

Bering Sea and Aleutian Islands sculpin complex

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Summary of Changes in Assessment Inputs

- Catch and retention data are updated with partial data for 2014.
- Biomass estimates and length compositions from the 2013 and 2014 Bering Sea shelf and the 2014 Aleutian Islands surveys.

Summary Table

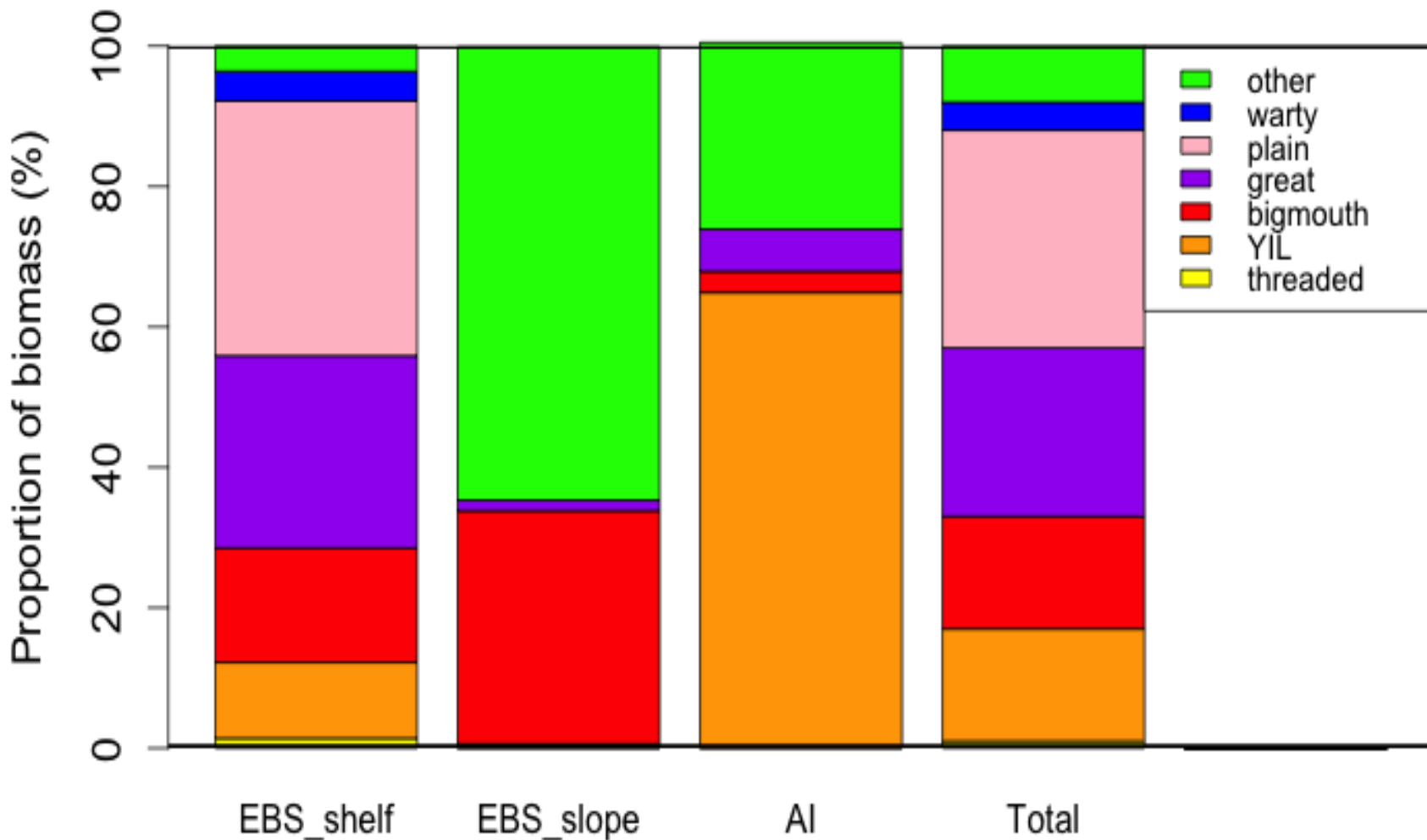
Quantity	As estimated or <i>specified last year for:</i>		As estimated or <i>recommended this year for:</i>	
	2014	2015	2015	2016
M (natural mortality rate)*	0.28	0.28	0.29	0.29
Tier	5	5	5	5
Biomass (t)	215,713	215,713	194,783	194,783
F_{OFL}	0.28	0.28	0.29	0.29
$maxF_{ABC}$	0.21	0.21	0.22	0.22
F_{ABC}	0.21	0.21	0.22	0.22
OFL (t)	56,424	56,424	56,487	56,487
maxABC (t)	42,318	42,318	42,852	42,852
ABC (t)	42,318	42,318	42,852	42,852
Status	As determined <i>last year for:</i>		As determined <i>this year for:</i>	
	2012	2013	2013	2014
Overfishing		n/a		n/a

