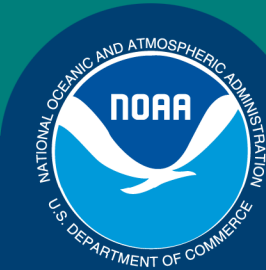


*Science, Service, Stewardship*



# Gulf of Alaska Sculpin Complex

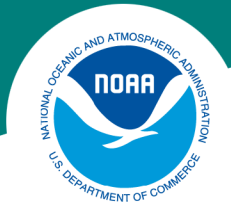
Ingrid Spies

November 15, 2016

**NOAA  
FISHERIES  
SERVICE**

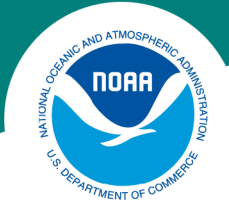
NOAA

**NOAA  
FISHERIES  
SERVICE**



Reference points: no change since last assessment.

<b>Quantity</b>	As estimated or <i>specified last year for:</i>		As estimated or <i>recommended this year for:</i>	
	2016	2017	2017	2018
$M$ (natural mortality rate) <sup>1</sup>	0.21	0.21	0.21	0.21
Tier	5	5	5	5
Biomass (t)	34,943	34,943	34,943	34,943
$F_{OFL}$	0.21	0.21	0.21	0.21
$maxF_{ABC}$	0.16	0.16	0.16	0.16
$F_{ABC}$	0.16	0.16	0.16	0.16
OFL (t)	7,338	7,338	7,338	7,338
maxABC (t)	5,591	5,591	5,591	5,591
ABC (t)	5,591	5,591	5,591	5,591
<b>Status</b>	As determined <i>last year for:</i>		As determined <i>this year for:</i>	
	2014	2015	2015	2016
Overfishing		n/a		n/a



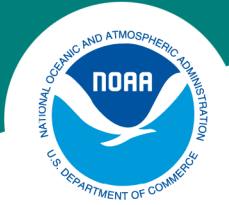
## 45 sculpins found in the Gulf of Alaska, four primary species

Bigmouth (*Hemitripterus bolini*)

Great (*Myoxocephalus polyacanthocephalus*)

Plain (*Myoxocephalus jaok*)

Yellow Irish Lord (*Hemilepidotus jordani*)



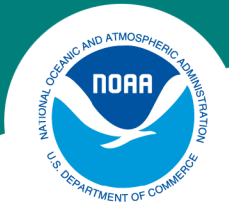
November 2015 Plan Team:  
Examine whether a combination of low fecundity and fishing mortality explain long-term decline of bigmouth sculpin.

Most sculpins lay adhesive eggs in nests, and many exhibit parental care for eggs.

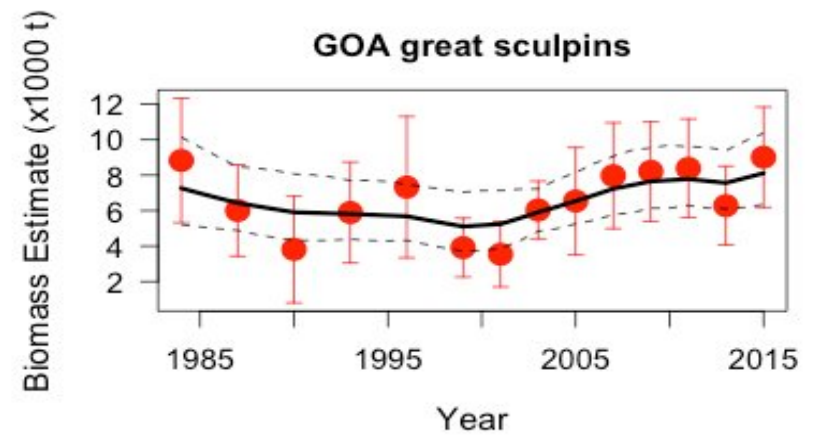
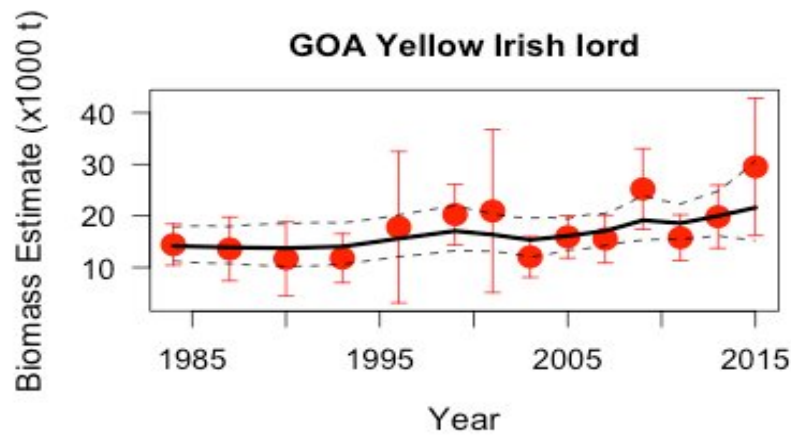
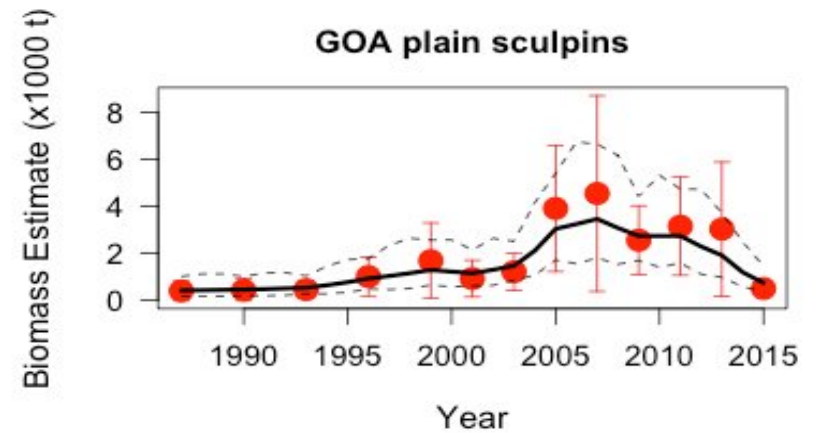
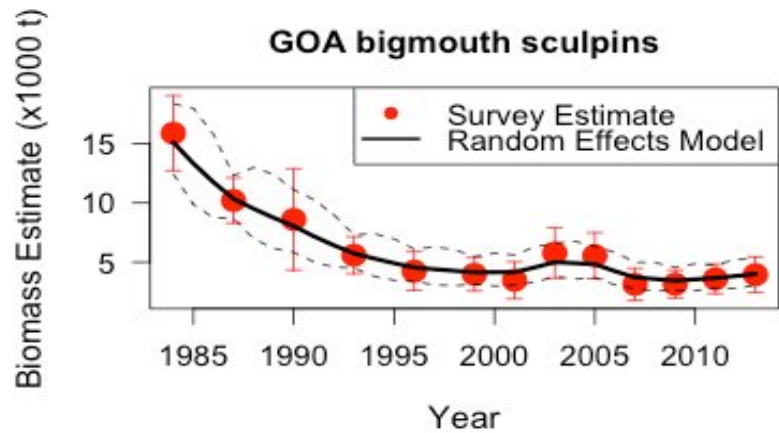
These types of reproductive strategies may make sculpin populations more sensitive to changes in benthic habitats than other groundfish species.

