10. Assessment of the Alaska plaice stock in the Bering Sea/Aleutian Islands

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Executive Summary

Starting in 2014, it was proposed that the Alaska plaice stock assessment was a candidate for full stock assessments in even years on a biennial basis in the Bering Sea/Aleutian Islands region. For 2015 an executive summary is prepared to provide management quantities and recommendations for the 2016 fishing season, even though a full Bering Sea shelf survey was conducted. Alaska plaice are managed as a Tier 3 stock using a statistical age-structured model as the primary assessment tool. Details of the model and the last full stock assessment can be found at http://www.afsc.noaa.gov/REFM/docs/2014/BSAIplaice.pdf. The assessment model is not re-run for this update but instead, a projection model is run with updated catch information. This projection model run incorporates the most recent catch and provides estimates of 2016 and 2017 ABC and OFL without re-estimating the stock assessment model parameters or biological reference points. A full stock assessment document with updated assessment results is planned for the 2016 SAFE report.

Summary of changes in assessment input

Changes in the input data: New input data for the projection model included updating the 2014 and 2015 catch and estimating the 2016 and 2017 catch. The 2015 catch was 12,471 t as of the week of September 15. This value was rounded-up to 13,000 t to estimate the 2015 total since flatfish fishing was still ongoing at that time. For 2016, the average catch from the 5 year period 2011-2015 was used to estimate the 2016 total catch at 16,250 t.

For the 2016 fishery, the authors recommend the maximum allowable ABC of 41,000 t from the updated projection model. This value is a decrease of 14% from the 2015 ABC of 44,100 t and similar to the projected value of 42,900 t for 2016 derived from last year's full stock assessment.

Reference values for Alaska plaice are summarized in the following table, with the recommended 2016 values in bold. The stock was not being subjected to overfishing last year, is currently not overfished, nor is it approaching a condition of being overfished.

Summary of Results

Quantity	As estimated or *specified last* year for: 2015	2016	As estimated or *recommended this* year for: 2016	2017
M (natural mortality rate)	0.13	0.13	0.13	0.13

Tier	3a	3a	3a	3a
Projected total (3+) biomass (t)	471,500	462,600	468,100	465,400
Female spawning biomass (t)	215,300	201,300	204,600	193,600
$B_{100\%}$	355,250		345,100	
$B_{40\%}$	142,100		138,100	
$B_{35\%}$	124,300		120,800	
F_{OFL}	0.175	0.175	0.175	0.175
$maxF_{ABC}$	0.143	0.143	0.143	0.143
F_{ABC}	0.143	0.143	0.143	0.143
OFL (t)	54,000	51,600	49,000	46,800
maxABC (t)	44,900	42,900	41,000	39,100
Status	As determined *last* year for: 2013	2014	As determined *this* year for: 2014	2015
Overfishing	no	n/a	No	n/a
Overfished	n/a	no	n/a	no
Approaching overfished	n/a	no	n/a	no

SSC and Plan Team Comments on Assessments in General.

The SSC requests that stock assessment authors utilize the following model naming conventions in SAFE chapters:

Model 0: last years' model with no new data,
Model 1: last years' model with updated data, and
Model numbers higher than 1 are for proposed new models.

The SSC also requests that stock assessment authors utilize the random effects model for area apportionment of ABCs.

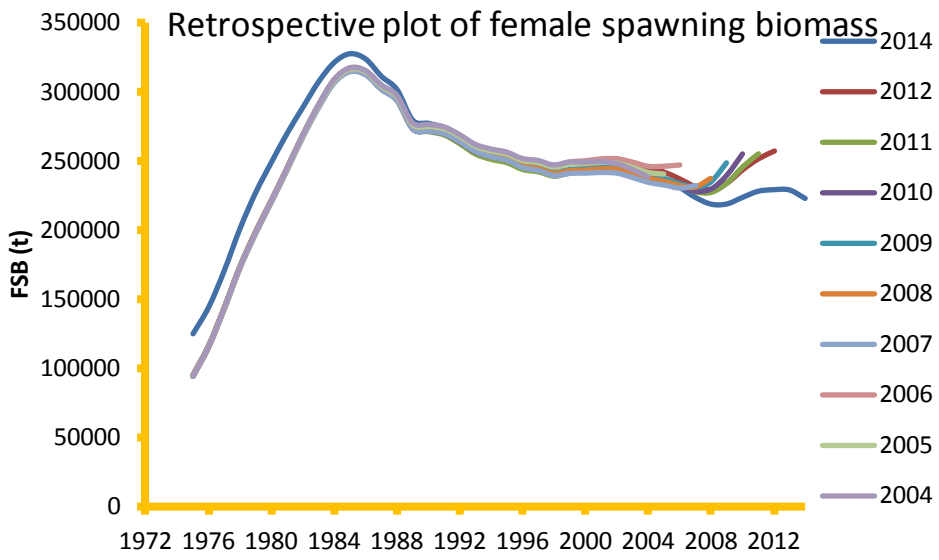
The assessment authors acknowledge these comments (not applicable to this "off-cycle" assessment) and will address them in the next full assessment.