Six most abundant sculpins in the BSAI

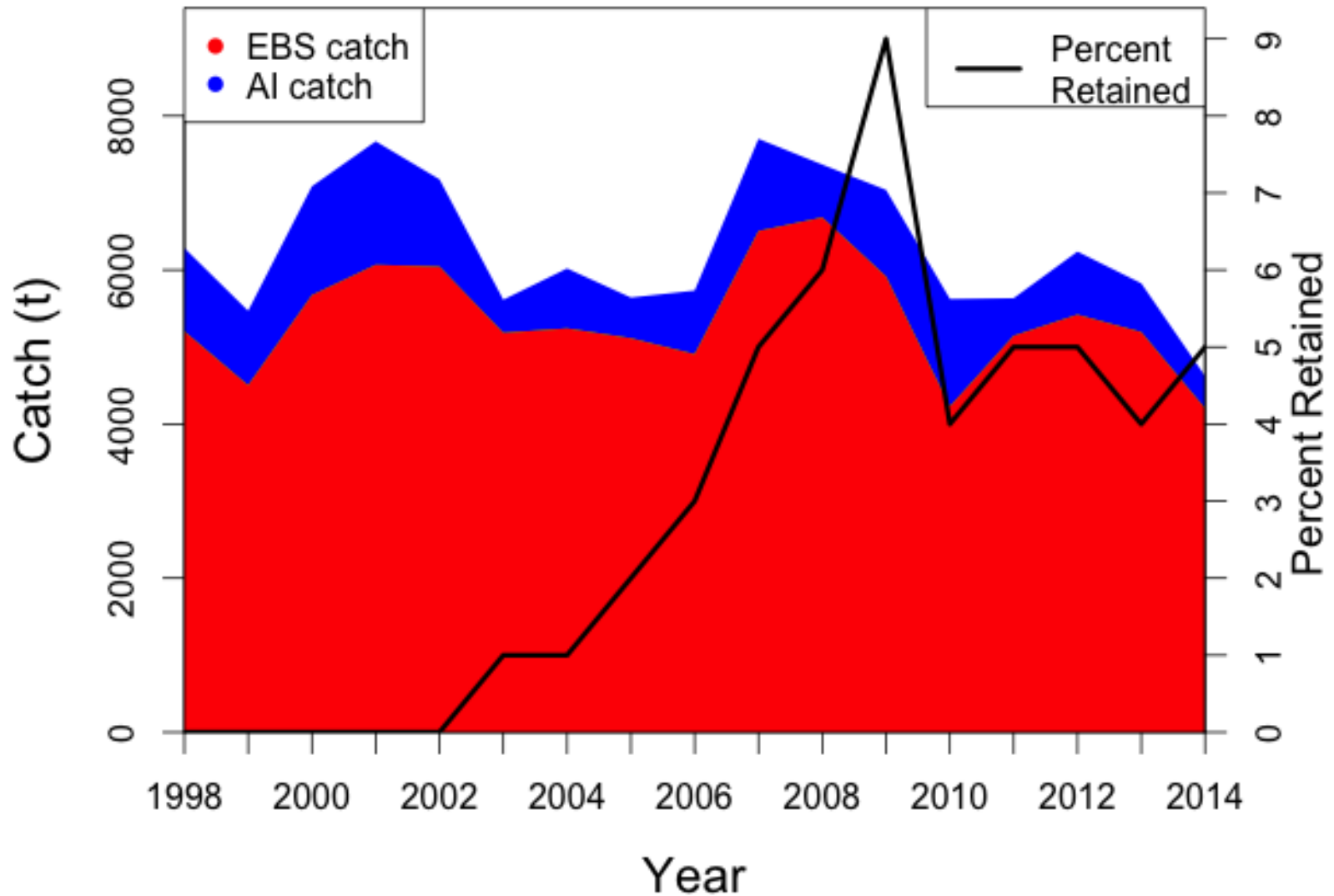
- *bigmouth (Hemitripterus bolini)*
- *great (Myoxocephalus polyacanthocephalus),*
- *plain (Myoxocephalus jaok),*
- *threaded (Gymnocanthus pistilliger),*
- *warty (Myoxocephalus verrucosus),*
- *yellow Irish lord (Hemilepidotus jordani)*

