7. Assessment of the Arrowtooth Flounder Stock in the Gulf of Alaska (Executive Summary)

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7.1 Introduction

In 2006, the Gulf of Alaska arrowtooth flounder (*Atheresthes stomias*) stock was moved to a biennial stock assessment schedule to coincide with new survey data. A discussion at the September 2006 Groundfish Plan Team meetings concluded the following two important points for updating information in off-year assessments:

1) Anytime the assessment model is re-run and presented in the SAFE Report, a full assessment document **must** be produced.
2) The single-species projection model **may** be re-run using new catch data without re-running the assessment model.

Thus, on alternate (even) years, parameter values from the previous year's assessment model and total catch information for the current and previous year are used to make projections via the single species projection model for the following two years and to recommend ABC levels for those years.

Because no new survey data was available this year, option 2 above was followed to update information for the 2012 stock assessment. Thus, the single species projection model was run using parameter values from the accepted 2011 assessment model (the base model, Turnock and Wilderbuer 2011[1]), together with updated catch information for 2011 and 2012, to predict stock status for arrowtooth flounder and estimate OFL and ABC for 2013 and 2014.

7.2 Updated catch and projection

Arrowtooth flounder is in Tier 3a. New information available to update the projection model consists of the total catch for 2011 (30,890 t) and the current catch for 2012 (16,284 t as of Oct. 6, 2012). To run the projection model to predict ABC's for 2013 and 2014, estimates are required for the total catches in 2012 and 2013. The final catch for 2012 and 2013 was estimated using the 5-year average F (0.020). Based on the updated projection model results, the recommended ABC's for 2013 and 2014 are 210,451 t and 208,811 t, respectively, while the OFL's are 247,196 t and 245,262 t. The new ABC recommendation and OFL for 2013 are slightly less than those developed using the 2011 full assessment model (212,033 t and 249,066 t). The principal reference values are shown in the following table:

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[1]Turnock, B.J. and T.K. Wilderbuer. 2011. Gulf of Alaska Arrowtooth flounder Stock Assessment. In: Stock assessment and fishery evaluation report for the groundfish resources of the Gulf of Alaska. North Pacific Fishery Management Council, PO Box 103136, Anchorage, AK.

Quantity	As estimated or *specified last* year for: 2012	As estimated or *specified last* year for: 2013	As estimated or *recommended this* year for: 2013	As estimated or *recommended this* year for: 2014
M (natural mortality rate)	0.2 females, 0.35 males	0.2 females, 0.35 males	0.2 females, 0.35 males	0.2 females, 0.35 males
Tier	3a	3a	3a	3a
Projected total (age 3+) biomass (t)	2,161,690	2,133,320	2,055,560	2,104,150
Female spawning biomass (t)	1,263,150	1,278,530	1,274,290	1,271,940
Projected				
$B_{100\%}$	1,205,580	1,205,580	1,205,580	1,205,580
$B_{40\%}$	482,231	482,231	482,231	482,231
$B_{35\%}$	421,953	421,953	421,953	421,953
F_{OFL}	0.207	0.207	0.207	0.207
$maxF_{ABC}$	0.174	0.174	0.174	0.174
F_{ABC}	0.174	0.174	0.174	0.174
OFL (t)	250,100	249,066	247,196	245,262
maxABC (t)	212,882	212,033	210,451	208,811
ABC (t)	212,882	212,033	210,451	208,811
Status	As determined *last* year for: 2010	As determined *last* year for: 2011	As determined *this* year for: 2011	As determined *this* year for: 2012
Overfishing	No	No	No	n/a
Overfished	No	No	No	No
Approaching overfished	No	No	No	No

7.3 Area Apportionment

The recommended area apportionment percentages are identical to last year because there is no new survey information. The apportionments are estimated using the percent 2011 survey biomass by area.

7.4 Research Priorities

Continued aging of otoliths from survey data will allow investigation of possible changes in growth.

7.5 Summaries for Plan Team

Year	Age 3+ Biomass(t) [1]	Female spawning biomass(t) [1]	OFL[2]	ABC[2]	TAC[2]	CATCH[3]
2009	2,237,420	1,189,740	261,022	221,512	43,000	24,937
2010	2,223,450	1,213,230	254,271	215,882	43,000	24,268
2011	2,187,980	1,238,210	251,068	213,150	43,000	30,890
2012	2,161,690	1,263,150	250,100	212,882	103,300	16,284
2013	2,055,560	1,274,290	247,196	210,451		
2014	2,104,150	1,271,940	245,262	208,811		

[1]Age 3+ biomass and female spawning biomass from the full assessment model (2011) or the updated projection model (2013-2014).
[2]As published in the Federal Register or as recommended based on the projection model (2013-2014).
[3]As of Oct. 6, 2012.

The ABC by management area using $F_{40\%}$ was estimated by calculating the fraction of the 2011 survey biomass in each area and applying that fraction to the ABC:

Arrowtooth flounder values by INPFC area

2011 survey biomass percent by area		2012				2013		2014	
		OFL[1]	ABC[1]	TAC[1]	Catch[2]	OFL[3]	ABC[3]	OFL[3]	ABC[3]
Western	12.92%	--	27,495	14,500	1,074	--	27,181	--	26,970
Central	67.25%	--	143,162	75,000	15,104	--	141,527	--	140,424
West Yakutat	9.94%	--	21,159	6,900	32	--	20,917	--	20,754
East Yakutat/SE	9.90%	--	21,066	6,900	74	--	20,826	--	20,663
Total	100%	250,100	212,882	103,300	16,284	247,196	210,451	245,262	208,811

[1]As published in the Federal Register. [2]As of Oct. 6, 2012. [3]Based on the updated projection model.

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