Respecification of Acceptable Biological Catch and Annual Catch Limits in the Main Hawaiian Island Deep 7 Bottomfish Fishery for Fishing Year 2014-2015

Features Common to All Alternatives: The analysis is based on the 2011 Main Hawaiian Island Deep 7 Bottomfish Stock Assessment. The analysis also used the 2013-14 fishery data summarized by DAR for the economic impact analysis.

Rationale for Developing the Alternatives: At its 116th meeting, the SSC heard a presentation from the Pacific Island Fisheries Science Center on the draft 2014 Main Hawaiian Island Deep 7 Bottomfish stock assessment update. The SSC expressed some concerns about the CPUE standardization and the assumptions behind the screening of the commercial marine license to derive fishing skill. The SSC then recommended using the 2011 Main Hawaiian Island Deep 7 bottomfish stock assessment as the basis for setting the Acceptable Biological Catch for fishing year 2014-2015. The Western Pacific Stock Assessment Review policy states that application of new methodologies to the Pacific Island Region, as well as routine assessment updates fall under Tier 2 and are reviewed by a WPSAR independent expert panel. The draft 2014 assessment will undergo a stock assessment review prior to being finalized for management use.

Table 1: Alternative ACLs and Associated Probabilities of Overfishing

Alternative	**ABC/ACL for MHI Deep 7 Stock complex (lb)**	**Probability of overfishing MHI Deep 7 complex (%)**		**Compliance**				
		2011 Stock Assessment[1]	*2014 Draft Stock Assessment*[2]	*MSRA*	*NS1*	*NS2*	*NEPA*	*FEP*
Alternative 1 (No Action)	No ABC/ACL	n.a.	n.a					
Alternative 2 **(Preliminary preferred)**	346,000	41 $\surd_{ssc}$	55 $\surd_{pir}$	$\surd$	$\surd_{ssc}$ X_{pir}	$\surd_{ssc}$ X_{pir}	$\surd_{ssc}$ X_{pir}	$\surd_{ssc}$ X_{pir}
Alternative 3	319,000	35	≈52	$\surd$	$\surd_{ssc}$ X_{pir}	$\surd_{ssc}$ X_{pir}	$\surd_{ssc}$ X_{pir}	$\surd_{ssc}$ X_{pir}
Alternative 4	299,000	30	≈48	$\surd$	$\surd$	$\surd$	$\surd$	$\surd$
Alternative 5	277,000	25	≈44	$\surd$	$\surd$	$\surd$	$\surd$	$\surd$
Alternative 6	265,000	22	≈41	$\surd_{pir}$	$\surd_{pir}$	$\surd_{pir}$	$\surd_{pir}$	$\surd_{pir}$

[1] Source: Brodziak et al. (2011)

[2] Source: NMFS unpublished data

Legends: ($\surd$) – compliance from both parties; ($\surd_{ssc}$) – compliance from ssc's perspective; (X_{pir}) – noncompliance from PIRO's perspective; ($\surd_{pir}$) – result of the pre-emption

Alternative 1: No Action - Do Not specify an ACL or AM

Under Alternative 1 (No Action), Council would not specify an ACL or AM. This alternative would not comply with National Standard 1 of the Magnuson-Stevens Act, or the Hawaii FEP implementing regulations at 50 CFR 665.4 (76 FR 37285, June 27, 2011), and is therefore, not a viable alternative.

Alternative 2: Specify an ACL of 346,000 lb as Recommended by the Council (Preferred)

Alternative 2 is the preferred alternative. The Council, at its 160th meeting specified an ACL of 346,000 lb for the 2014-15 fishing year. This ACL is equal to the SSC's recommended ABC. It is the same ACL that NMFS specified for the past three fishing years (2011-12, 2012-13, and 2013-14). Based on catch projections presented in Brodziak et al. (2011), this level of catch is associated with a 41 percent probability of overfishing (P* of 41%). This is more conservative than the 50 percent risk threshold allowed for under NMFS National Standard 1 advisory guidelines for optimum yield (74 FR 3178, January 16, 2009). The reader is referred to the July 2011 EA for details on the development of Alternative 2. Based on the information provided in the draft 2014 stock assessment update, this level of catch would exceed the draft revised OFL of 316,000 lb, and would be associated with up to a 55 percent probability of overfishing until a new stock assessment is completed.

Under this alternative, based on the fishery performance in 2013-14 where the average price per pound is $6.67, the revenue that will be generated is approximately $2,007,803. The average annual revenue per fisher (@ 343 fishermen reporting their landings) is approximately $5,854.

