



PRELIMINARY DRAFT

**2027-2030 Annual Catch Limits and Accountability Measures for the
Main Hawaiian Islands Kona Crab Fishery**

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Prepared by the Western Pacific Regional Fishery Management Council

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1 Introduction

At its upcoming 159th and 206th meetings, the SSC and Council will review options to specify a multi-year ACL, ACT and AMs in fishing years 2027-2030 for the Hawaii Kona crab fishery.

1.1 Background information

Fisheries for crustacean management unit species (MUS) 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).

In accordance with the Magnuson-Stevens Act, the FEP, and regulations at 50 CFR 665.4, NMFS must specify an annual catch limit (ACL) and implement accountability measures (AM) for crustacean MUS as recommended by the Council and in consideration of the best available scientific and commercial information available about the fishery for that stock or stock complex. The ACL may not exceed the acceptable biological catch (ABC) recommended by the Council's Science and Statistical Committee (SSC). Throughout the Western Pacific region, fishing for Kona crab is only active in the Main Hawaiian Islands (MHI).

The Hawaii commercial and non-commercial Kona crab fisheries are both subject to a uniform suite of species-specific regulations under Hawaii Administrative Rules (HAR) §13-95-5 including a four-inch minimum carapace length, annual May through September seasonal closure, prohibition on take by spearing, and prohibition on the retention of berried females. General statewide gear restrictions under HAR §13-75 also apply to both the commercial and non-commercial take of Kona crab including minimum mesh sizes for crab traps and crab nets. Pursuant to HAR §13-74-20, individuals who take Kona crab for commercial purposes must possess a valid Commercial Marine License (CML) issued by the State of Hawai'i and submit monthly catch reports as required by HAR §13-74-2. These reports allow for the in-season monitoring of commercial Kona crab landings.

1.2 Action Under Consideration

The Council is considering management options to recommend ACLs and AMs for the MHI kona crab fishery managed under the Hawaii FEP. The management measures under consideration would maintain the current ACLs, ACTs and AMs in fishing year 2027 to 2030 for MHI kona crab. The ACL and ACT specified for fishing years 2024 through 2026 were specified at 30,802 lb and 25,491 lb, respectively.

Catches from each fishing year would be counted towards the ACL for the stock based on catch data collected by the State of Hawaii Division of Aquatic Resources through their commercial marine license and reporting program. The options under consideration for this action would maintain the current in-season and post-season AMs. As an in-season AM, NMFS will close Federal waters to commercial and non-commercial fishing for Kona crab for the remainder of the fishing year if NMFS projects that the fishery will reach the ACT. The State of Hawaii does not currently require closure of state waters when the federal ACT is reached. As a post-season AM, if NMFS and the Council determine that the catch from the most recent year exceeds the

specified ACT, NMFS will not apply the overage adjustment. However, if the catch from the most recent year exceeds the ACL, NMFS would reduce the ACL and ACT in the subsequent fishing year by the amount of the overage.

1.3 Best Scientific Information Available

A stock assessment of the Main Hawaiian Islands Kona crab fishery was conducted in 2018 using data from 1957 through 2016 (Kapur et al. 2019). This 2018 benchmark assessment improved upon filtering of data records by re-defining fishing effort as a single reported fishing day and exploring fisher effects (individual fisher effects and cumulative fishing experience) in catch per-unit effort (CPUE) standardization. Additionally, this 2018 assessment addressed uncertainty previously unaccounted for, including unreported catch, incidental mortality of female crab catch following the prohibition of female crab harvest in 2006, and a Bayesian prior on the initial ratio of biomass to carrying capacity. The assessment used a state-space Bayesian surplus production model in a new user-friendly framework, Just Another Bayesian Biomass Assessment (JABBA). The model fit standardized CPUE data in a generalized Pella-Tomlinson surplus production model. Parameter distributions were estimated in a Bayesian framework, which estimates parameter posterior distributions starting from prior distributions and fitted to data. Annual harvest rates (H), harvest rate at maximum sustainable yield (H_{MSY}), annual biomass (B), and biomass at maximum sustainable yield (B_{MSY}) were estimated in JABBA, among other outputs.

