingman Reef, Jarvis Island, Baker Island, Howland Island, Johnston Atoll, and Wake Island.

In accordance with the Magnuson-Stevens Act, the FEPs and their implementing regulations at 50 CFR 665.4, NMFS must specify an annual catch limit (ACL) and implement accountability measures (AM) for BMUS. ACLs are recommended by the Council in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex. The ACL may not exceed the acceptable biological catch (ABC) recommended by the Council's Scientific and Statistical Committee (SSC).

1.1   Best Scientific Information Available

In August 2019, NMFS Pacific Islands Fisheries Science Center (PIFSC) completed a benchmark stock assessment for bottomfish in American Samoa, Guam, and the CNMI (Langseth et al. 2019). The assessments used a state-space Bayesian surplus production model within the modeling framework Just Another Bayesian Biomass Assessment (JABBA). Estimates of harvest rate (H), annual biomass (B), the harvest rate associated with overfishing as determined by the harvest control rule (HCR), maximum sustainable yield (MSY), and the biomass at maximum sustainable yield (BMSY) allowed for determination of stock status relative to reference points determining overfishing (H/HCR > 1) and overfished (B < 0.7×BMSY) status. Stock projections were conducted for 2020–2025 for a range of hypothetical 6-year catches, and the corresponding risk of overfishing was calculated.

The 2019 benchmark assessment was reviewed by the WPSAR Tier 1 panel on April 15-18, 2020. The panel found the assessment update adequate for management use (Martell, Powers, and Nielson 2019). The SSC at its 134th meeting in October 15, 2019 received the WPSAR review reports and the peer-reviewed benchmark stock assessment. The SSC noted the concerns regarding the application of the assessment to the single BMUS complex and the quality of the data used in the assessment. The SSC also noted the improvements in the benchmark assessment compared to the 2015 assessment update. The SSC accepted the 2019 benchmark assessment as the best scientific information available for setting harvest limits for fishing year 2020 to 2022. The SSC also recommended that the Council direct staff to convene the P* and SEEM working group to quantify the uncertainties to set the ABC and specify the ACLs.

1.2   Current Task for the SSC

<u>Setting the Acceptable Biological Catch</u>

The SSC's current task is to specify ABCs for the bottomfish fishery in Guam, and the CNMI for fishing year 2020-2023. The Council's ACL specification process allows for a maximum of four year specification. The ABC may not exceed the projected overfishing limit (OFL). The Council's ACL process is described in the FEPs, and includes methods by which the ABC may be reduced from the OFL based on scientific uncertainties through a Risk of Overfishing Analysis (P* Analysis[1]). The CNMI and Guam P* working group met on January 29 and 31, respectively. The working groups scored the four P* dimensions: 1) assessment information; 2) uncertainty characterization; 3) stock status; and 4) productivity and susceptibility. The CNMI P* working group concluded that an 11 percent reduction from the OFL is required to account for the scientific uncertainties. The Guam P* working group concluded a 19 percent reduction from the OFL. The main difference is the reduction due to the stock status where Guam bottomfish is overfished thus requiring a larger buffer.

2   Summary of Bottomfish Fishery Information

2.1   Guam Bottomfish MUS

2.1.1   *Estimation of OFL*

According to the PIFSC 2019 bottomfish benchmark stock assessment (Langseth et al. 2019), the long-term MSY for Guam bottomfish is estimated to be 42,100 lb (95%CI=29,300 – 65,500 lb) which is lower than the previous MSY estimate of 56,130 lb reported in the previous assessment update (Yau et al, 2015). Stock projection results, which assumed that a six-year bottomfish catch limit would be harvested in its entirety in in the previous years, indicated that an ACL set at 36,000 lb would result in a 50 percent probability of overfishing in 2020 to 2023 (Table 1). Therefore, while 42,100 lb is the long-term estimate of MSY, 36,000 lb is considered to be the OFL proxy for the six year period. As a reference, estimated average annual total catch during the period 2016-2018 was 26,262 lb with 32,750 lb landed in 2018, the most recent year for which complete catch data (i.e., total and commercial catch) are available (Table 3). The average catch and the 2018 catch estimate are close to the OFL, 73 and 91 percent, respectively. There were two years in the past decade that exceeded the OFL (2009 and 2011).

The 36,000 lb of catch associated with the OFL projects a standing stock biomass of 219,300 lb and a harvest rate of 17 percent in 2023. The probability of the stock is overfished in 2023 is 35 percent (Langseth et al 2019, Table 15).