species	EBS shelf			EBS slope			AI		
	2010	2012	2014	2004	2010	2012	2010	2012	2014
antlered	-	-	-	-	-	-	0	0	0
armorhead	1,956	907	569	-	-	-	637	416	210
bigmouth	32,477	24,080	23,576	1,289	3,191	4,245	794	339	709
blacknose	-	-	-		17	21	-	-	-
blob	-	-	-		3,325	1,030	-	-	-
butterfly	965	2,426	477	-	-	-	-	-	-
crescent-tail	-	-	-	-	-	-	-	-	-
crested	-	-	-	-	-	-	-	-	-
darkfin	22	142	25	1,798	1,082	1,530	5,431	4,514	3,231
flabby	-	-	-	-	0.39	0.21	-	-	-
great sculpin	49,665	40,733	44,222	5	88	309	1,067	1,930	805
Pacific hookhorn	17	9	3	-	-	-	-	-	-
Pacific staghorn	-	-	-	-	-	-	0	0	0
plain	55,135	53,271	69,999	-	-	-	-	-	-
purplegray	14	21	46	-	-	-	-	-	-
red Irish lord	0	85	0	-	-	-	-	-	-
ribbed	474	291	85	-	-	-	-	-	-
roughspine	77	19	146	-	-	-	-	-	-
sailfin	1	0	0	-	-	-	-	-	-
scissortail	9	0	0	-	-	-	155	83	129
spatulate	60	49	39	-	-	-	-	-	-
spectacled	503	156	529	57	29	61.2	956	746	821
spinyhead	1,277	707	1,155	701	372	229	59	3	35
thorny	2,385	784	1,177	39	8	19	0.10	1	1
threaded	1,501	4,990	559	-	-	-	4	0	1
unidentified	-	-	-	1,486	-	-	124	108	89
warty	6,998	6,477	7,136	-	-	-	-	-	-
wide-eye	-	-	-	-	0.14	2.35	-	-	-
YIL	21,518	22,154	9,218	113	20	29	15,247	14,166	13,916
total	175,054	162,897	158,963	5,488	8,131	7,476	24,473	22,306	19,947

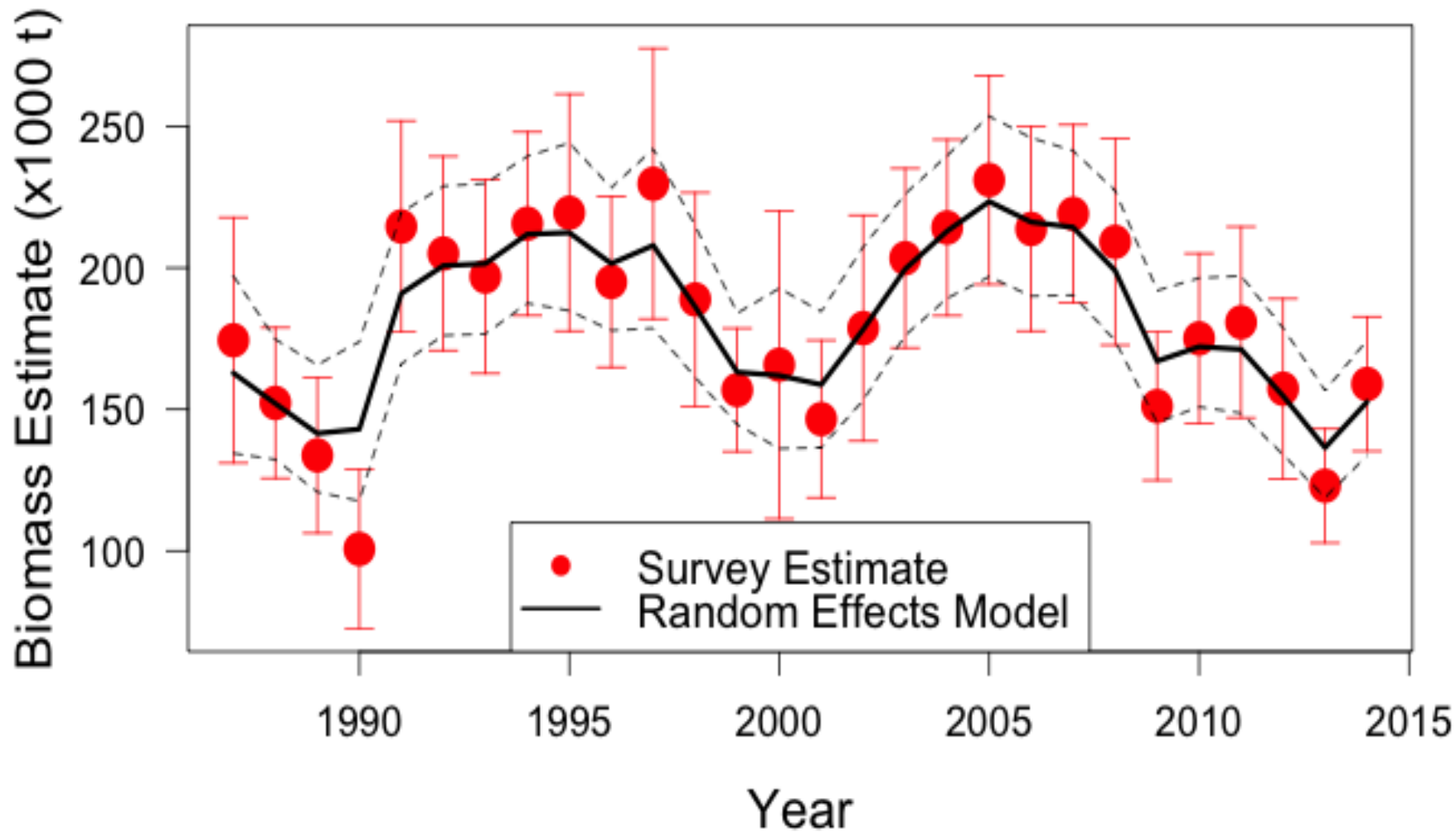
Species composition in the three subregions of the BSAI based on the 3 most recent surveys