Results from the benchmark stock assessment conclude that in 2016, the Hawaii Kona crab fishery was not overfished (defined as $B/B_{MSY} < 0.7$) with a 0.0 percent probability of the status being overfished in 2016. In 2016, the stock was not experiencing overfishing (defined as $H/H_{MSY} > 1$), with 0.0 percent probability of overfishing occurring.

At its 131st meeting, the SSC deemed the 2018 benchmark assessment of the main Hawaiian islands Kona crab as the best scientific information available for the stock status determination and setting for harvest limits. This assessment has not been updated, and provides the most recent formal scientific analysis of the state of the MHI Kona crab stock.

Table 1: Recent history of ACL and AM recommendations for Hawaii Kona crab

Fishing year	Council Recommended ACL/ACT	NMFS Implemented ACL/ACT	NMFS Implemented AM	Total Recorded Catch (pounds)	Proportion of ACL or ACT caught
2011	N.A.	N.A.	N.A.	10,609	40%
2012 ¹	27,600	27,600	Post-Season Review	8,149	30%
2013	27,600	27,600	Post-Season Review	9,551	27%
2014	27,600	27,600	Post-Season Review	2,999	8%
2015	27,600	27,600	Post-Season Review	2,919	11%
2016	27,600	N.A.	N.A.	758	NA
2017	3,500	3,500	Post-Season Review	2,777	79%
2018	N.A.	N.A.	N.A.	2,953	NA
2019 ²	3,500	3,500	Post-Season Review	5,737	164%
2020	30,802/25,491	30,802/25,491	In-season tracking; Post-Season Review	4,265	14%
2021	30,802/25,491	30,802/25,491	In-season tracking; Post-Season Review	3,946	13%
2022	30,802/25,491	30,802/25,491	In-season tracking; Post-Season Review	2,533	8%
2023	30,802/25,491	30,802/25,491	In-season tracking; Post-Season Review	4,879	16%
2024	30,802/25,491	30,802/25,491	In-season tracking; Post-Season Review	4,783	16%
2025	30,802/25,491	30,802/25,491	In-season tracking; Post-Season Review	5,534	22%
2026	30,802/25,491	30,802/25,491	In-season tracking; Post-Season Review	Current Year	Current Year

¹ Fishing year 2012 (beginning January 1, 2012) was the first year the Kona crab fishery was subject to ACLs and AMs in the MHI.

² Fishing year 2019 was 64 percent over the ACL. Results from the 2019 assessment conclude that overfishing was not occurring (Kapur et al.)

Fishing year	Council Recommended ACL/ACT	NMFS Implemented ACL/ACT	NMFS Implemented AM	Total Recorded Catch (pounds)	Proportion of ACL or ACT caught

Source: WPFMC (2025).

2 Specification for the MHI Kona Crab Fishery

2.1 Current OFL, ABC, ACL Specification

2.1.1 Estimation of OFL

In the 2018 stock assessment, estimated posterior distributions of base case assessment model parameters were used in projections for fishing years 2020–2026 to estimate the probability of overfishing, P^* , from 2020–2026 under various levels of catch. The projection results accounted for uncertainty in the distribution of estimates of model parameters from the posterior of the base case model. The projections were conducted assuming each value for the future total catch was constant for each fishing year 2020–2026. Projections were used to compute reported catches for 2020–2026 that would produce probabilities of overfishing varying from 0% to 50% at 1% intervals. The future catch corresponding to a 50% risk of overfishing can be considered the overfishing limit (OFL).