Table 1. Guam BMUS probabilities of overfishing in fishing year 2020-2025

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[1] P* Analysis is conducted to quantify scientific uncertainties in the data and model used for stock assessment.

Probability of overfishing ($H/H_{CR}>1$) in terminal year	2020	2021	2022	2023	2024	2025	Probability of overfishing ($H/H_{CR}>1$) in terminal year	2020	2021	2022	2023	2024	2025
0.01	2	2	2	3	3	3	0.26	21	23	24	25	25	26
0.02	3	3	4	4	5	5	0.27	22	23	24	25	26	26
0.03	4	5	5	6	6	7	0.28	23	24	25	26	26	27
0.04	5	5	6	7	8	9	0.29	23	24	26	27	27	27
0.05	5	6	7	8	9	9	0.30	24	26	26	27	27	28
0.06	6	7	9	9	10	11	0.31	25	26	27	27	28	28
0.07	7	8	9	10	11	11	0.32	25	27	27	28	28	29
0.08	8	9	10	11	12	13	0.33	26	27	27	28	29	29
0.09	9	10	11	12	13	13	0.34	26	27	28	29	29	30
0.10	9	10	12	13	13	15	0.35	27	28	29	29	30	30
0.11	10	11	13	13	14	16	0.36	27	29	29	30	30	31
0.12	11	12	13	14	15	16	0.37	28	29	30	30	31	31
0.13	11	13	14	15	17	17	0.38	29	30	30	31	31	31
0.14	12	13	15	16	17	18	0.39	29	31	31	31	31	32
0.15	13	15	16	17	18	18	0.40	30	31	31	31	32	32
0.16	13	15	17	18	19	19	0.41	31	31	32	32	32	33
0.17	14	16	17	18	19	19	0.42	31	32	32	33	33	33
0.18	15	17	18	19	19	21	0.43	32	32	33	33	33	33
0.19	16	18	19	19	20	22	0.44	32	32	33	33	33	34
0.20	16	18	19	20	21	22	0.45	33	33	33	34	35	35
0.21	17	19	20	21	22	23	0.46	33	34	35	35	35	35
0.22	18	19	21	22	23	24	0.47	34	35	35	35	35	35
0.23	19	20	22	23	23	24	0.48	35	35	35	36	35	36
0.24	19	21	22	23	24	24	0.49	35	36	36	36	36	36
0.25	20	22	23	24	25	25	0.50	36	36	36	36	36	36

Source: Langseth et al. 2019.

2.1.2 Stock Status

In 2017, the most recent year for which stock status information is available, $H_{2017}/H_{CR} = 0.81$ while $B_{2017}/B_{MSY} = 0.57$ (Langseth et al. 2019; Table 2). The production model results indicate that during the period 1982 through 2017, there were years were the stock is on the green quadrat, several years where overfishing was occurring but not overfishing, both overfished and experiencing overfishing, and in the terminal year of the analysis (2017), the stock is overfished but the fishery is not subject to overfishing (Figure 1).