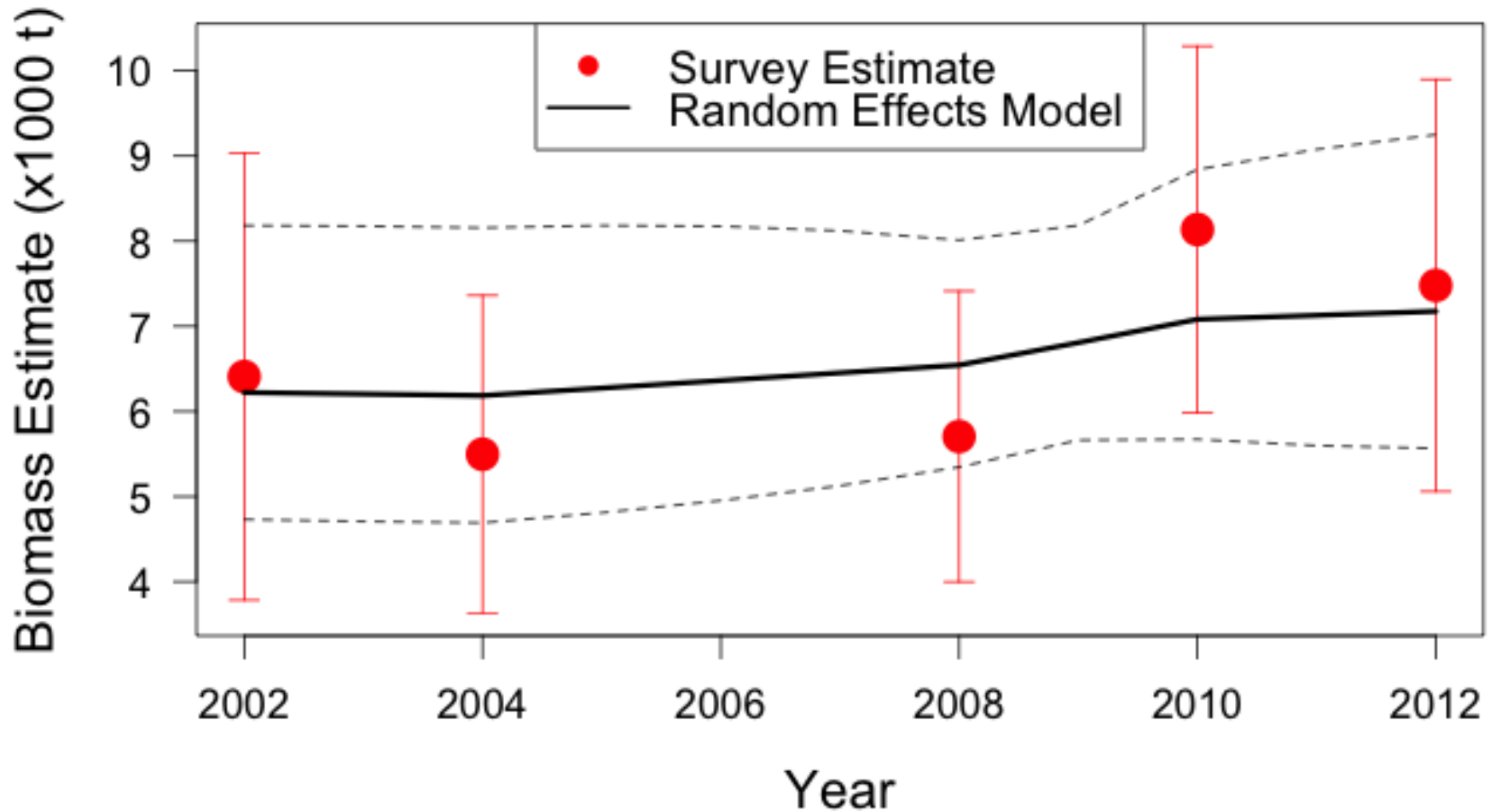
Sculpin catch, percent retained



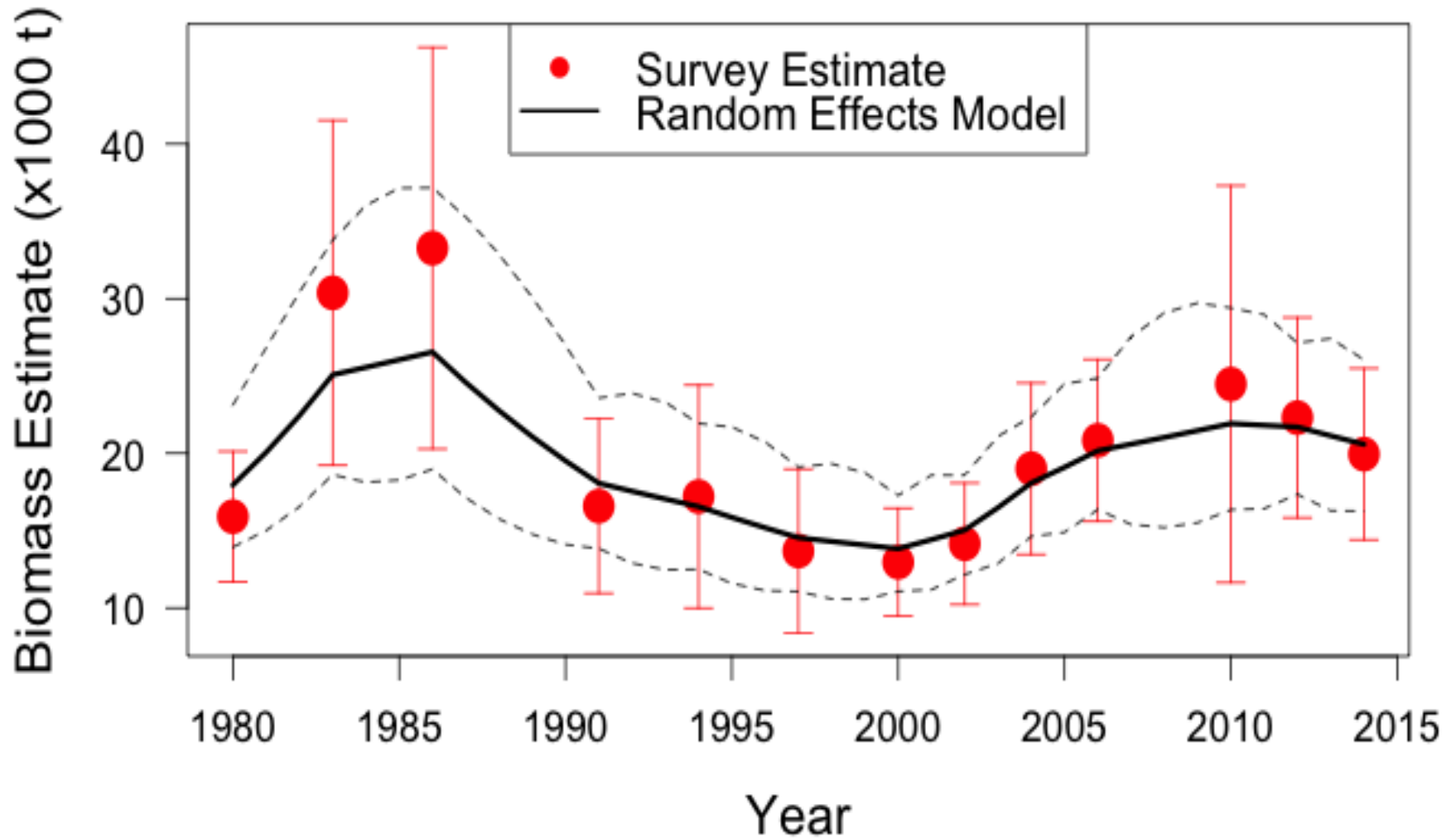
