Chapter 1A: Assessment of the pollock stock in the Aleutian Islands

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Executive Summary

The Aleutian Islands (AI) pollock stock assessment is on a biennial cycle with full assessments in even years timed with the Aleutian Islands bottom trawl survey, and partial assessments in odd years. For AI pollock in partial assessment years, we present an executive summary to recommend harvest levels for the next two years. A full assessment was conducted in 2020 and can be found at (https://apps-afsc.fisheries.noaa.gov/refm/docs/2020/AIpollock.pdf). A full stock assessment document with updated assessment and projection model results will be presented in next year's SAFE report.

The AI pollock assessment consists of a population model, which uses survey and fishery data to generate a historical time series of population estimates, and a projection model, which uses results from the population model to predict future population estimates and recommended harvest levels. The Aleutian Islands walleye pollock stock assessment uses the Assessment Model for Alaska (here referred to as AMAK). AMAK is a variation of the "Stock Assessment Toolbox" model presented to the Plan Team in the 2002 Atka mackerel stock assessment (Lowe *et al.* 2002). The data sets used in this assessment include total catch biomass, fishery age compositions, AI bottom trawl survey abundance estimates, and AI bottom trawl survey age compositions. For a partial assessment year, we do not re-run the assessment model, but do update the projection model with new catch data. This incorporates the most current catch information without re-estimating model parameters and biological reference points. The stock remains at tier 3b.

Summary of Changes in Assessment Inputs

Changes in the input data: There were no changes made to the assessment model inputs since this was an off-cycle year. New data added to the projection model included an updated 2020 catch estimate (3,205 t) and new catch estimates for 2021. The 2021 catch was estimated by increasing the official catch as of September 28, 2021, by an expansion factor of 9.5%, which represents the average fraction of catch taken after September 28 in the last three complete years (2018-2020). The 2022 catch was set at the 3 year average for 2018-2020 of 2,243 t.

Changes in the assessment methodology: There were no changes in assessment methodology since this was an off-cycle year.

Summary of Results

For the 2022 fishery, we recommend the maximum allowable ABC of 50,752 t from the updated projection model. This ABC is down slightly from the 2021 ABC of 51,241 t and nearly the same as last year's projected 2022 ABC of 50,789 t. Reference values for AI pollock are summarized in the following table, with the recommended ABC and OFL values for 2022.

Quantity	As estimated or *specified last* year for: 2021	2022	As estimated or *recommended this* year for: 2022	2023*
M (natural mortality r**a**te)	0.21		0.21	
Tier	3a		3a	
Total (age 1+) biomass (t*)*	292,967	308,671	308,525	330,375
Female spawning biomass (t)				
Projected	89,906	85,785	89,516	87,650
$B_{100\%}$	185,475		185,475	
$B_{40\%}$	74,190		74,190	
$B_{35\%}$	64,916		64,916	
F_{OFL}**	0.390	0.390	0.390	0.390
$maxF_{ABC}$	0.313	0.313	0.313	0.313
F_{ABC}	0.313	0.313	0.313	0.313
OFL (t)	61,856	61,308	61,264	61,379
maxABC (t)	51,241	50,789	50,752	50,825
ABC (t)	51,241	50,789	50,752	50,825
	As determined *this* year for:		As determined *this* year for:	
Status	2019	2020	2020	2021
Overfishing	no	no	no	n/a
Overfished	n/a	n/a	n/a	no
Approaching overfished	n/a	n/a	n/a	no

* Projection based on estimated catches of 1,656 t for 2021 and 2,243 t for 2022, the three-year average (2018-2020), used in place of maximum permissible ABC .

** Long-term equilibrium F_{OFL} and F_{ABC} were 0.390 and 0.313, respectively.

The stock is not being subject to overfishing, is not currently overfished, nor is it approaching a condition of being overfished. The tests for evaluating these three statements on status determination require examining the official total catch from the most recent complete year and the current model projections of spawning biomass relative to $B_{35\%}$ for 2021 and 2022. The official total catch for 2020 is 3,205 t which is a small fraction of the 2020 OFL of 66,973 t; therefore, the stock is not being subjected to overfishing. The estimates of spawning biomass for 2021 and 2022 from last year's assessment model (Barbeaux et al. 2020) and the current year (2021) projection model are 89,906 t and 85,785 t, respectively. The 2021 estimate from the current year projection is above $B_{35\%}$ at 64,916 t and the 2022 estimate is above ½ $B_{35\%}$ and the stock is expected to be above $B_{35\%}$ in 2033 under projection Scenario 7, therefore, the stock is not currently overfished nor approaching an overfished condition.