Table 2. Stock assessment parameters for the Guam BMUS complex in 2017

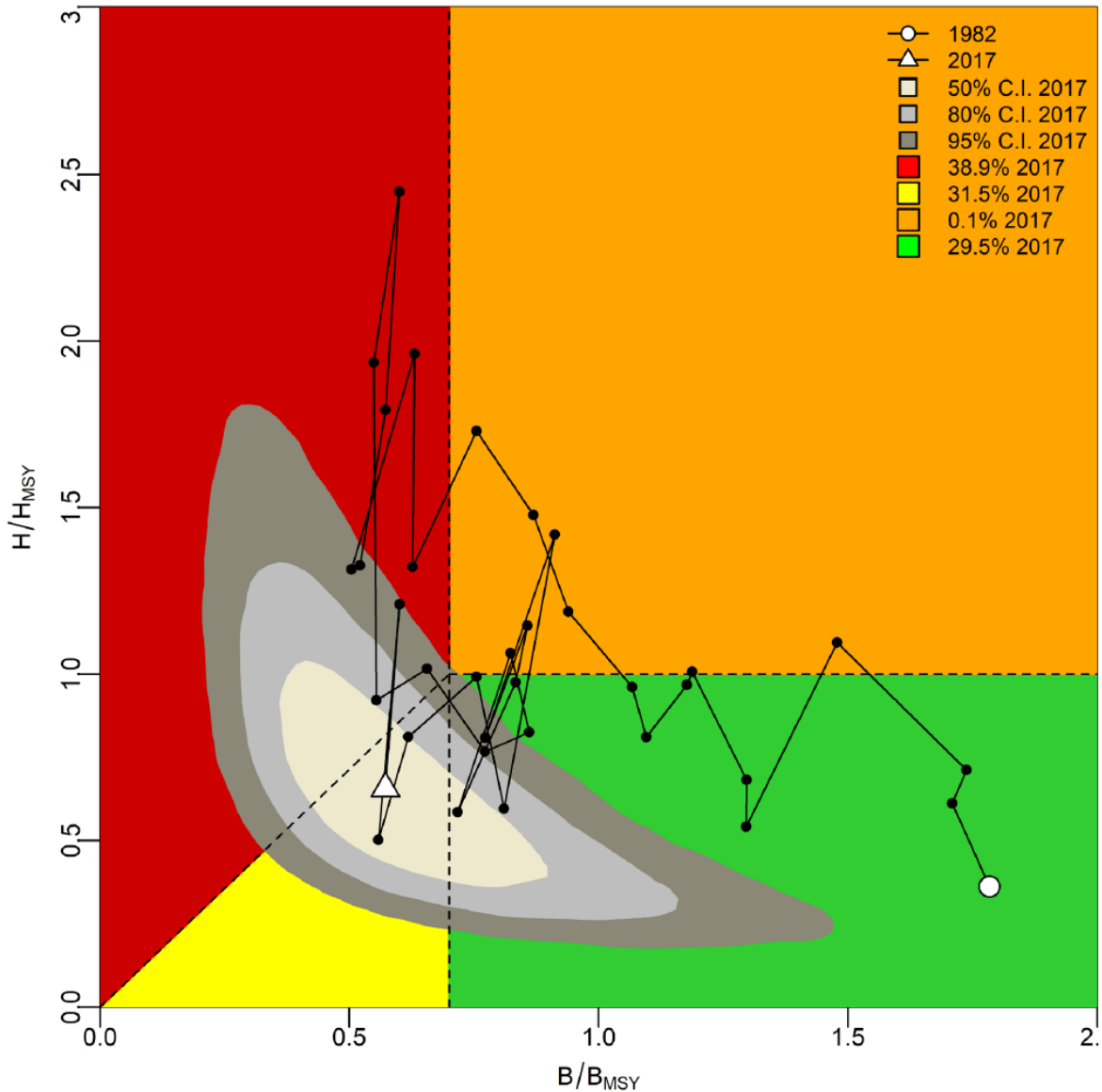| Param	Value	Notes	Status
MSY	$42.1 \pm 29.3\text{-}65.5$	Expressed in 1,000 lb (95%CI)	
H_{2017}	0.11	Expressed in percentage	
H_{MSY}	$0.170 \pm 0.071\text{-}0.382$	Expressed in percentage (95%CI)	
H/H_{CR}	0.81		No overfishing
B_{2017}	143.0	Expressed in 1,000 lb	
B_{MSY}	$248.8 \pm 107.1\text{-}636.8$	Expressed in 1,000 lb (95%CI)	
B/B_{MSY}	0.57		Overfished

Source: Langseth et al. (2019).

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Figure 1. Kobe plot of relative biomass and relative exploitation rate from the best fitting production model for Guam from 1982 to 2017
Source: Langseth et al. 2017.

In 2018, the most recent year for which annual estimated BMUS catch data are available, there was an estimated total catch of 32,750 lb from creel surveys and just 3,556 lb recorded from commercial purchase reports. The 2018 point estimate of catch is higher than the recent three year average. The estimated commercial catch for 2017 and 2018 are higher than the recent three year average catch (Table 3). The difference between the creel total and the commercial landings is assumed to be the non-commercial component of the catch. The average catch and the 2018 point estimate are close to the OFL, 73 and 91 percent, respectively. There is not much buffer between the OFL and the succeeding harvest levels (i.e. ABC and ACL).