EBS shelf sculpins



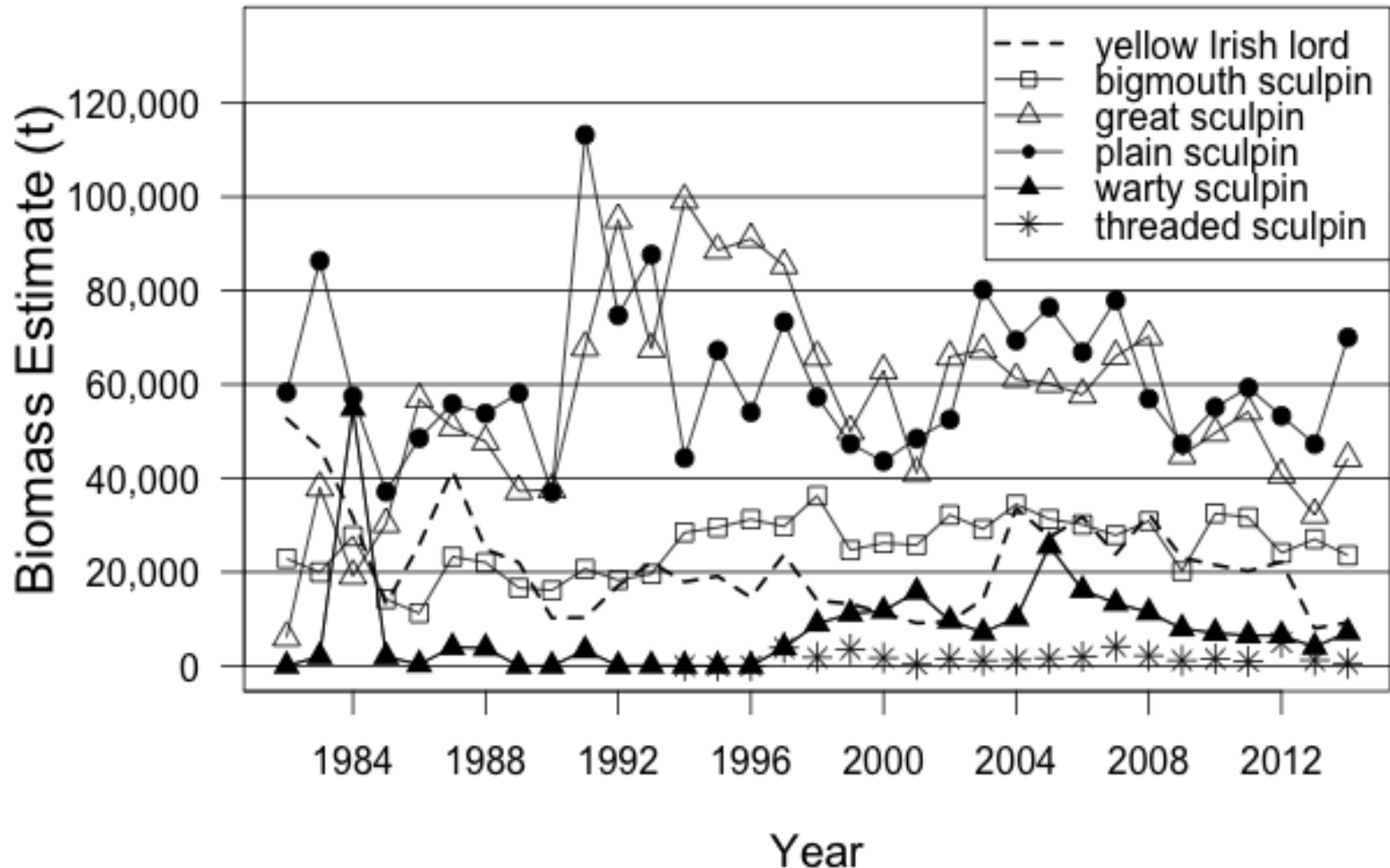
EBS slope sculpins



