

15. Assessment of the shortraker rockfish stock in the Eastern Bering Sea and Aleutian Islands

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**Introduction**

In 2005, Bering Sea/Aleutian Islands (BSAI) rockfish were moved to a biennial assessment schedule to coincide with the frequency of trawl surveys in the Aleutian Islands (AI) and the eastern Bering Sea (EBS) slope. These surveys occur in even years, and for these years a full assessment of shortraker rockfish in the BSAI area will be conducted. The shortraker assessment is conducted with Tier 5 methods. In 2012, a surplus production model was applied to a time series of survey biomass estimates to obtain the current estimated biomass. The 2012 full assessment can be found at <http://www.afsc.noaa.gov/REFM/docs/2012/BSAIshortraker.pdf>. An exploitation rate is then applied to the estimated current biomass to obtain the ABC and OFL.

**Updated ABC, OFL, and Catch**

The BSAI catch of shortraker rockfish in 2012 was 339 t, with 226 t in the AI and 114 t in the EBS. The 2013 catch of shortraker rockfish, through October 20, was 380 t, with 262 t in the AI and 118 t in the EBS.

Because neither the time series of survey biomass estimates nor the proxy values for  $F_{abc}$  and  $F_{ofl}$  have changed since 2012, the estimated ABC and OFL values for 2014 and 2015 in this update are identical to the values for 2013 and 2014 produced in the 2012 assessment. Stock size, harvest, and fishing rate reference values are shown in the following table:

<b>Quantity</b>	As estimated or <i>specified last year for:</i>		As estimated or <i>recommended this year for:</i>	
	2013	2014	2014	2015
$M$ (natural mortality rate)	0.03	0.03	0.03	0.03
Tier	5	5	5	5
Biomass (t)	16,447	16,447	16,447	16,447
$F_{OFL}$	0.03	0.03	0.03	0.03
$maxF_{ABC}$	0.0225	0.0225	0.0225	0.0225
$F_{ABC}$	0.0225	0.0225	0.0225	0.0225
OFL (t)	493	493	493	493
maxABC (t)	370	370	370	370
ABC (t)	370	370	370	370
<b>Status</b>	As determined <i>last year for</i>		As determined <i>this year for</i>	
	2011	2012	2012	2013
Overfishing	No	n/a	No	n/a

## Data Gaps and Research Priorities

Little information is known regarding most aspects of the biology of shortraker rockfish, particularly in the Aleutian Islands. In particular, little is known regarding the distribution, duration, and habitat requirements of the various life-history stages of shortraker rockfish. Validating aging techniques of shortraker rockfish, and obtaining ages from archived samples remains a research priority.

Rockfish species appear to be generally sedentary, with limited lifetime dispersal distances. Most studies on rockfish population structure have demonstrated some level of structuring. A study on the genetic population structure of shortraker rockfish in the BSAI would provide information on whether area-specific apportionment is advised.

The authors feel that the random walk time series model should be explored to potentially replace the surplus production model that was used in the 2012 assessment. Estimation of several parameters for the surplus production model proved problematic, whereas the random walk model incorporates does not require estimation of complex parameters. The 2013 biomass estimate based on the random effect model specified by the plan team is 16,929.8 t (95% CI: 11,819.1, 24,250.3), in which process errors are estimated as random effects.

## Summary table for the Plan Team

Year	Biomass	OFL	ABC	TAC	Catch
2012	17,452	524	393	393	339
2013	16,447	493	370	370	420 <sup>2</sup>
2014	16,447	493	370		
2015	16,447	493	370		

<sup>2</sup> Catch as of November 4, 2013.

Catch by area, with totals as of November 4, 2013.

Year	WAI	CAI	EAI	EBS	Total
1994	2	84	91	46	223
1995	7	44	113	49	213
1996	33	48	63	87	231
1997	47	14	29	36	126
1998	27	100	32	52	211
1999	23	63	43	66	195
2000	20	85	95	130	330
2001	58	87	27	57	229
2002	78	62	66	93	299
2003	30	65	37	107	239
2004	32	76	15	119	242
2005	27	17	18	108	170
2006	39	103	23	48	213

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2007	23	145	43	113	324
2008	42	45	23	60	170
2009	32	46	44	83	205
2010	49	41	52	181	323
2011	162	40	29	103	334
2012	168	32	28	120	348
2013	172	73	48	127	420

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