Table 3. Annual estimated BMUS catch (lb) in Guam from 2009 to 2018

Year	Estimated Total Catch	Estimated Commercial Catch
2009	39,247*	N.A.
2010	27,044	N.A.
2011	59,023*	N.A.
2012	22,182	N.A.
2013	30,869	N.A.
2014	24,865	1,651
2015	13,837	804
2016	26,892	1,619
2017	19,143	5,095
2018	32,750	3,556
Avg. Catch 2016-2018	**26,262**	**3,423**

Source: WPRFMC (2019). *Catch greater than OFL (36,000 lb)
Note: "N.A." indicates confidential data for year in which less than three vendors were recorded.

2.2   CNMI Bottomfish MUS

2.2.1   *Estimation of OFL*

According to the PIFSC 2019 bottomfish stock assessment update (Langseth et al. 2019), the long-term MSY for CNMI bottomfish is estimated to be 93,600 lb (95%CI= 48,800-205,300 lb) which is lower than the previous MSY estimate of 173,100 ± 32,190 lb reported in the assessment by Yau et al. (2015). Stock projection results, which assumed that a six-year bottomfish catch limit would be harvested in its entirety in in the previous years, indicated that an ACL set at 98,000 lb would result in a 50 percent probability of overfishing in 2020 to 2023 (Table 4) the maximum risk allowable under Federal law (74 FR 3178, January 9, 2011). Therefore, while 93,600 lb is the long-term estimate of MSY, 98,000 lb is considered to be the OFL proxy for the four year period. As a reference, estimated average annual total catch during the period 2016-2018 was 32,172 lb with merely 858 lb landed in 2018, the most recent year for which complete catch data (i.e., total and commercial catch) are available (Table 6). The recent three year average catch and the 2018 catch estimate are below the OFL, 33 and 0.8 percent, respectively. There were was one year where the estimated total catch had exceeded the OFL (2012).

The 98,000 lb of catch associated with the OFL projects a standing stock biomass of 619,600 lb and a harvest rate of 17 percent in 2023. The probability of the stock is overfished in 2023 is 27 percent (Langseth et al 2019, Table 17).

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Table 4. CNMI BMUS probabilities of overfishing in fishing year 2020 and 2023

Probability of overfishing ($H/H_{CR}>1$) in terminal year	2020	2021	2022	2023	2024	2025	Probability of overfishing ($H/H_{CR}>1$) in terminal year	2020	2021	2022	2023	2024	2025
0.01	2	3	4	5	6	7	0.26	68	68	68	68	68	66
0.02	6	7	9	11	13	14	0.27	70	69	70	68	68	68
0.03	9	11	14	16	17	21	0.28	72	71	71	70	70	69
0.04	12	15	18	21	22	24	0.29	74	72	72	72	71	71
0.05	16	18	23	24	26	28	0.30	75	74	74	72	72	71
0.06	18	22	25	28	29	31	0.31	77	76	74	74	73	72
0.07	22	25	29	31	33	34	0.32	79	78	77	75	74	74
0.08	25	29	32	35	35	36	0.33	81	79	78	77	75	75
0.09	28	33	34	37	38	38	0.34	82	81	79	78	77	75
0.10	32	36	38	39	40	42	0.35	84	82	80	80	78	77
0.11	35	38	40	41	43	43	0.36	85	83	82	80	80	78
0.12	38	41	41	44	45	45	0.37	87	85	83	82	81	80
0.13	40	44	45	46	48	49	0.38	89	87	85	83	82	81
0.14	43	46	48	49	49	49	0.39	90	88	86	84	83	82
0.15	46	49	49	50	51	51	0.40	92	89	87	86	84	83
0.16	48	50	51	51	52	53	0.41	95	90	88	86	86	84
0.17	50	52	53	53	54	54	0.42	94	91	90	88	86	85
0.18	53	54	55	56	56	56	0.43	97	95	90	89	87	86
0.19	54	56	57	57	57	57	0.44	98	94	93	90	89	88
0.20	57	57	58	59	59	59	0.45	101	96	93	92	90	89
0.21	58	60	60	61	61	60	0.46	102	97	94	93	90	90
0.22	61	62	62	61	61	61	0.47	104	99	96	94	93	90
0.23	63	63	63	63	63	62	0.48	105	101	97	94	93	93
0.24	64	64	65	64	64	63	0.49	108	102	100	96	94	93
0.25	66	66	67	66	65	66	0.50	109	104	101	98	96	95

Source: Langseth et al. (2019).