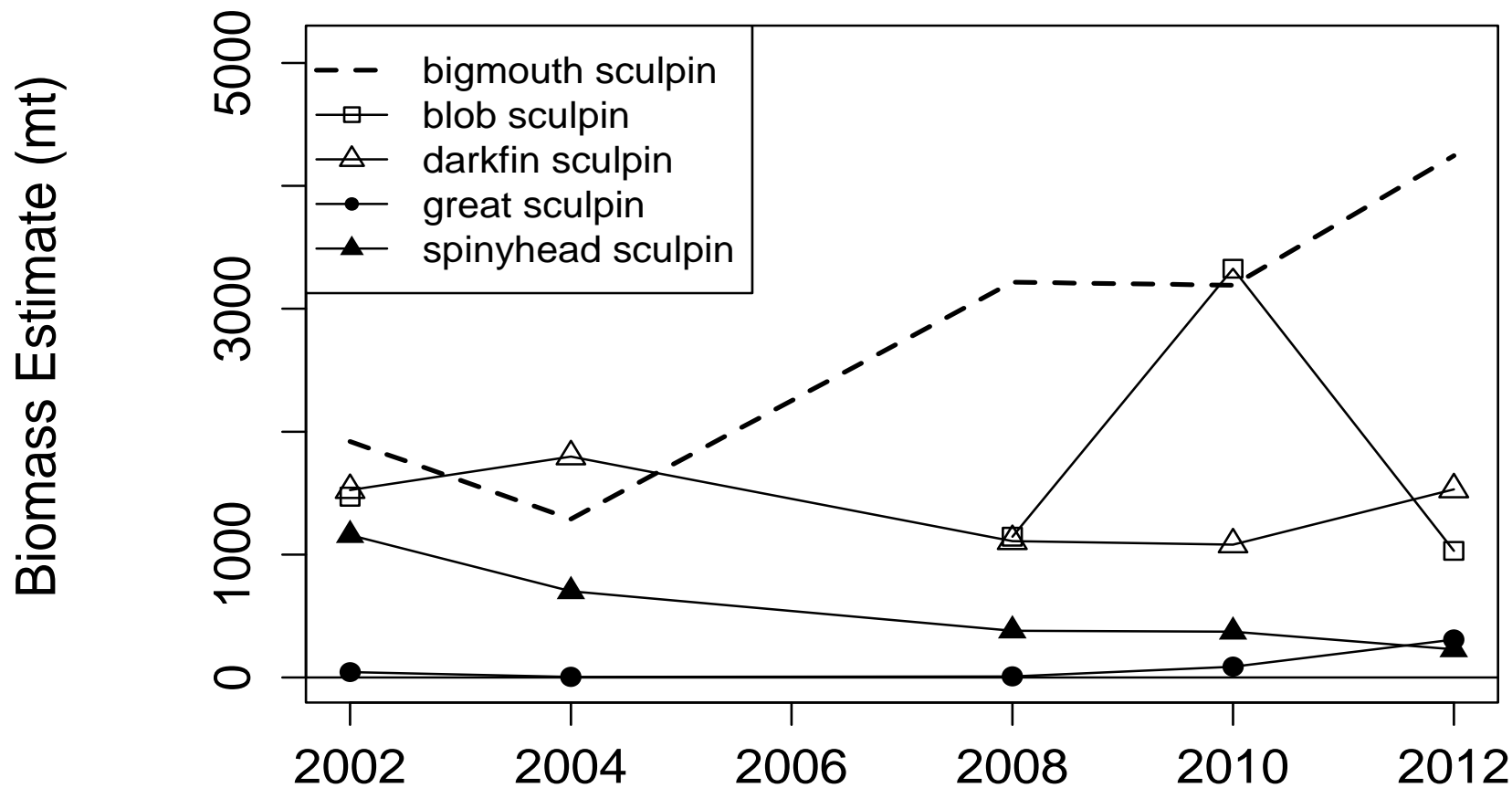
Aleutian Islands sculpins



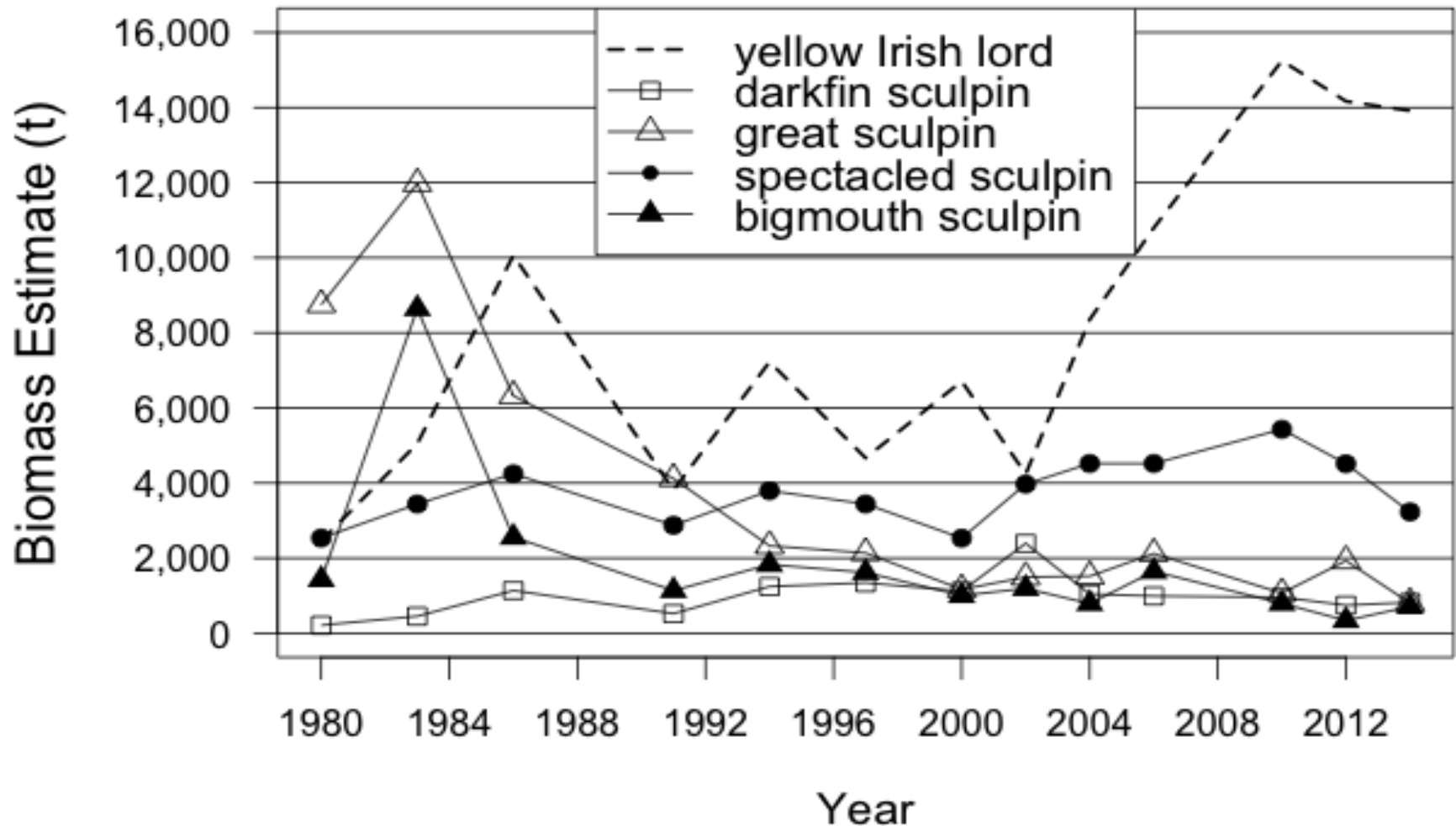
EBS shelf survey biomass estimates for the six most abundant sculpin species, 1982-2014.