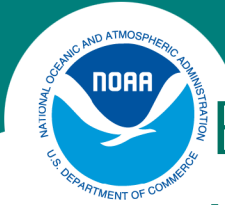
In the western Pacific, great sculpins (*Myoxocephalus polyacanthocephalus*) are reported to have relatively late ages at maturity (5-8 years, Tokranov, 1985) despite being relatively short-lived (13-15 years).

This suggests a limited reproductive portion of the lifespan relative to other groundfish species, vulnerability to fishing.



# Biomass estimates from 2015 assessment





Estimated catch for bigmouth sculpin, yellow Irish lords, plain sculpin, and unidentified scupins of genus *Myoxocephalus* (*Myoxo. unid.*), which includes both plain and great sculpin.

Species or group	Fishery catch <sup>1</sup>			Assessed biomass		Fishing mortality ( $F \sim \text{catch}/\text{biomass}$ )			Species specific $M*0.75$
	2014	2015	2016	2013, 2014	2015, 2016	F 2014	F 2015	F 2016	
bigmouth sculpin	69.8	75.5	81.8	3,455	4,469	0.020	0.017	0.018	0.1575
yellow Irish lord	859.4	562.5	681.3	19,138	21,614	0.045	0.026	0.032	0.1275
<i>Myoxo. unid.</i>	18.0	62.7	17.5						
plain sculpin	3.0	1.3	2.4	3303	747	0.001	0.002	0.003	0.3000
<i>Myoxo. unid.+plain</i>	21.0	64.0	19.9			0.006	0.086	0.027	

Composition of observed fishery catches, 2012-2016, and species composition of sculpin complex biomass, based on the 3 most recent GOA surveys. Fishery catch proportions are based on fishery observer data.

Taxon	Fishery catch composition					Proportion of average survey biomass
	2012	2013	2014	2015	2016	
<b><i>Hemitripterus</i> spp.**</b>						
<i>H. bolini</i> (bigmouth)	17%	14%	10%	15%	19%	13%
<b><i>Hemilepidotus</i> spp.</b>						
<i>H. jordani</i> (YIL)	61%	51%	54%	46%	46%	55%
<b><i>Myoxocephalus</i> spp.</b>						
<i>M. verrucosus</i> (warty)	<1%	<1%	<1%	< 1%	< 1%	0%
<i>M. jaok</i> (plain)	<1%	<1%	<1%	< 1%	< 1%	9%
<i>M. polyacanthocephalus</i> (great)	10%	9%	8%	10%	11%	23%
<b><i>Malacottus</i> spp.</b>						
<i>M. zonurus</i> (darkfin)	<1%	<1%	1%	1%	1%	0%

A close-up photograph of a large, textured, brownish-grey material, possibly a biological specimen or a piece of fabric. The material has a mottled, granular appearance with various shades of brown, tan, and grey. In the background, a white, curved object, possibly a piece of equipment or a container, is visible. The word "Questions?" is overlaid in white text in the center of the image.

Questions?