2.2.2 Stock Status

In 2017, the most recent year for which stock status information is available, $H_{2017}/H_{CR} = 0.79$ while $B_{2017}/B_{MSY} = 1.08$ (Langseth et al 2019, Table 5). The production model results indicated that the CNMI bottomfish complex in 2017 was not overfished and did not experience overfishing (Figure 2). However, the data quality and the lack of contrast in the CPUE resulted in a large uncertainty in the stock status projections.

Table 5. Stock assessment parameters for the CNMI BMUS complex in 2017

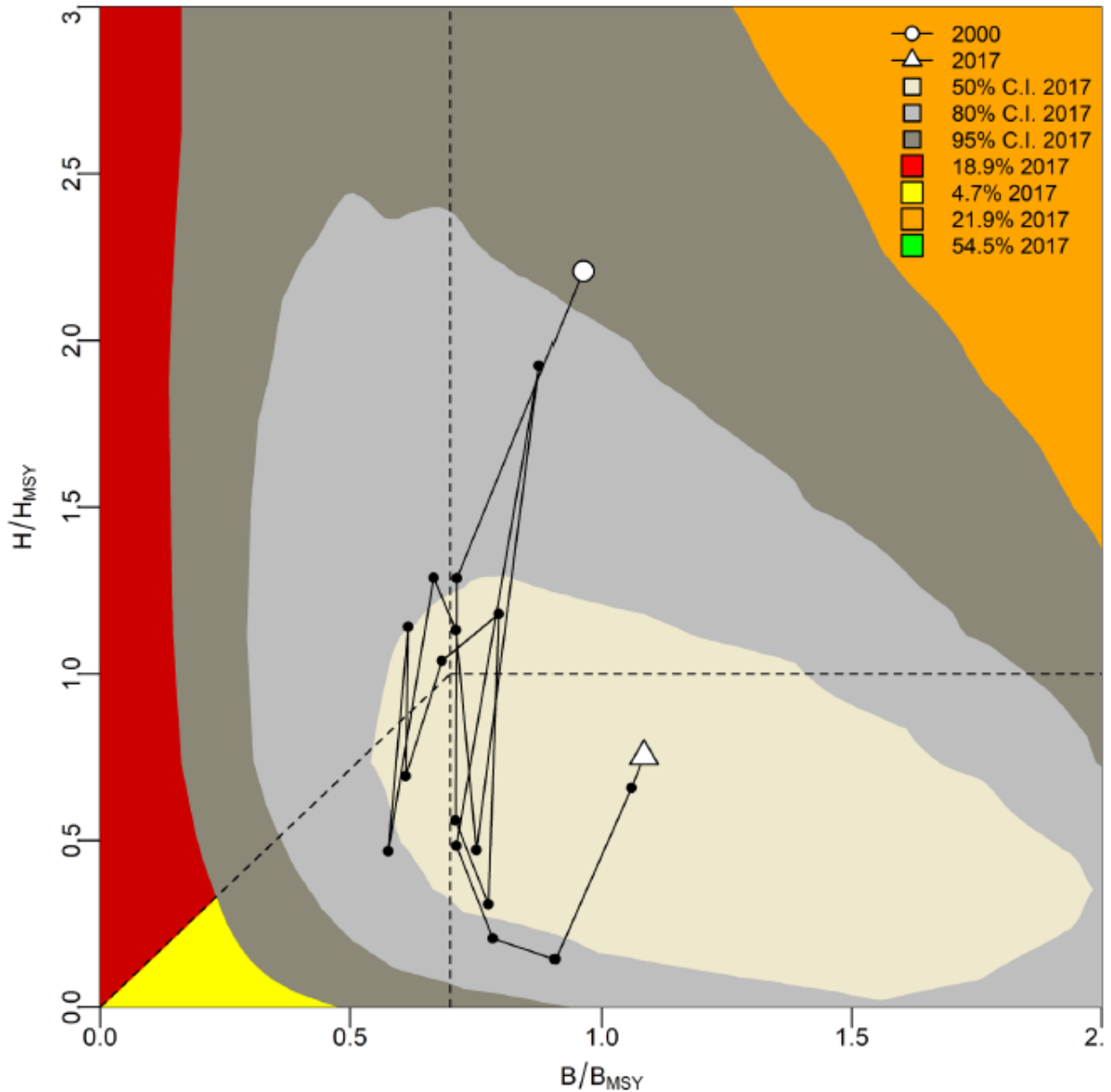| Param	Value	Notes	Status
MSY	93.6 (48.8-205.3)	Expressed in 1,000 lb (95%CI)	
H_{2017}	0.12	Expressed in percentage	
H_{MSY}	0.261 ± 0.063	Expressed in percentage (95%CI)	
H/H_{CR}	0.79		No overfishing
B_{2017}	569.2	Expressed in 1,000 lb	
B_{MSY}	570.6 (107.1-636.8)	Expressed in 1,000 lb (95%CI)	
B/B_{MSY}	1.08		Not overfished

Source: Langseth et al. (2019).