Because the management action currently under consideration includes years 2027–2030, which are beyond the projections included in the 2018 stock assessment, it is not possible to determine a specific risk of overfishing at a given catch level. Based on information in the 2018 stock assessment, we can conclude that the risk of overfishing at a given catch level has not *increased*. This conclusion is supported based on information in the 2018 assessment, which includes a catch projection of 12,038 lb each year from 2020 through 2026 that would result in a 1 percent risk of overfishing. At that level of catch, the stock assessment also projects that stock biomass would increase from by over 50,000 lb over that same time period (*i.e.*, from 1.10 million lb in 2020 to 1.15 million lb in 2026). However, the fishery has caught less than half that amount each year since 2020 (see Table 1). Given that current stock biomass is expected to be larger than it was during 2020 (*i.e.*, the initial year that the 2018 stock assessment was employed to set catch limits), we reasonably conclude that, although we cannot ascribe a specific P^* to a given level of catch, the respective P^* 's have not increased. We therefore consider the P^* 's previously used to specify the ACL and ACT as reasonable *de minimis* estimates of the risk of overfishing in the management action currently under consideration.

2.1.2 Stock Status

Under the Hawaii FEP, 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. A stock is considered overfished when its biomass (B) has declined below the level necessary to produce MSY on a continuing basis (B_{MSY}). This threshold is termed the minimum stock size threshold (MSST) and is expressed as a ratio, $B/B_{MSY} = 0.7$. Thus, if the B/B_{MSY} ratio is less than 0.7, the stock complex is considered overfished.

In 2016, the most recent year for which stock status information is available directly from model outputs, $H_{2016}/H_{MSY} = 0.07$ while $B_{2016}/B_{MSY} = 1.39$ (Kapur et al. 2019; **The stock** assessment estimated the biomass in 2016 to be 885,067 lb, 1,101,480 lb in 2020, and 1,153,881 lb in 2026 based on catches of 12,086 lb each year from 2020–2026.

Table 2). The production model results indicate that the MHI Kona crab stock was not experiencing overfishing at that time, and was not overfished The stock assessment estimated the biomass in 2016 to be 885,067 lb, 1,101,480 lb in 2020, and 1,153,881 lb in 2026 based on catches of 12,086 lb each year from 2020–2026.

Table 2. Posterior estimates of parameters and results from Hawaii Kona crab production model presented in the 2018 benchmark stock assessment

Parameter	Median	95% LCI	95% UCI
K (lb)	1,445,595	917,297	2,809,544
r (yr^{-1})	0.17	0.10	0.26
M	1.50	0.72	3.03
Ψ	0.71	0.50	0.95
q_1	0.00005	0.00002	0.00009
q_2	0.00003	0.00001	0.00006
σ_η	0.09	0.05	0.13
$\sigma_{\tau_{estimated,1}}$	0.09	0.05	0.13
$\sigma_{\tau_{estimated,2}}$	0.08	0.04	0.19
H_{MSY}	0.11	0.05	0.24
B_{MSY} (lb)	640,489	342,488	1,392,849
MSY (total lb)	73,069	48,045	127,364
MSY (reported lb)	25,869	17,010	45,092
P_{2016}	0.61	0.39	0.84
B/B_{MSY} 2016	1.39	0.76	2.29
H/H_{MSY} 2016	0.07	0.02	0.17

Source: Kapur et al. (2019).

Commercial catch generally declined from 1995 to 2015, and had been relatively stable since then notwithstanding some interannual variability. Over the past ten years (2015 - 2024) the average annual reported harvest has been 3,555 lb., though the three-year (2022-2024) recent average catch has is slightly higher at 4,065 lb. From 2000 to 2010 a substantial amount (30-75%) of catch came from within the EEZ (NMFS 2011). Penguin Bank, which is entirely in federal waters, and historically has been an important location for Kona crab fishing (Onizuka 1972). More recently fishing on Penguin Bank has decreased and most catch comes from state waters.