SSC and Plan Team comments Specific to this Assessment.

The SSC appreciated the responsiveness of the authors to the SSC's request for updating maturity with more recent data and including a new maturity schedule based on 2012 data. As recommended for BSAI yellowfin sole, the SSC recommends testing for differences in maturity curves and pooling all maturity data for the next assessment if no significant differences are found.

The Team recommends that retrospective analyses be conducted for the next assessment.

The authors agree to test and consider pooling maturity curves in the next full assessment. Retrospective plots were shown in the last assessment (Fig. 10-20) but were not analyzed as to the desirability of the pattern. Initial review is that they do not contain a bias.



2015 Survey results and new information since 2014

The 2015 Bering Sea shelf survey biomass estimate for Alaska plaice was 355,640 t, a 21% decrease from the 2014 biomass point estimate (Figure 1) and the lowest point-estimate for the survey time-series since 1982. The Alaska plaice resource is still at a high and stable level and remains lightly harvest as the exploitation level was estimated at less than 3% for 2014. The projection model predicts that fishing at the current 5-year average fishing mortality rate will not result in a significant change in stock size, and the stock will remain above estimated $B_{40\%}$.

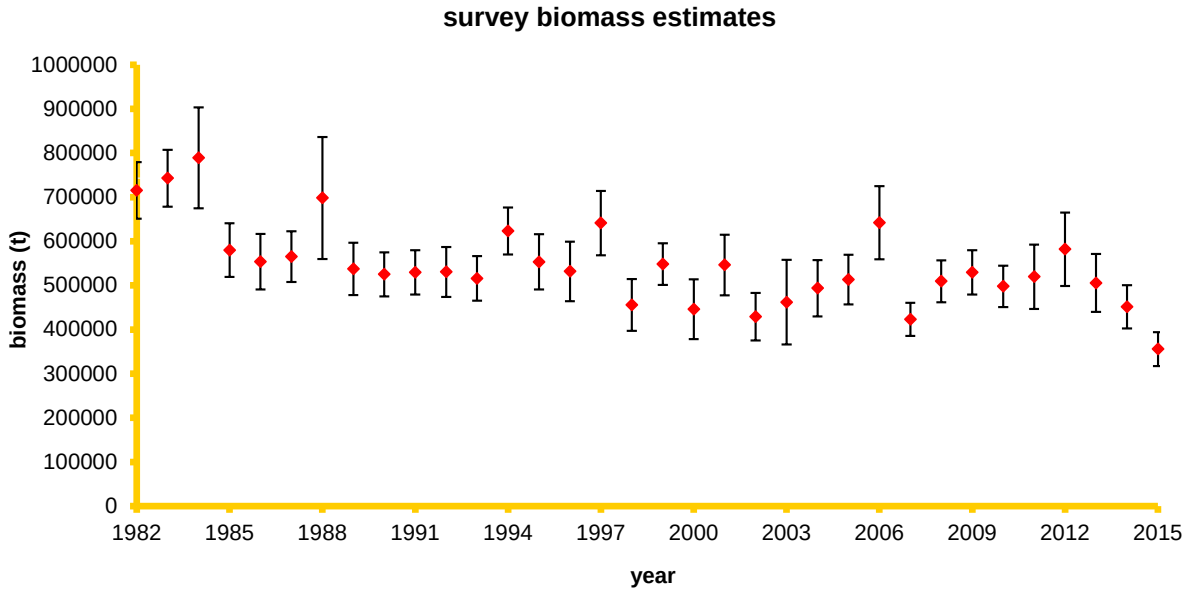


Figure 1. NMFS Bering Sea shelf survey biomass estimates (1987-2015), with 95% confidence intervals.

Estimates of the survey age composition for 2014 are also available since last year's assessment (Figure 2). Consistent with the past few years, the ageing results indicate the presence of a strong 2002 year class as twelve-year olds in 2014. The indication of a high estimate of 10 year-olds in the age composition may also indicate an above-average cohort from the 2004 year class.