Figure 2. Kobe plot of relative biomass and relative exploitation rate from the best fitting production model for CNMI from 1983 to 2013.
Source: Langseth et al. (2019).

In 2018, the most recent year for which annual estimated BMUS catch data are available, there was an estimated total catch of 32,172 lb from creel surveys and just 8,362 lb recorded from commercial purchase reports. The commercial annual estimate and the 2018 total estimate were below the three-year average catch for 2016-2018 (Table 6). The difference between the creel total and the commercial landings is assumed to be the non-commercial component. The average catch and the 2018 point estimate below the OFL, 33and 0.8 percent, respectively. There is sufficient buffer between the OFL and the succeeding harvest levels (i.e. ABC and ACL).

Table 6. Annual estimated BMUS catch (lb) in CNMI from 2000 to 2017

Year	Estimated Total Catch	Estimated Commercial Catch
2009	69,587	20,419
2010	58,610	14,729
2011	29,600	16,931
2012	136,857*	11,747
2013	24,065	17,770
2014	8,450	19,333
2015	11,121	4,197
2016	49,367	12,260
2017	46,290	8,918
2018	858	3,909
Avg. Catch 2016-2018	**32,172**	**8,362**

Source: WPRFMC (2019).

2.3   ABC Alternatives for Bottomfish MUS

2.3.1   *Option 1: No Action – Do not specify ABCs*

Under Option 1, the SSC would not specify an ABC for the bottomfish fishery in Guam and CNMI for the 2020-2023 fishing year. However, this alternative would not comply with the Magnuson-Stevens Act or the provisions of the American Samoa and Marianas FEP, which require NMFS to specify an ABC for all stocks and stock complexes.

Expected Fishery Outcome

Under this option, not specifying an ABC or AM is not expected to result in large adverse effects on the conduct of the fishery, including gear types used, areas fished, level of catch or effort, target and non-target stocks, or protected species for CNMI. This is because, based upon the best available commercial and scientific information, the Territory bottomfish fishery historically harvests less than the stock complex's maximum sustainable yield, and is not constrained by the ACLs. As shown in Table 6, the estimated catches of Territory bottomfish have consistently remained below the estimated OFL of 95,000 lb for CNMI. The catches were also below the long-term MSY of 93,600, except for 2012 when the estimated catch exceeded the MSY. The catch is 2012 is roughly four times the average catch.

In the 2012 fishing year, the estimated CNMI catch was 136,857 lb of BMUS. This is the highest level of catch since NMFS implemented a catch limit system in fishing year 2012 and in the past 10 years. The estimated commercial component of that catch did not significantly increase. In recent years, the fishery has not reached the ACL. In fishing year 2020 to 2023, total reported catch is expected to be similar to catch in recent years, and is not expected to result in overfishing. Therefore, the expected fishery outcome under Option 1 would not be expected to have major adverse effects on the conduct of the fishery in CNMI.

The best scientific information available produced a more conservative estimate of MSY and OFL projections. Under this option, not specifying and ABC or AM may result in adverse effects on the conduct of the fishery particularly on the target stocks, area fished, and level of catch and effort. The fishery historically landed between a low of 13,837 lb in 2015 to a high of 59,023 lb in 2011. There are two years (2009 and 2011) where the catch exceeded the estimated OFL but only one year that exceeded the MSY. The recent average catch is roughly two-thirds of the catch in 2009 while it about half of the 2011 catch.

In the 2018 fishing year, the estimated Guam catch was 32,750 lb of BMUS. This is the highest level of catch since NMFS implemented a catch limit system in fishing year 2012. This is 55 percent of the highest estimated catch in 2011 at 59,023 lb in the past 18 years. The long term MSY was exceeded once and the OFL was exceeded twice in the past 10 years. In recent years, the fishery has not reached the OFL and MSY. In fishing year 2020 to 2023, total reported catch is expected to be similar to catch in recent years, and is not expected to result in overfishing. However, the 2018 catch estimate is 91 percent of the OFL. Any increase in catch in the succeeding years may have a potential to exceed the recommended ACL and possibly the OFL. Therefore, the expected fishery outcome under Option 1 may have adverse effects on the conduct of the fishery in Guam.