Alternative 3: Specify an ACL of 319,000 lb

The Council developed this alternative based on catch projections presented in Brodziak et al. (2011), this level of catch is associated with a 35 percent probability of overfishing (P* of 35%). This is more conservative than Alternative 2 and the 50 percent risk threshold allowed for under NMFS National Standard 1 advisory guidelines for optimum yield (74 FR 3178, January 16, 2009). There is a need to lower the P* value related to the scientific uncertainty due to the large difference in the catch levels associated with the different level of risk between the 2011 stock assessment and the draft 2014 stock assessment. At this level of catch, the probability of overfishing was reduced by 6% from status quo.

Based on the fishery performance from the last fishing year (2013-14), this level of catch is sufficient to keep the fishery open for the whole year. The total landing of deep 7 bottomfish was 309,485 lb of which 87% were sold. The total revenue expected at this ACL level is approximately $1,851,125. This revenue is 7.8% lower compared to the preferred alternative. The average annual revenue per fisher per year is approximately $5,397.

Based on the information provided in the draft 2014 stock assessment update, this level of catch would exceed the draft revised OFL of 316,000 lb by 3,000 lb, and would be associated with up to approximately 51 percent probability of overfishing until a new stock assessment is completed.

Alternative 4: Specify an ACL of 299,000 lb

Council developed Alternative 4, based on the 2011 stock assessment (Brodziak et al. 2011). Based on the catch projections presented in Brodziak et al. (2011), 299,000 lb of catch is associated with a 30 percent probability of overfishing (P* of 30%). The justification for the lowering of the P* values was to find an alternative that would add buffer in the scientific uncertainty due to the large difference in the projected catches between the 2011 stock assessment and the draft 2014 stock assessment. At this level of catch, the probability of overfishing was further reduced by 11% from status quo.

Based on the fishery performance from the previous fishing year, this level of catch would have closed the fishery for several weeks. It would have resulted in an overage of 10,485 lbs. Historically, this level of catch would have resulted in 1 fishery closure event (2013-2014). Since the bottomfish fishery has near-real-time reporting, it is projected that the closure period would last for 6 days prior to reaching the 299,000 lb limit.

Under this alternative, the total potential revenue to be generated if the ACL is reached is approximately $1,735,067. This revenue is 13.6% lower compared to the preferred alternative. The average annual revenue per fisher is approximately $5,059. If the ACL has been reached and the fishery closure is in effect, this would result in a potential fleet wide loss of $272,736 on average. The average individual fisher loss was estimated to be at $795.

Under this alternative, Council assumes that had the SSC used the draft 2014 stock assessment for setting the 2014-15 ABC, it might have considered a 47 percent probability of overfishing (P* of 47%). This alternative implicitly assumes that there are still scientific uncertainties in the draft 2014 assessment (particularly the complex grouping) despite the improvements in the CPUE standardization. This also implicitly assumes that there is a large scientific uncertainty comparing between the 2011 stock assessment and the draft 2014 stock assessment. These scientific uncertainties between assessments cannot be resolved until the independent review has been completed.

This level of catch is below the OFL of 316,000 lb. To be consistent with previous specification, the Council can set the ACL equal to ABC since there is no significant change in the management system hence no change in the management uncertainties. Thus OFL > ABC = ACL.

Alternative 5: Specify an ACL of 277,000 lb

Council developed Alternative 5 based on catch projections presented in Brodziak et al. (2011), this level of catch is associated with 25 percent probability of overfishing (P* of 25%). At this

level of catch, this adds a significant amount of buffer to status quo by 16%. Based on the fishery performance in the previous fishing year, this level would have closed the fishery between April and May resulting in a 133-day fishery closure. Historically, this level would have resulted in 3 fishery closure events (2008-2009; 2010-2011; and 2013-2014).

Under this alternative, Council assumes that, had the SSC used the draft 2014 stock assessment for setting the 2014-15 ABC, the fishery will operate at approximately 43 percent probability of overfishing. This is 3% higher than the P* percentile the SSC applied in setting the ABC upon which the proposed ACL described in Alternative 2 is based.

Under this alternative, the Council estimates total revenue of $1,607,403. This revenue is 19.9% lower compared to the preferred alternative. The average annual revenue per fisher is estimated at $4,686. Should the fishery close, this would translate to a potential fleet loss of $400,400 and an individual fisher loss of $1,167 on average.