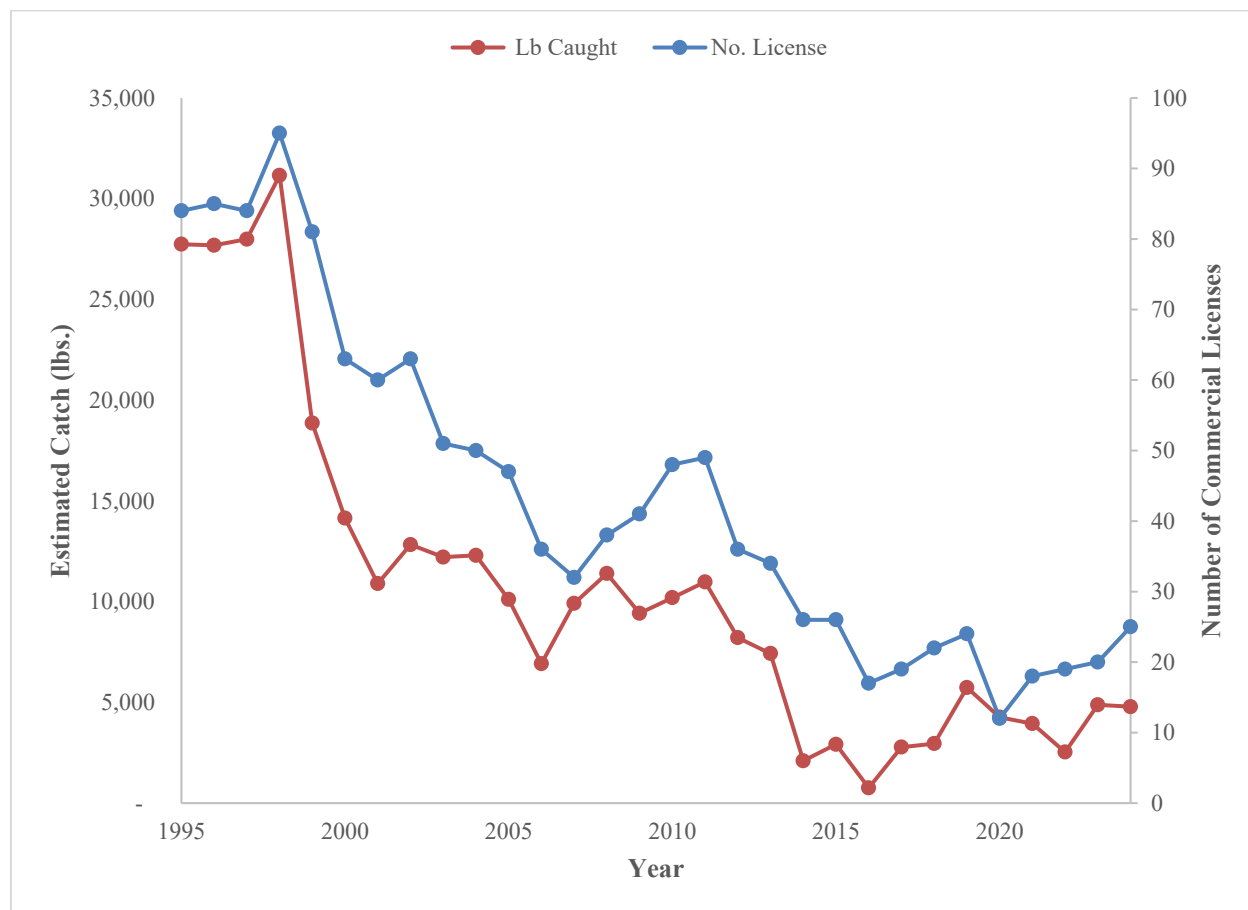


Figure 1. Number of Commercial Marine License holders reporting catch of Kona crab and annual reported landings of Kona crab in the Main Hawaiian Islands from 1995 to 2024.

Source: WPRFMC (2025).

Participation in the MHI Kona crab fishery also varies from year to year. Over the past 20 years, the number of CML holders participating in the MHI Kona crab fishery has steadily declined from 63 commercial fishermen in 2002 to a low of 12 fishermen in 2020 (Table 3; Figure 1). However, from 2020, there has been an increase of CML holders up to 25 commercial fishermen. In each of the last four years, there were 30 or fewer CML holders participating in the fishery accounting for less than 65 trips annually (Table 3), though the majority (~50-60%) of trips are attributed to only three fishermen.