In each of the archipelagic areas, the fishing year began January 1 and ends on December 31. In accordance with 50 CFR 665.4, when NMFS projects that catches will reach an ACL for any stock or stock complex, the agency must restrict fishing for that stock or stock complex in the applicable U.S. EEZ to prevent catches from exceeding the ACL. The restriction may include, but is not limited to, closing the fishery, closing specific areas, or restricting effort (76 FR 37286, June 27, 2011). However, an in-season restriction cannot be implemented for any territorial bottomfish fishery because catch statistics only become available about six months after local management agencies collect the data. For this reason, the Council may recommend a post-season accounting of the annual catch for a stock complex relative to its ACL immediately after the end of the fishing year, or as soon as possible, given the limitations in the data collection and processing methods. Additionally, if landings of any stock complex exceed the specified ACL in a fishing year, the AM requires the Council to take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. This may include a recommendation that NMFS implement a downward adjustment to the ACL in the subsequent fishing year, or other measures, as appropriate. As an additional performance measure specified in each FEP, if catches exceed any ACL more than once in a four-year period, the Council must re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness. Future changes to an ACL would be subject to separate environmental review at such time as changes are proposed, and are not part of the current proposed action.

2.3.2 *Option 2: Use the best scientific information available and utilize the result of the P* analysis to set the ABC*

Under this option, the SSC will be utilizing the best scientific information available (Langseth et al 2019) in setting the ABC for fishing year 2020-2023. The Risk of Overfishing tables (Table 1 and 4) will be used to set the ABC. This option would also utilize the results of the Marianas P* analysis (WPRFMC 2020a and 2020b) to guide the setting of the ABC. The CNMI P* analysis

resulted in an 11 percent reduction accounting for scientific uncertainty (WPRFMC 2019a) while the Guam P* analysis resulted in a 19 percent reduction primarily due to the stock status dimension (WPRFMC 2020b).

Under this option, the CNMI ABC will be set at 39 percent risk of overfishing corresponding to an annual catch level of 84,000 lb using 2023 as the terminal year. For Guam, the ABC will be set at 31 percent risk of overfishing corresponding to an annual catch level of 27,000 lb. using 2023 as the terminal year.

Expected Fishery Outcome

Under Option 2, fishing for Guam BMUS would be subject to an ABC of 27,000 lb for the 2020-2023 fishing year. The fishery has landed below the specified ABC almost half the time in the past 10 years and exceeded the ABC for five years. Fishery operations have fluctuated over the past 7 years since ACLs were first implemented. The average annual catch from 2016 to 2018 was 26,262 lb, which is 97 percent of the ABC of 27,000 lb. Given the current state of Guam's bottomfish fleet, it is likely that total catch in 2020 to 2023 to approach the ABC under this option. Because there is no data that would allow NMFS to implement an in-season closure to prevent the ACL from being exceeded, the AM under this alternative would be the same as those described under Option 1. Therefore, the impacts to fishermen would be similar to those described in Option 1.

Under Option 2, fishing for CNMI BMUS would be subject to an ABC of 84,000 lb for the 2020-2023 fishing year. The fishery has consistently landed below the ABC except for that one year when the fishery landed an order of magnitude higher compared to all other years. Fishery operations have remained consistent over the past 7 years since ACLs were first implemented. The average annual catch from 2016 to 2018 was 32,172 lb, which is only 38 percent of the ABC of 84,000 lb. Given the current state of CNMI's bottomfish fleet, it is unlikely that total catch in 2020-2023 would approach the ABC under this option. Because there is no data that would allow NMFS to implement an in-season closure to prevent the ACL from being exceeded, the AM under this alternative would be the same as those described under Option 1. Therefore, the impacts to fishermen would be similar to those described in Option 1.

2.3.3 *Option 3: Use the best scientific information available and set the ABC lower than the outcome of the P* analysis*

Under this option, the SSC will be utilizing the best scientific information available (Langseth et al 2019) in setting the ABC for fishing year 2020-2023. Similar to option 2, the results of the P* analysis will be considered. However, under this option, the SSC may set the ABC lower than the results of the P* analysis. This option provides a more precautionary approach to cover scientific uncertainties not identified in the P* analysis. The P* level of 39 percent for CNMI and 31 percent for Guam would be the upper bound of the risk level. The SSC may select a lower risk level and provide a rationale for selecting the lower risk level by describing what scientific uncertainties are being considered.

