

Science, Service, Stewardship



Overview of the 2012 BSAI Groundfish SAFE Report

BSAI Groundfish Plan Team

- Mike Sigler, co-chair
- Grant Thompson, co-chair
- Jane DiCosimo, coordinator

**NOAA
FISHERIES
SERVICE**

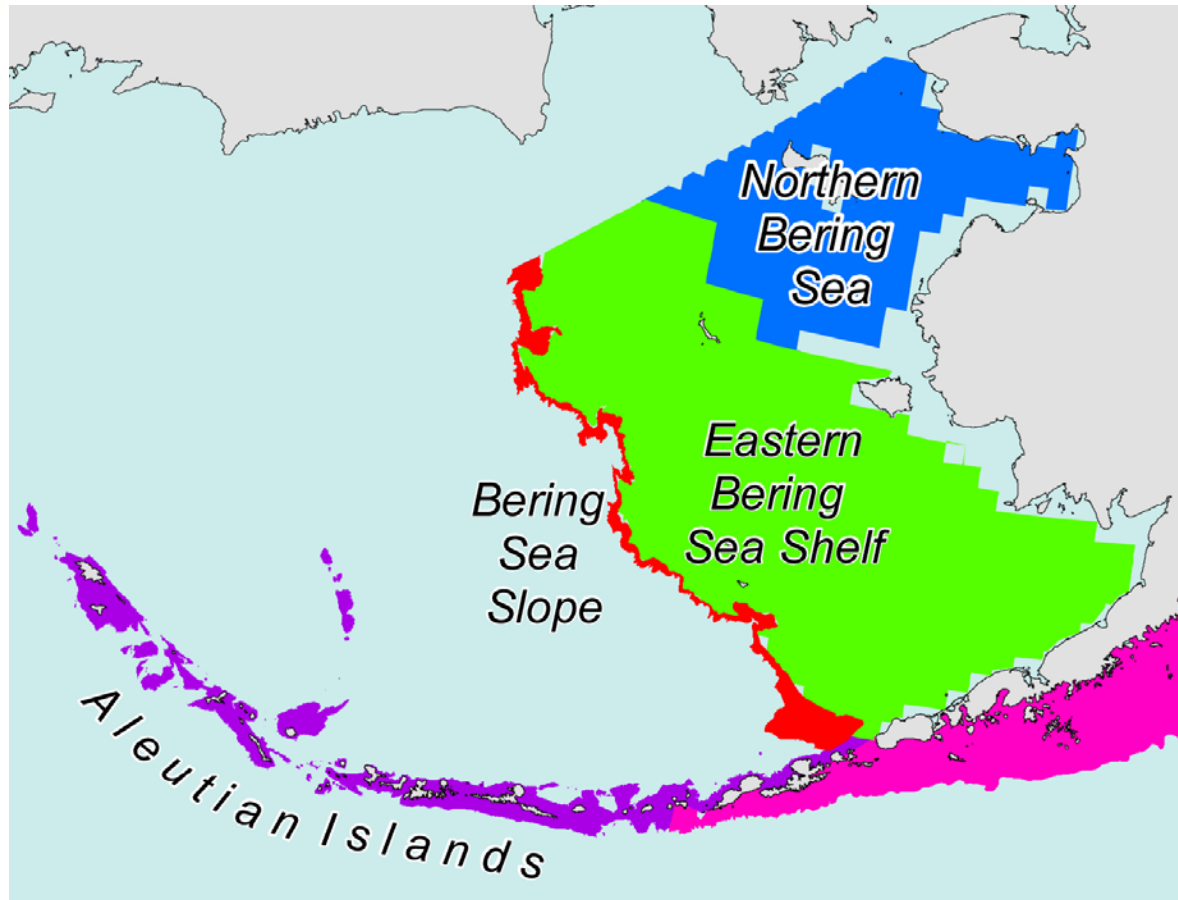


Team members