Alternative 6: Specify an ACL of 265,000 lb

Council developed Alternative 6 based on catch projections presented in Brodziak et al. (2011), this level of catch is associated with approximately 22 percent probability of overfishing. This alternative is the most conservative with a 19% reduction from the preferred alternative/status quo. At this level of catch, it would have closed the fishery between March and April based on the performance from the previous fishing year. This would result in 154-day closure in the fishery. Historically, this level would have resulted in 3 fishery closure events (2008-2009; 2010-2011; and 2013-2014).

Under this alternative, the Council estimates total revenue of $1,537,769. This revenue is 23.4% lower compared to the preferred alternative. The average annual fisher revenue is estimated at $4,483. Should the fishery close, this would translate to a potential fleet loss of $470,035 and an individual fisher loss of $1,370 on average.

Under this alternative, Council assumes that, had the SSC used the draft 2014 stock assessment for setting the 2014-15 ABC, it might have considered an ABC of 266,000 lb as this is the level of catch associated with a 41 percent probability of overfishing. This is also the same P* percentile the SSC applied in setting the ABC upon which the proposed ACL described in Alternative 2 is based. Based on this assumption, Council would set ACL equal to ABC. Assuming NMFS completes the independent review of the draft 2014 stock assessment and finalizes the assessment without changes, this level of catch would be associated with a 41 percent probability of overfishing until a new stock assessment is completed. If there will be a secretarial action, this catch level would be the most likely pre-emption level to which the ACL will be set.

Table 1. Summary of the various alternatives for specifying ACL for the MHI deep 7 bottomfish showing the probability of overfishing between the 2011 stock assessment and the draft 2014 stock assessment.

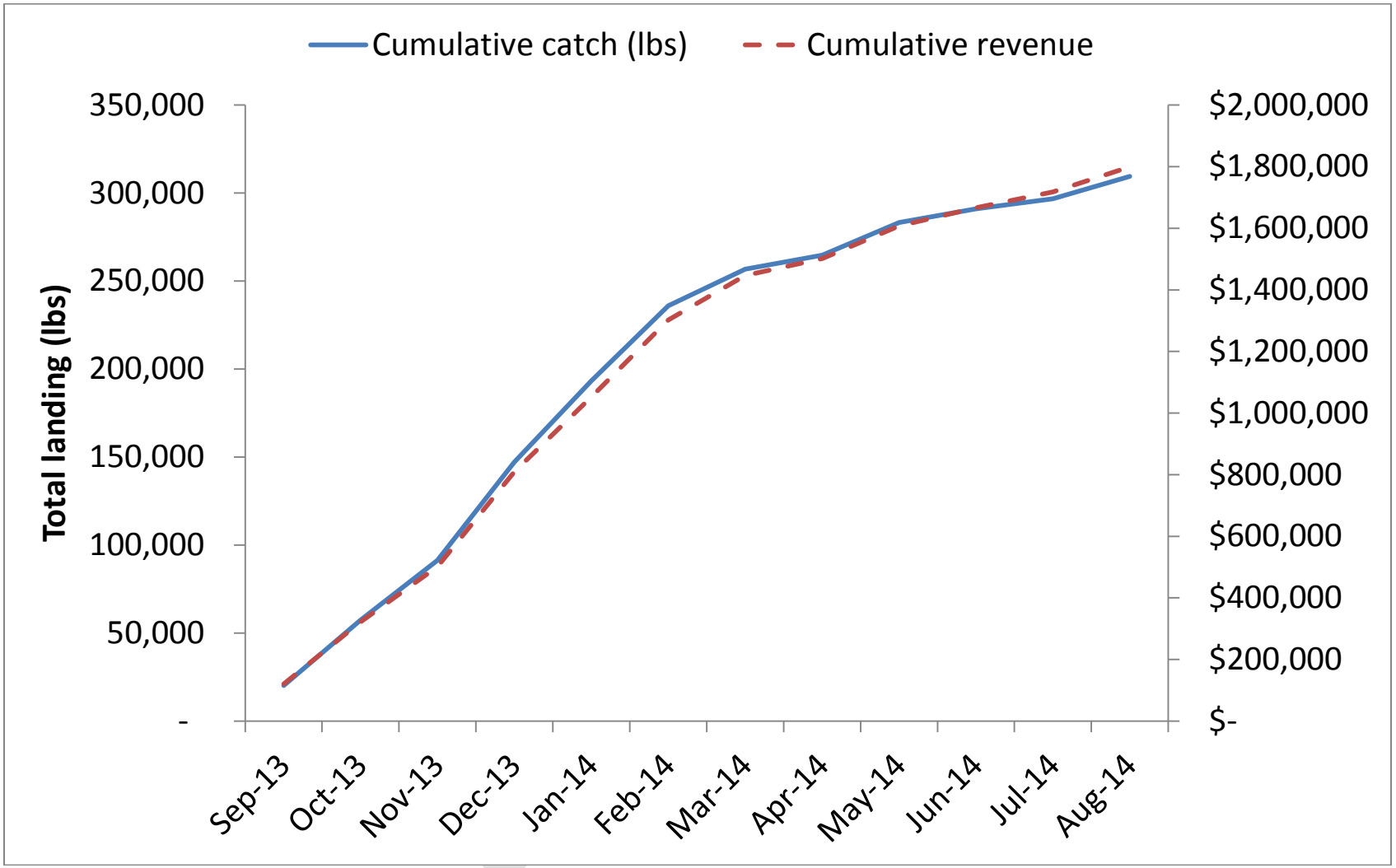
Alternative	ACL for MHI Deep 7 Bottomfish (lbs)	Probability of Overfishing in 2012 (%) from the 2011 Stock Assessment	Probability of Overfishing in 2015 (%) from the 2014 Draft Stock Assessment* *Based on an estimated 2014 catch of 276,000 lbs.
Alternative 1 (No Action)	No ACL	n.a.	n.a.
Alternative 2 (Preliminary Preferred)	346,000	41	55
Alternative 3	337,270	39	54
	334,800	38	53
	330,140	37	52
	324,130	36	52
	319,000	35	51
Alternative 4 (Expected ABC/ACL)	316,200	34	50
	311,850	33	50
	307,960	32	49
	303,400	31	48
	299,000	30	47
Alternative 5	295,000	29	47
	291,000	28	46
	287,000	27	45
	283,000	26	44
	277,000	25	43
Alternative 6	273,000	24	42
	269,000	23	42
	265,000	22	41
	259,000	21	40
	255,000	20	39