Expected Fishery Outcome

Under this option, based on the historical fishery performance in Guam, it is more likely (compared to option 2) that the catch in 2020 to 2023 will exceed the ABC. In option 2, the catch fell below the ABC 50 percent of the time and conversely had exceeded more than 50 percent of the time. Lowering the ABC by another 5 percent risk (at P*=26% with an associated catch of 25,000 lb), would increase the likelihood of exceeding the ABC (in this example, there were 6 years that exceeded the ABC and only 4 years below). A 10 percent further reduction from the P* result will put the ABC at P*=21% with an associated catch of 21,000 which increased the number of years exceeding the ABC (8 out of 10 years). Under this option, it will likely have a major adverse effect on the fishery in Guam.

Under this option, it is unlikely that the catch in 2020 to 2023 will exceed the ABC. Based on the past 10 year fishery performance, there was one year that exceeded the ABC. Lowering the ABC by another 5 percent risk (at P*=34% with an associated catch of 78,000 lb), will not increase the number of years that exceeded the ABC. A 10 percent reduction to 24% risk level will also not result in exceeding the ABC of 72,000 lb (at P*=29%). Under this option, it will have no adverse effect on the fishery in CNMI.

3   Summary of New Information for the Impact Analysis

The table below summarizes the new information (if any) that can be used to evaluate the impacts of the options to the target stocks and the environment.

New info on physical resources	There is no new information available. The action will not likely have an adverse impact to the physical environment.
New info on biological resources	
• **Target**	Langseth et al. 2019 concluded that the target BMUS stock in Guam is overfished but not experiencing overfishing. The conservative catch projection will likely result in an adverse effect on the target stock if the ACL is exceeded. Based on the fishery performance from 2009 to 2018, the catch exceeds the ABC 50 percent of the time. For CNMI, the stock status for the target BMUS is sustainable. This likely will have no adverse effect on the target stock.
• **Non-target**	The bottomfish fishery harvests both deep snapper complex and the shallow water reef fish species complex. The action will not likely change the conduct of the fishery. It is a hook and line fishery and the species composition is anticipated to remain similar to previous years.
• **Bycatch**	CNMI bottomfish fishery had 0% bycatch in 2018. Guam had 0.019% bycatch in 2018. Therefore, the action is not likely to have an adverse impact on bycatch species.
• **Protected species**	On January 22, 2018, NMFS issued a final rule to list the giant manta ray as a threatened species under the ESA (83 FR 2916). On

	January 30, 2018, NMFS issued a final rule to list the oceanic whitetip shark as threatened under the ESA (83 FR 4153). In response to these listings, NMFS reinitiated consultation under ESA on June 5, 2019, as required by 50 CFR 402.16. Based on the information in the biological evaluation prepared to support this consultation (NMFS 2019a), NMFS determined that the bottomfish fishery in Guam (1) may affect, and is likely to adversely affect, the oceanic whitetip shark; and (2) may affect, but is not likely to adversely affect, the giant manta ray. NMFS reinitiated consultation to determine whether the bottomfish fishery in Guam is likely to jeopardize the continued existence of the oceanic whitetip shark, and to seek concurrence that the fishery is not likely to adversely affect the giant manta ray. On June 6, 2019, NMFS determined that during the period of consultation, the continued operation of the bottomfish fishery in Guam is not likely to jeopardize the oceanic whitetip shark or the giant manta ray; would not violate ESA section 7(a)(2); or result in an irreversible or irretrievable commitment of resources precluding implementation of any reasonable and prudent alternatives (2019b).
• **Biodiversity and eco-function**	The action will not likely have an adverse effect on biodiversity and ecosystem function since the fishery has been landing well below the ACL since 2012 until the new assessment generated a conservative catch projection estimate. The bycatch rates are very low, and fishing methods do not impact the habitat.
New info on socio-economic setting	No new socio-economic information aside from the updated fishing participation data from the Territory Annual SAFE Report
New info on management setting	
• **Marine Protected Areas**	No new information and the actions are not likely to adversely affect the management of MPAs. The fishery does not occur inside protected areas.
• **EFH/HAPC**	No change in EFH/HAPC for the Territory bottomfish in American Samoa and the Marianas

4   References

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