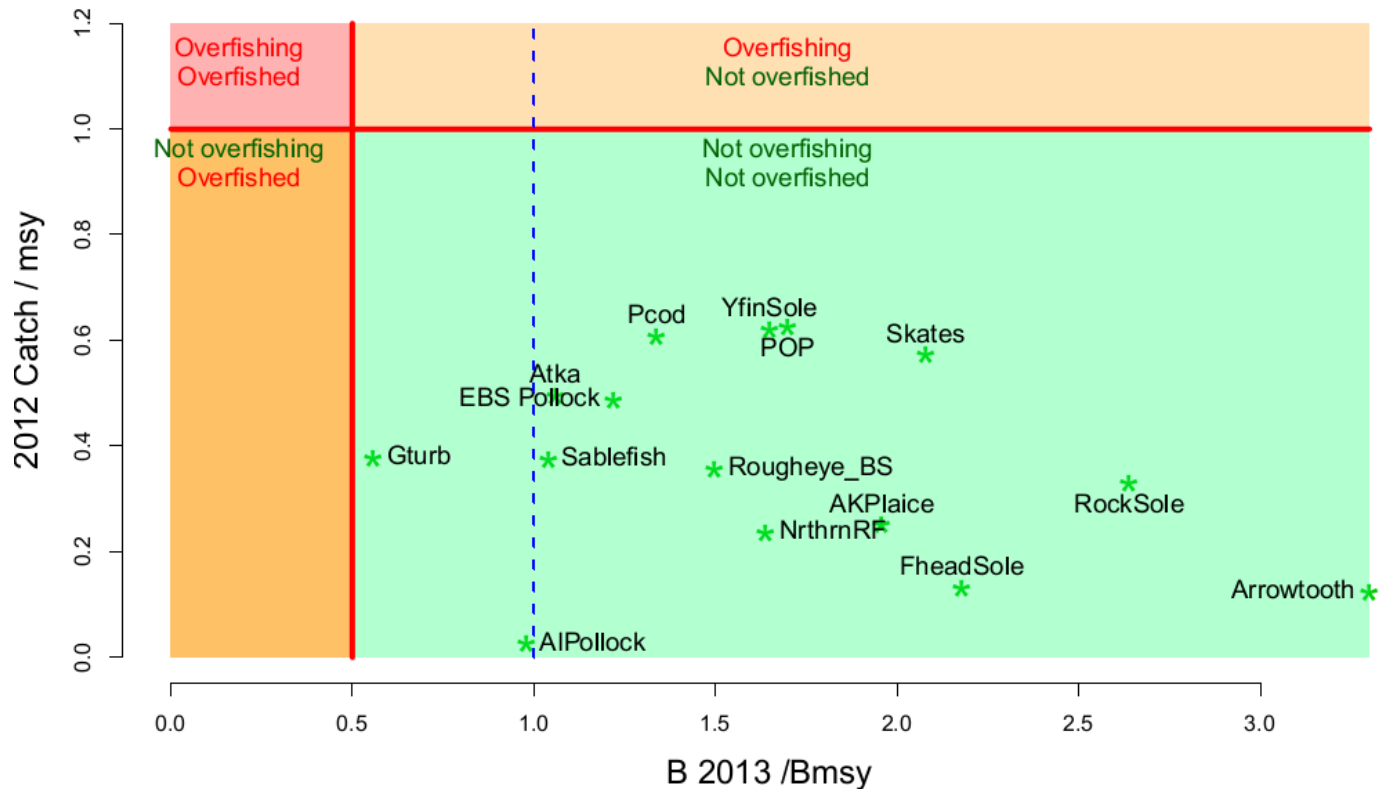
BSAI bottom trawl survey areas





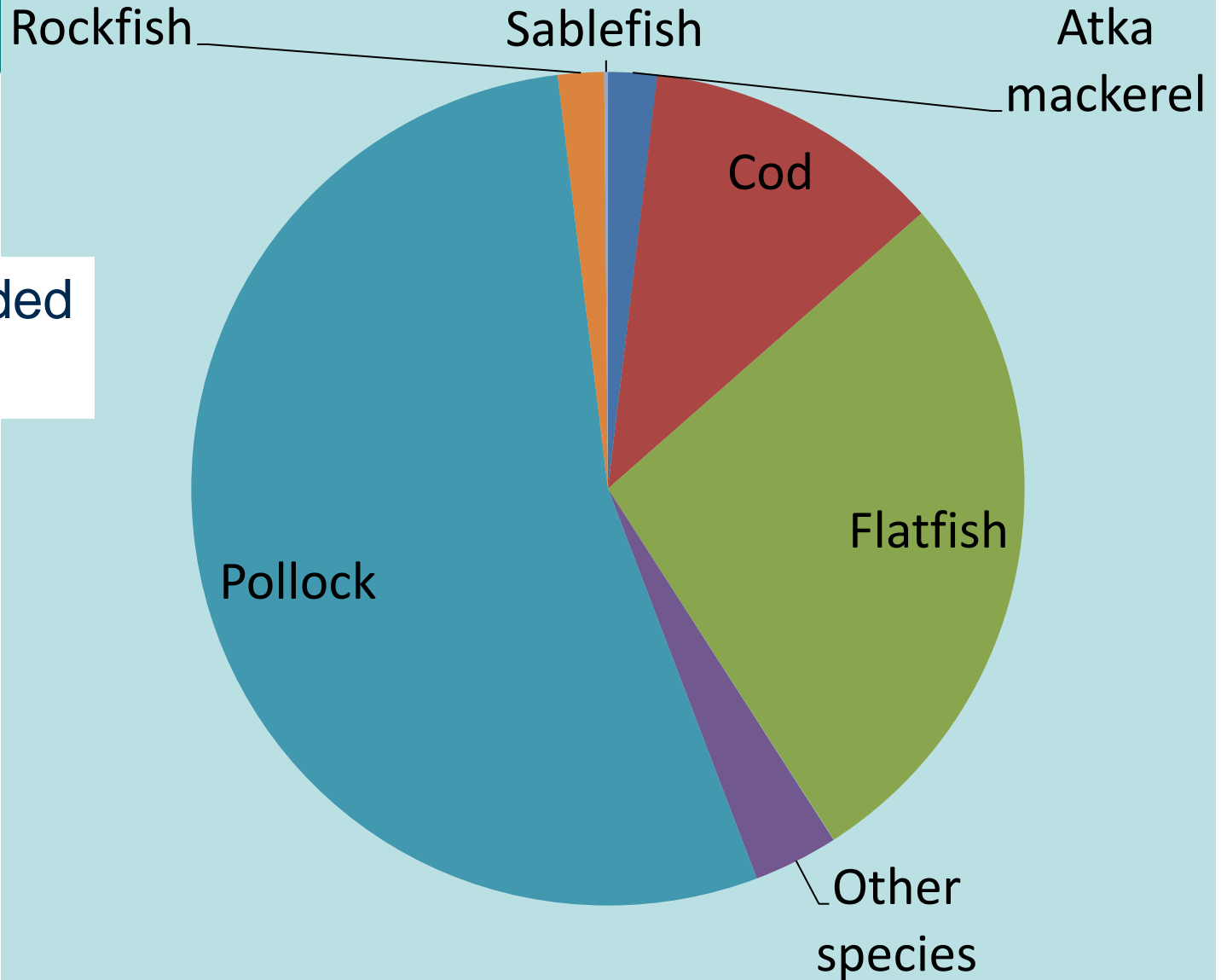
The big picture

Bering Sea and Aleutian Islands