Table 2 Summary of the economic impacts of the different alternatives.

Month-Year	Catch (lbs)	Cumulative catch (lbs)	Lbs sold	%sold	Revenue	Cumulative revenue	No. fishers	Revenue per fisher	No. days
Sep-13	20,155	20,155	18,789	93	$ 120,695	$ 120,695	99	$ 1,219	30
Oct-13	37,173	57,328	32,246	87	$ 201,275	$ 321,970	57	$ 3,531	31
Nov-13	34,012	91,340	30,040	88	$ 178,990	$ 500,960	93	$ 1,925	30
Dec-13	55,813	147,153	47,015	84	$ 308,534	$ 809,494	43	$ 7,175	31
Jan-14	46,114	193,267	36,827	80	$ 242,595	$ 1,052,089	33	$ 7,351	31
Feb-14	42,643	235,910	36,212	85	$ 249,735	$ 1,301,824	106	$ 2,356	28
Mar-14	20,793	256,703	20,647	99	$ 144,805	$ 1,446,629	146	$ 992	31
Apr-14	8,001	264,704	7,623	95	$ 55,174	$ 1,501,803	132	$ 418	30
May-14	18,575	283,279	15,510	83	$ 105,400	$ 1,607,203	171	$ 616	31
Jun-14	7,721	291,000	8,125	105	$ 59,490	$ 1,666,693	147	$ 405	30
Jul-14	5,670	296,670	6,283	111	$ 50,999	$ 1,717,692	135	$ 378	31
Aug-14	12,815	309,485	10,255	80	$ 10,255	$ 1,798,713	57	$ 180	31
AVERAGE	25,790		22,464	91	$ 143,996		128	$ 2,212	
TOTAL	309,485		269,572	87	$/lb =	$ 6.67	343		

ACL options	%sold	Ave. price/lb	Total revenue	Ave. ann. revenue per fisher	Days w/in mo	Days closure	Ave. fleet loss	Ave. fisher loss
346,000	301,020	$ 6.67	$2,007,803	$ 5,854				
319,000	277,530	$ 6.67	$1,851,125	$ 5,397				
299,000	260,130	$ 6.67	$1,735,067	$ 5,059	25	6	$ 272,736	$ 795
277,000	240,990	$ 6.67	$1,607,403	$ 4,686	10	133	$ 400,400	$ 1,167
265,000	230,550	$ 6.67	$1,537,769	$ 4,483	31	154	$ 470,035	$ 1,370

Figure 1.


Cumulative catch (lbs)
Cumulative revenue
Total landing (lbs)
350,000
300,000
250,000
200,000
150,000
100,000
50,000
-
$2,000,000
$1,800,000
$1,600,000
$1,400,000
$1,200,000
$1,000,000
$800,000
$600,000
$400,000
$200,000
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Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14