Fishery Trends

Updated catch data (t) for AI pollock as of September 28, 2021 (NMFS Alaska Regional Office Catch Accounting System via the Alaska Fisheries Information Network (AKFIN) database, http://www.akfin.org) are summarized in the following table.

Year	Eastern 541	Central 542	Western 543	Aleutians Total	Aleutians ABC	Aleutians TAC
2020	2,166	674	365	3,205	55,120	19,000
2021[1]	1,021	265	226	1,512	51,241	19,000

[1]Current as of September 28, 2021. Source: NMFS Alaska Regional Office Catch Accounting System via the AKFIN database (http://www.akfin.org).

Although open to fishing, there continues to be very little directed fishing for pollock in the Aleutian Islands. In 2020 there was a total of 712 t of pollock landed from pollock targeted fisheries and in 2021 there was a total of 0 t of pollock landed in targeted fisheries. In 2020 an EFP for a directed pollock fishery was approved and conducted which accounts for the slight increase in catch in that year.

Summaries for Plan Team

Species	Year	Biomass[1]	OFL	ABC	TAC	Catch[2]
AI pollock	2020	340,680	66,973	55,120	19,000	3,205
	2021	292,967	61,856	51,241	19,000	1,695
	2022	308,525	61,263	50,752	19,000	
	2023	330,375	61,379	50,824	19,000	

[1]Total biomass (ages 1+) from the age-structured model

[2]Current as of November 16, 2021. Source: NMFS Alaska Regional Office Catch Accounting System via the AKFIN database (http://www.akfin.org).

Responses to SSC and Plan Team Comments on Assessments in General

No applicable comments.

Responses to SSC and Plan Team Comments Specific to this Assessment

No applicable comments.

Figures

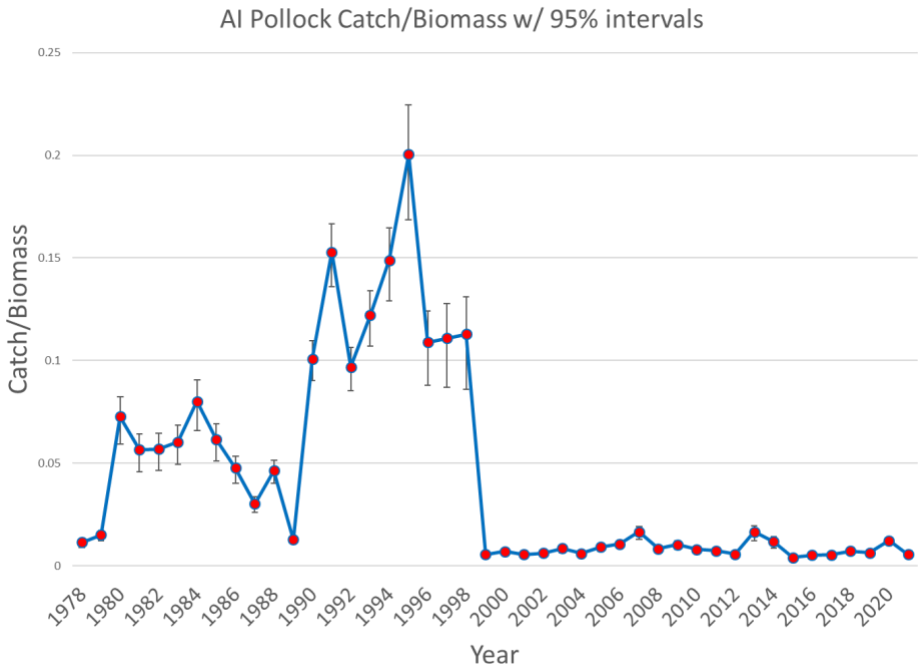

Figure A1:1. Modeled catch over total biomass (point estimates in red circles) with 95% sampling error confidence intervals for AI pollock from 1978-2021.