Bering sea slope survey biomass estimates for the five most abundant sculpin species, 2002-2012.

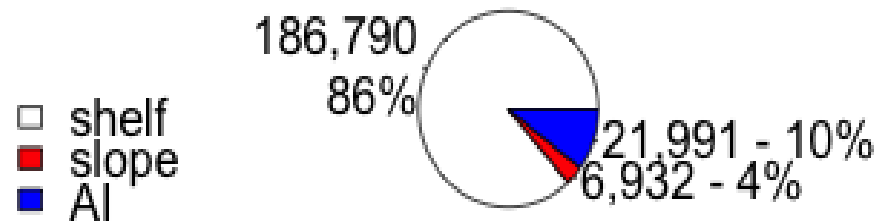


Aleutian Islands (AI) survey biomass estimates for the five most abundant sculpin species, from 1980-2014.

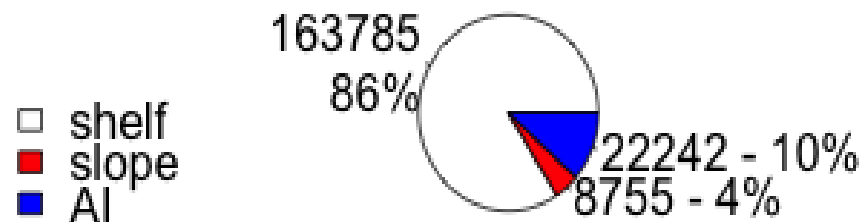


Relative sculpin abundance

Relative sculpin abundance, 2012



Relative sculpin abundance, 2014



Methods

- Standard Tier 5 methodology (OFL = M * biomass estimate, ABC \leq 0.75 * M * biomass estimate).
- Average biomass for the six most common species, “other” sculpins for each area: average of the last 3 surveys
 - 2004, 2010, and 2012 for the EBS slope and
 - 2010, 2012, and 2014 for the EBS shelf and Aleutian Islands.
- Species-specific M s are applied to the aggregate sculpin biomass, with the proportional 3-most-recent-survey average biomass of each of the 6 most common species providing the weights.

M based on 3 year average survey biomass

2015-2016 sculpin complex harvest specifications						
species	3-survey average biomass				<i>M</i>	weighted contribution to mort. est.
	EBS shelf	EBS slope	AI	BSAI		
threaded	2,350	0	2	2,352	0.45	0.01
YIL	17,630	54	14,443	32,127	0.17	0.03
bigmouth	26,711	2,908	614	30,233	0.21	0.04
great	44,873	134	1,267	46,275	0.28	0.07
plain	59,468	0	0	59,468	0.40	0.13
warty	6,870	0	0	6,870	0.26	0.01
other	5,884	5,659	5,916	17,459		
total	163,785	8,755	22,242	194,783		0.29

Weighted estimate of natural mortality = 0.29

F_{OFL}	0.29
max F_{ABC}	0.22
rec. F_{ABC}	0.22
OFL	56,487
max. ABC	42,852
rec. ABC	42,852

Total Biomass Estimate

- Standard method: 194,783 t.
- Random effects model:
176,229 t (95%CI: 156,472, 195,986).