Table 3: Annual fishery parameters for Kona crab harvested by loop net in Hawaii from 2002 to 2024

Year	Number of Licenses	Number of Fishing Trips	Estimated Total Catch (lbs.)	CPUE
2002	63	196	12,830	65.46
2003	51	161	12,211	75.84
2004	50	197	12,297	62.42
2005	47	203	10,111	49.81
2006	36	154	6,921	44.94
2007	32	200	9,915	49.58
2008	38	243	11,396	46.90
2009	41	229	9,422	41.14
2010	48	222	10,195	45.92
2011	49	209	10,979	52.53
2012	36	129	8,212	63.66
2013	34	105	7,423	70.70
2014	26	75	2,101	28.01
2015	26	71	2,919	41.11
2016	17	28	758	27.07
2017	19	62	2,777	44.79
2018	22	63	2,953	46.87
2019	24	86	5,737	66.71
2020	12	60	4,265	71.08
2021	18	69	3,946	57.19
2022	19	53	2,533	47.79
2023	20	70	4,879	69.70
2024	25	68	4,783	70.34
2015	26	71	2,919	65.46
2016	17	28	758	75.84
2017	19	62	2,777	62.42
2018	22	63	2,953	49.81
2019	24	86	5,737	44.94
2020	12	60	4,265	49.58
2021	18	69	3,946	46.90
2022	19	53	2,533	41.14
2023	20	70	4,879	45.92
2024	25	68	4,783	52.53
Avg. 22-24	21	64	4,065	57.73

Source: WPRFMC (2025).

2.1.3 Current ABC, ACL and ACT Specification

In March 2019, the Pacific Island Fisheries Science Center (PIFSC) released the final 2018 benchmark stock assessment for the MHI Kona crab fishery (Kapur et al. 2019). This assessment underwent scientific peer review by a Western Pacific Stock Assessment Review (WPSAR) panel on September 10 to 14, 2018. The WPSAR was open to the public and advertised through notices in the *Federal Register* (83 FR 28808, June 21, 2018). Overall, the WPSAR Panel concluded that the results of the assessment can be used to determine stock status and set harvest limits. Using the 2018 stock assessment conforms to the National Standard 2 of the Magnuson-Stevens Act, which requires the use of the best scientific information available (BSIA) for management.

The development for the 2020 – 2023 ACL, ACT and AMs for the MHI Kona crab fishery was made during the 176th Council public meetings. At its 176th meeting in March 19, 2019, the Council received the presentation from PIFSC on the benchmark assessment and accepted the SSC BSIA recommendation. The Council directed staff to organize a working group to quantify the scientific uncertainty through the P* process and the management uncertainty through the SEEM process. Both the Council and SSC meetings were open to the public and advertised through notices in the *Federal Register* (84 FR 3760, February 13, 2019), and on the Council's website.

At its 178th meeting in June 25, 2019, the Council considered and discussed issues relevant to ACL, ACT and AM specifications for the MHI Kona crab fishery, including the ABC recommendations from the Council's SSC at its 132nd meeting held in June 18, 2019. The SSC considered and discussed the results of the P* analysis that quantified the scientific uncertainty that generated the risk of overfishing level that was used to set the ABC at 30,802 pounds (P*=38%). The Council considered and discussed the results of the SEEM analysis that quantified the social, ecological, economic and management uncertainty that was used to specify the ACL and set the ACT at 25,491 pounds (P*=20%). The Council recommended the ACT was set 10 percent lower than the P* and SEEM analysis to provide a conservative approach as the State of Hawaii was in the process of removing regulations on no-take of females. At its 195th meeting in June 2023, the Council considered and discussed issues relevant to ACL, ACT, and AM specifications for the MHI Kona crab fishery and carried over the ACL, ACT, and AM specifications from 2020–2023 to the 2024–2026 fishing years. Since there is no new information on stock status or MSY, the action alternative considered presents the same ABC as the currently implemented value.

