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

Benjamin J. Turnock
November 2010

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 2010 stock assessment. Thus, the single species projection model was run using parameter values from the accepted 2009 assessment model (the base model, Turnock and Wilderbuer 2009[1]), together with updated catch information for 2009 and 2010, to predict stock status for arrowtooth flounder and estimate OFL and ABC for 2011 and 2012.

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 2009 (24,937 t) and the current catch for 2010 (19,738 t as of Oct. 16, 2010). To run the projection model to predict ABC's for 2011 and 2012, estimates are required for the total catches in 2010 and 2011. The final catch for 2010 was estimated by dividing the current catch by the ratio of the catch in the same week in 2009 as the current catch to the final 2009 catch. The estimated final catch for 2010 (22,300 t) was also used as the estimate for the final 2011 catch. Based on the updated projection model results, the recommended ABC's for 2011 and 2012 are 213,150 t and 211,027 t, respectively, while the OFL's are 251,068 t and 248,576 t. The new ABC recommendation and OFL for 2011 are similar to those developed using the 2009 full assessment model (212,719 t and 250,559 t). The principal reference values are shown in the following table:

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[1]Turnock, B.J. and T.K. Wilderbuer. 2009. 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/Status	Last year (2009 Assessment)		This year (2010 Update)	
	2010	2011	**2011**	**2012**
M (natural mortality)	0.2 females, 0.35 males	0.2 females, 0.35 males	0.2 females, 0.35 males	0.2 females, 0.35 males
Specified/recommended tier	3a	3a	3a	3a
Total biomass (Age 3+; t)	2,139,000	2,118,000	2,121,440	2,105,330
Female Spawning Biomass (t)	1,253,210	1,243,920	1,246,660	1,240,120
$B_{100\%}$	1,197,060	1,197,060	1,197,060	1,197,060
$B_{40\%}$	478,822	478,822	478,822	478,822
$B_{35\%}$	418,969	418,969	418,969	418,969
$F_{OFL} = F_{35\%}$	0.219	0.219	0.219	0.219
$max\ F_{ABC} = F_{40\%}$	0.183	0.183	0.183	0.183
$recommended\ F_{ABC}$	0.183	0.183	0.183	0.183
Specified/recommended OFL (t)	254,271	250,559	251,068	248,576
Specified/recommended ABC (t)	215,882	212,719	213,150	211,027
Is the stock being subjected to overfishing?	no	no	**no**	no
Is the stock currently overfished?	no	no	**no**	no
Is the stock approaching a condition of being 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 2009 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	2,155,780	1,252,550	261,022	221,512	43,000	24,937
2010	2,139,000	1,253,210	254,271	215,882	43,000	19,738
2011	2,121,440	1,246,660	251,068	213,150		
2012	2,105,330	1,240,120	248,576	211,027		

[1] Age 3+ biomass and female spawning biomass from the full assessment model (2009) or the updated projection model (2010-2012).
[2] As published in the Federal Register or as recommended based on the projection model (2011-2012).
[3] As of Oct. 16, 2010.

The ABC by management area using $F_{40\%}$ was estimated by calculating the fraction of the 2009 survey biomass in each area and applying that fraction to the ABC:

Arrowtooth flounder values by INPFC area

2009 survey biomass percent by area		2010				2011		2012	
		OFL [1]	ABC [1]	TAC [1]	Catch [2]	OFL [3]	ABC [3]	OFL [3]	ABC [3]
Western	16.11%	--	34,773	8,000	2,270	--	34,317	--	33,975
Central	67.82%	--	146,407	30,000	17,257	--	144,558	--	143,119
West Yakutat	10.58%	--	22,835	2,500	139	--	22,551	--	22,327
East Yakutat/SE	5.50%	--	11,867	2,500	72	--	11,723	--	11,606
Total	100.00%	254,271	215,882	43,000	19,738	251,068	213,150	248,576	211,027

[1] As published in the Federal Register. [2] As of Oct. 16, 2010. [3] Based on the updated projection model.

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