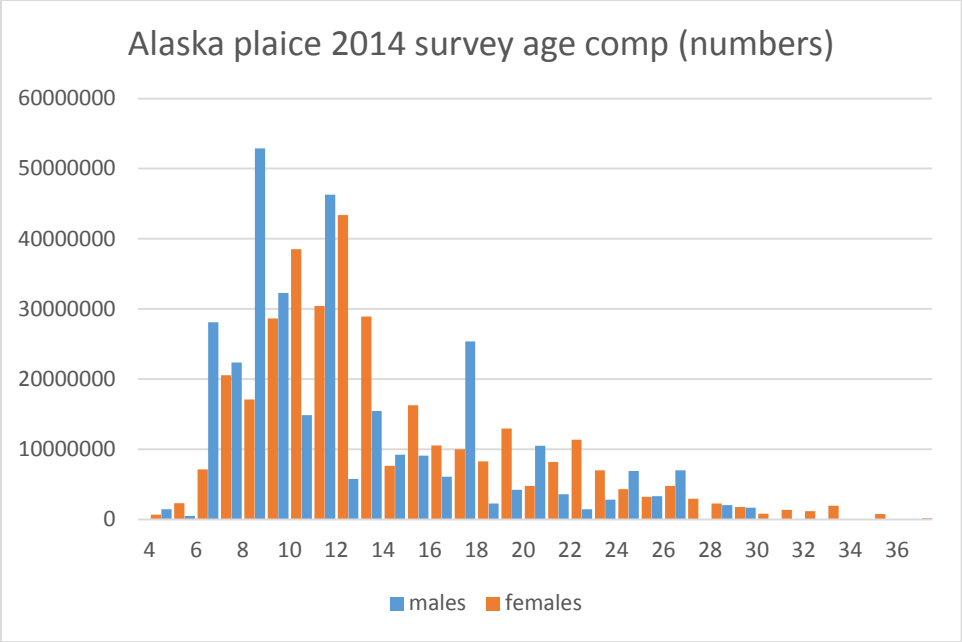


Figure 2. New estimates of the survey age composition for samples collected in the 2014 field season.

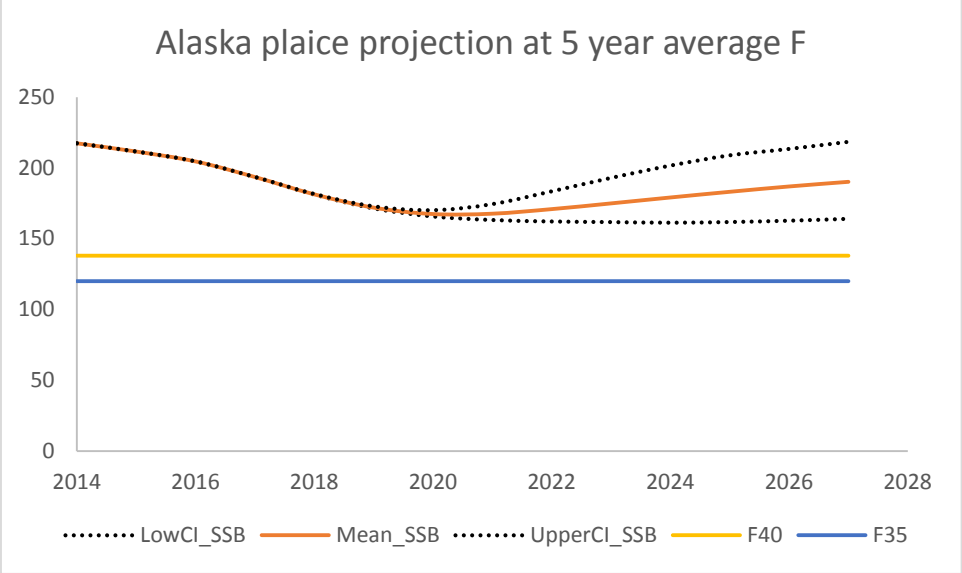


Figure 3. Projected female spawning biomass for 2014 to 2028 fishing at the average 5 year F.

The projection of female spawning biomass fishing at the 2011-2015 average F indicates that the stock will slowly decline at levels well above the B40 level for the next six years.

Alaska plaice continue the trend of high retention and low discard when harvested.

Table 1. Discarded and retained catch of Alaska plaice, 2002-2014.

year	Discard	Retained	Total	Proportion discarded
2002	11,806	370	12,176	0.97
2003	9,428	350	9,778	0.96
2004	7,193	379	7,572	0.95
2005	10,293	786	11,079	0.93
2006	14,746	2,564	17,310	0.85
2007	15,481	3,946	19,427	0.8
2008	9,330	8,046	17,376	0.54
2009	5,061	8,882	13,945	0.36
2010	5,845	10,322	16,166	0.36
2011	7,197	16,459	23,656	0.30
2012	3,589	13,023	16,611	0.22
2013	9,053	14,470	23,523	0.38
2014	3,702	15,747	19,449	0.19

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