Both the Council and SSC meetings were open to the public and advertised through notices in the *Federal Register* (84 FR 24759, May 29, 2019, 88 FR 33867, May 25, 2023), and on the Council's website. The public had an opportunity to comment at the meetings on the proposed ACL and ACT specifications and AMs.

2.2 Current Task for the SSC

Setting the Acceptable Biological Catch

The SSC's current task is to specify the ABC for Kona Crab in the main Hawaiian Islands for the 2027 to 2030 fishing year. The ABC may not exceed the projected overfishing limit based on the

2019 stock assessment (Kapur et al.). 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 Analyst (P* Analysis). Since the MHI Kona crab fishery is a Tier 1 stock, the SSC applied the P* analysis to set the ABC.

2.2.1 ABC Options for MHI Kona Crab

2.2.1.1 Option 1: No Action – Do not set the ABCs

Under Option 1, the SSC would not set an ABC level for NMFS to specify for Hawaii Kona crab harvested in fishing years 2027–2030. This option would not comply with the Magnuson-Stevens Act (50 CFR 665.4) or the provisions of the Hawaii FEP, which require the Council to specify an ACL for all managed stocks and stock complexes in a fishery. In order to set the ACL, an ABC is required according to the control rules. Option 1 serves as the baseline for environmental effects analyses involving other options.

2.2.1.2 Option 2: Status Quo – Set ABC at 30,802 lb (equal to the 2023–2026 value)

Under Option 2, the SSC would set the ABC of 30,802 lb of MHI Kona crab for the 2027 to 2030 fishing year. Based on the probability of overfishing projections contained in the 2018 benchmark stock assessment, an ABC of 30,802 lb was associated with a 38 percent risk of overfishing through 2026. The stock assessment does not include catch projections and associated P* values beyond 2026, but this is the most relevant frame of reference available. As described above, based on the low level of recent catches and the estimated increase in stock biomass, we do not expect the risk of overfishing associated with this catch level is higher than 38 percent, and it provides a suitable buffer to prevent overfishing. This catch level and those that follow indicate reported commercial catch, following the results of the 2018 stock assessment. These catch projections account for estimated mortality of female crabs discarded due to State regulations. However in 2024, DAR amended its rules that allow the take of female crabs and have revised the annual no-take season to May through September.

Using this benchmark assessment information conforms with the National Standard 2 of the Magnuson-Stevens Act, which requires the use of the best scientific information available for management. This option also utilizes the information from the P* working group meeting that accounted for the scientific uncertainties following the specification process described in the Hawaii FEP.

This Option is more precautionary than the No action Option, which would not specify an ABC.

2.3 Current Task for the Council

Specifying Annual Catch Limits

The Council's previous recommendation covered to fishing year 2024–2026. At its 206th meeting, the Council will consider specifying the ACL for the next four-year ACL starting 2027 to 2030 for MHI Kona Crab. No new scientific information will be available in the foreseeable future. The ACL can be set equal or below the SSC recommended ABC. The Council's ACL

process is described in the FEPs, and includes methods by which the ACL may be reduced from the ABC based on social, economic, ecological and management uncertainty through a SEEM Analysis.

2.3.1 *ACL Options for MHI Kona Crab*

2.3.1.1 *Option 1: No Action – Do not set the ACL*

Under Option 1, Council would not specify an ACL for the MHI Kona crab fishery for fishing year 2024–2026. This Alternative would not be consistent with the Magnuson-Stevens Act requirements (50 CFR 665.4) or the provisions of the Hawaii FEP, which require NMFS to specify an ACL and AMs for all stocks and stock complexes.

