

Gulf of Alaska sculpin complex

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TenBrink

GOA sculpin

- Yellow Irish lord (YIL), plain, great, and bigmouth sculpin



Species-specific catch and ABC

- *Based on a suggestion at the November 2013 GOA plan team meeting*
- Catch of plain, great, and bigmouth sculpin were below species-specific ABCs in 2012, 2013, and 2014 through October 13, 2014. Catch of yellow Irish lord has exceeded the species-specific ABC in 2013 and 2014 by 56% and 15% respectively.

	Year	plain sculpin	yellow Irish lord	great sculpin	bigmouth sculpin
2012					
Estimated					
Biomass		2,950	18,324	7,157	3,618
ABC by species		2,163	919	1,514	1,135
catch		0	630	88	149
2013					
Estimated					
Biomass		2,970	18,853	7,134	3,657
ABC by species		2,220	944	1,554	1,166
catch		0	1,469	176	274
2014					
Estimated					
Biomass*		2,970	18,853	7,134	3,657
ABC by species		2,102	893	1,471	1,103
catch		0	1,032	77	155

Biomass estimates for the 4 most abundant GOA sculpins

Year	plain sculpin	yellow Irish lord	great sculpin	bigmouth sculpin
2003	2,162	13,692	6,914	5,340
2004	2,386	14,571	6,954	5,107
2005	2,633	15,507	6,995	4,884
2006	2,731	16,143	7,044	4,310
2007	2,832	16,805	7,092	3,803
2008	2,826	18,234	7,127	3,641
2009	2,819	19,783	7,162	3,486
2010	2,874	18,771	7,171	3,532
2011	2,931	17,810	7,180	3,579
2012	2,950	18,324	7,157	3,618
2013	2,970	18,853	7,134	3,657
Average proportion	0.09	0.55	0.23	0.13

Observed fishery catch and 3-survey average biomass

taxon	GOA			
	fishery catch composition			proportion of average survey biomass
	2012	2013	2014	
<i>Hemitripterus</i> spp.**				
<i>H. bolini</i> (bigmouth)	17%	14%	12%	13%
<i>Hemilepidotus</i> spp.				
<i>Hemilepidotus</i> unidentified	11%	24%	24%	-
<i>H. hemilepidotus</i> (RIL)	<1%	1%	< 1%	-
<i>H. jordani</i> (YIL)	61%	51%	56%	55%
<i>H. spinosus</i> (BIL)	<1%	< 1%	< 1%	-
<i>Myoxocephalus</i> spp.				
<i>Myoxocephalus</i> unidentified	1%	1%	<1%	-
<i>M. verrucosus</i> (warty)	<1%	<1%	<1%	-
<i>M. jaok</i> (plain)	<1%	<1%	<1%	9%
<i>M. polyacanthocephalus</i> (great)	10%	9%	6%	23%
<i>Malacottus</i> spp.				
<i>M. zonurus</i> (darkfin)	<1%	<1%	1%	0%

Biomass-weighted M

- *November 2013 Plan Team: 4-year Biomass-weighted approach responds to declines in less productive species by increasing the target harvest rate for the complex, an undesirable response.*
- Alternatives:
 1. current methodology.
 2. a strict average of species-specific M estimates for the complex,
 3. a biomass-weighted M that includes biomass estimates for the entire biomass time series.

Current methodology: $M=0.222$

	average biomass ¹	proportion of total biomass	M	weighted contribution to M	weighted average M
yellow Irish Lord	19,138	0.57	0.17	0.097	
great	7,654	0.23	0.28	0.064	
bigmouth	3,455	0.10	0.21	0.021	
plain	3,303	0.10	0.40	0.040	
					0.222

¹ Average survey biomass is the mean estimate of biomass from the last four surveys (2007, 2009, 2011, and 2013).

Strict average, $M=0.265$

	M
yellow Irish Lord	0.17
great	0.28
bigmouth	0.21
plain	0.40
	0.265

Use entire time series for weighted biomass, 2003-2013, $M=0.221$

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Possible changes to methodology

- Use entire time series for biomass-weighted M.