20. Assessment of the Shark stock complex in the Bering Sea and Aleutian Islands (Executive Summary)

Cindy A. Tribuzio, Cara Rodgveller, Katy Echave, Peter Hulson
November 2015

Executive Summary

The shark complex (Pacific sleeper shark, spiny dogfish, salmon shark and other/unidentified sharks) in the Bering Sea and Aleutian Islands (BSAI) is assessed on a biennial stock assessment schedule in even years to coincide with RACE Eastern Bering Sea trawl surveys. BSAI sharks are a Tier 6 complex with the OFL based on maximum historical catch between the years 1997 – 2007 (ABC is 75% of OFL). For this off-year summary, we have updated the time series of catch through Oct 1, 2015 to reflect any changes that might have occurred in the Catch Accounting System (for the years 2003 – 2015). The estimates for 1997 – 2002 were determined by simulating the catch estimation algorithm used for target species in what was formerly called their "blend catch estimation system" and so updated data for those years are not available in CAS (Gaichas 2002 and 2003). There were no changes in catch estimates from 2003 – 2007, thus there were no changes to the proposed ABC/OFL from 2014. For further information regarding the assessment, please refer to last year's full stock assessment, which is available online (Tribuzio et al. 2014, http://www.afsc.noaa.gov/REFM/Docs/2014/BSAIshark.pdf). A full stock assessment document with updated survey and catch estimates will be presented in next year's SAFE report.

Summary of changes in Assessment Inputs

Changes in the input data: There were no changes made to the assessment inputs since this was an off-cycle year.

Changes in assessment methodology: There were no changes in assessment methodology.

Summary of Results

For 2015 we recommend the maximum allowable ABC of 1,022 t and an OFL of 1,363 t for the shark complex. Catch in 2014 was 137 t and in 2015 was 145 t (as of October 28, 2015). The stock complex was not subject to overfishing last year, and data do not exist to determine if the species in the complex are overfished. In 2014 the TAC was exceeded (catch was 137 t and TAC was 125 t). The 2014 catch was primarily Pacific sleeper shark (63 t) and salmon shark (52 t). The 2015 TAC has been exceeded by 20 t as of October 28, 2015. The 2015 catch is comprised primarily of salmon shark (90 t) and Pacific sleeper shark (47 t) (as of October 28, 2015). Salmon shark generally occur in a small number of hauls (only 26 observed hauls in 2015 as of October 28, 2015), and thus catch estimates are heavily influenced by each observed haul. In the case of 2015, there is one haul with a significantly higher than average discard rate for salmon shark that is possibly contributing to the large estimate of catch. This scenario is less likely a factor for Pacific sleeper shark, which occur in a larger number of observed hauls (185 hauls in 2015 as of October 28, 2015)

Shark Complex Quantity	As estimated or *specified last* year for: 2015	2016	As estimated or *recommended this* year for: 2016	2017
Tier	6	6	6	6
OFL (t)	1,363	1,363	**1,363**	1,363
maxABC (t)	1,022	1,022	1,022	1,022
ABC (t)	1,022	1,022	**1,022**	1,022
	As determined *last* year for:		As determined *this* year for:	
Status	2013	2014	2014	2015
Overfishing	No	n/a	No	n/a

Summaries for Plan Team

Species	Year	Biomass[1]	OFL	ABC	TAC	Catch[2]
Shark Complex	2014	Unknown	1,363	1,020	125	137
	2015	Unknown	1,363	1,020	125	145
	2016		1,363	1,020		
	2017		1,363	1,020		

[1]Swept area biomass estimates are calculated for the BSAI surveys, but are not reliable for the shark species. They are not used for ABC/OFL calculations and are not included here.
[2]Catch as of Oct 1, 2015

SSC and Plan Team Comments on Assessments in General

SSC and Plan Team Comments Specific to this Assessment

"*The Team recommends that both the reference period and OFL/ABC levels be re-evaluated after a few years of data from the restructured Observer Program have accumulated.*" (Plan Team November 2014)

"*BSAI sharks have been managed in Tier 6 based on estimates of maximum catch in 1997-2007. The SSC discussed the possibility of moving to average catch due to SSC, Plan Team, and CIE concerns over declining survey and fishery catches for Pacific sleeper shark. Despite concerns, the SSC recommended keeping the Tier 6 calculation based on maximum catch and to re-evaluate options at the next full assessment (2016), after similar options are explored by the authors for GOA sharks in 2015.*" (SSC December 2014)

"*When sufficient data are available, the SSC looks forward to an evaluation of a comparison of CAS and HFICE estimates, as well as an exploration of adjustments to the historical catch time series.*" (SSC December 2014)

Responses to Comments and Research Priorities

Responses to the previously listed SSC, Plan Team and CIE Comments will be provided in next year's full stock assessment report. To address several of these comments, we plan to continue studies to investigate stock structure of Pacific sleeper sharks and further investigate methods for assessing size and maturity for sharks caught in both survey and commercial fishing operations.

Literature Cited

Gaichas, S. 2002. Squid and other species in the Bering Sea and Aleutian Islands. *In*: Stock assessment and fishery evaluation report for the groundfish resources of the Bering Sea/Aleutian Islands

region, November 2002, p. 669-699. North Pacific Fishery Management Council, 605 W. 4th Ave., Suite 306, Anchorage AK 99501.

Gaichas, S. 2003. Squid and other species in the Bering Sea and Aleutian Islands. *In*: Stock assessment and fishery evaluation report for the groundfish resources of the Bering Sea/Aleutian Islands region, November 2003, p. 777-808. North Pacific Fishery Management Council, 605 W. 4th Ave., Suite 306, Anchorage AK 99501.

Tribuzio, C.A., K.B. Echave, C. Rodgveller, and P. Hulson. 2014. Assessment of the Shark Stock Complex in the Bering Sea and Aleutian Islands. *In* Stock assessment and fishery evaluation report for the groundfish resources of the Bering Sea and Aleutian Islands for 2012. North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306, Anchorage, AK 99501. Pgs. 1825 – 1884.

(This page intentionally left blank)