2.3.1.2 *Option 2: [Status quo] Specify an ACL at 30,802 pounds and ACT at 25,491 pounds (equal to the 2023–2026 values)*

Under Option 2, Council would specify the ACL equal to ABC at a 30,802 lb, equal to a 38% risk of overfishing through 2026, and an ACT of 25,491 lb through 2026, equal to a risk of 20% risk of overfishing through 2026. The ACL and ACT would be in place for the 2027–2030 fishing years. Based on the probability of overfishing projections contained in the 2018 benchmark stock assessment of kona crab in the MHI (Kapur et al. 2019), and ACT of 25,491 pounds is associated with a 20% risk of overfishing through 2026, which is 10 percent lower than the 2019 P* and SEEM analysis. As described above, the stock assessment does not include catch projections and associated P* values beyond 2026, but this is the most relevant frame of reference available. As described above, based on the low level of recent catches and the estimated increase in stock biomass, we do not expect the risk of overfishing associated with the ACL and ACT is higher than 38 percent or 20 percent, respectively, and these management measures provide suitable buffers to prevent overfishing.

This Option is more precautionary than the No action Alternative, which would not specify an ACL, but it is less conservative than Option 3, which would specify an ACT of 28,324 pounds. The ACT under Option 3 is 2,833 pounds greater than the ACL under Option 2.

2.3.1.3 *Option 3: Specify an ACL at 30,802 pounds and ACT at 28,324 pounds (ACT higher than the 2023–2026 level)*

Under Option 3, Council would specify the ACL equal to ABC at a 38% risk of overfishing through 2026 with an associated catch limit of 30,802 pounds and set an ACT of 28,324 pounds of MHI Kona crab for the 2027–2030 fishing year. Based on the probability of overfishing projections contained in the 2018 benchmark stock assessment of kona crab in the MHI (Kapur et al. 2019), and ACT of 28,324 pounds is associated with a 30% risk of overfishing through 2026, which is 10 percent higher than the status quo alternative.

This Option is more precautionary than the No action Option, which would not specify an ACL, but it is less conservative than Option 2, which would specify an ACT of 25,491 pounds. The ACT under Option 3 is 2,833 pounds greater than the ACL under the Option 2.

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 on the target stocks and their surrounding environment.

Table 4. Summary of new information on impacts of various options described

New information on physical resources	There is no new information available. The action will not likely to have an adverse impact to the physical environment.
New information on biological resources	The 2018 benchmark stock assessment incorporated new information on post-release mortality for the main Hawaiian island Kona crab (Wiley and Pardee 2018). This study also indicated that the MHI Kona crab are able to regenerate broken limbs and are able to survive contrary to what was previously believed about this species. No new information is available on biological resources since the 2018 stock assessment.
• Target species	Since the implementation of the last ACL rule, the state regulation requiring the return of all female crabs was revised, so now “berried females” must be returned to the water, but other females who meet the minimum size requirement may be retained. Given the low levels of catch and buffers to guard against overfishing, this change in the fishery should not result in new impacts.
• Non-target species	The action will not likely change the conduct of the fishery in a way that would impact non-target species. The fishery utilizes loop net and targets mainly Kona crab. This fishery is a selective fishery and catch of non-target species is negligible (WPFMC 2025).
• Bycatch	There is insignificant bycatch in this fishery since only Kona crab gets tangled in the loop nets.
• Protected species	Existing consultations under the Endangered Species Act found that crustacean fisheries, including the MHI Kona crab fishery, are not likely to adversely affect any listed species or critical habitat.
• 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 and does not impact other species or ecosystem features
New information on socio-economic setting	No new socio-economic information aside from the updated fishing participation data from the Hawaii Annual SAFE Report
New information on management setting	In 2023, DAR amended HAR Chapter 13-95 that removed the prohibition of take of female Kona crab and revised

	closed season to May through September. Rules implemented in 2024. This change does not affect federal enforcement of fishery regulations.
• Marine Protected Areas	No new information and the action are not likely to adversely affect the management of MPAs. The fishery occurs outside the protected areas.
• EFH/HAPC	No new information.

4 References

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