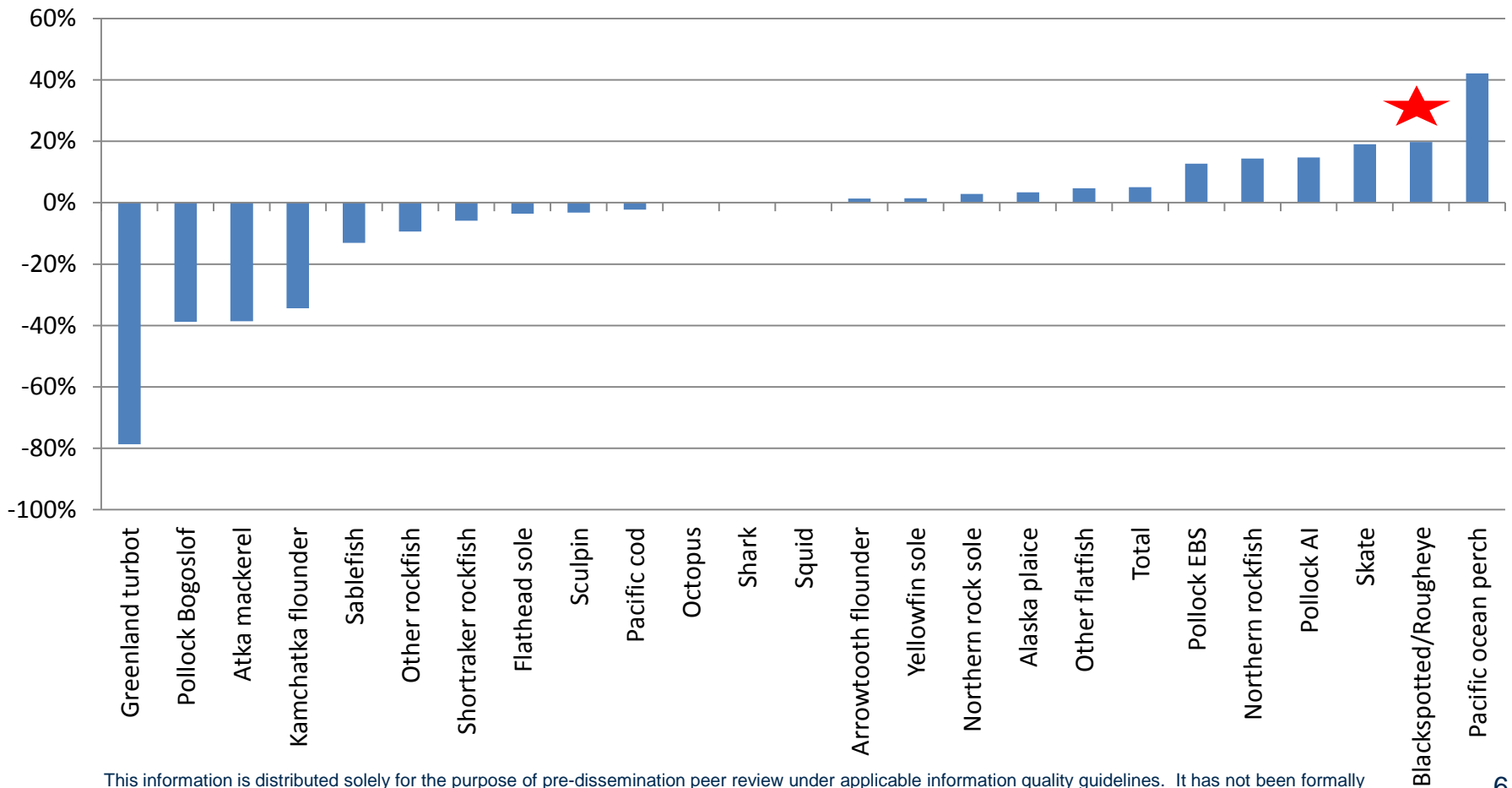


Recommended
2013 ABC





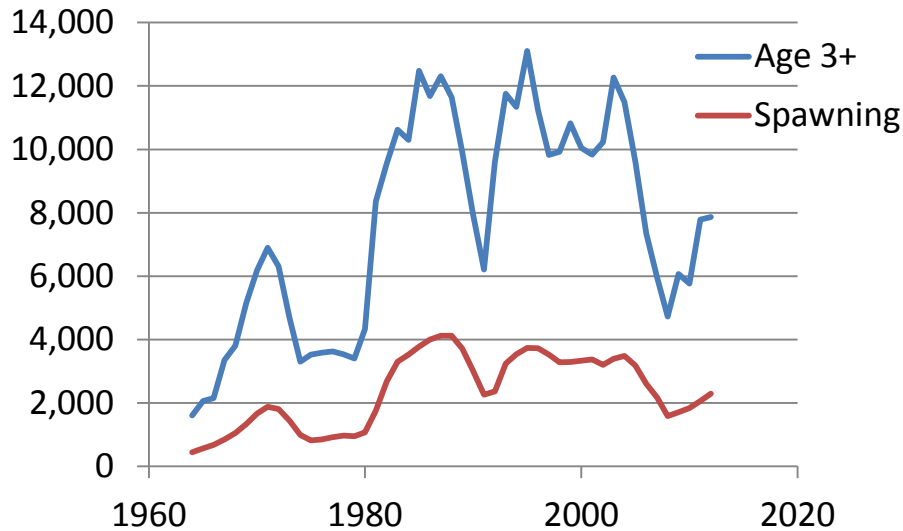
Percent change in ABC (2013 vs. 2012)



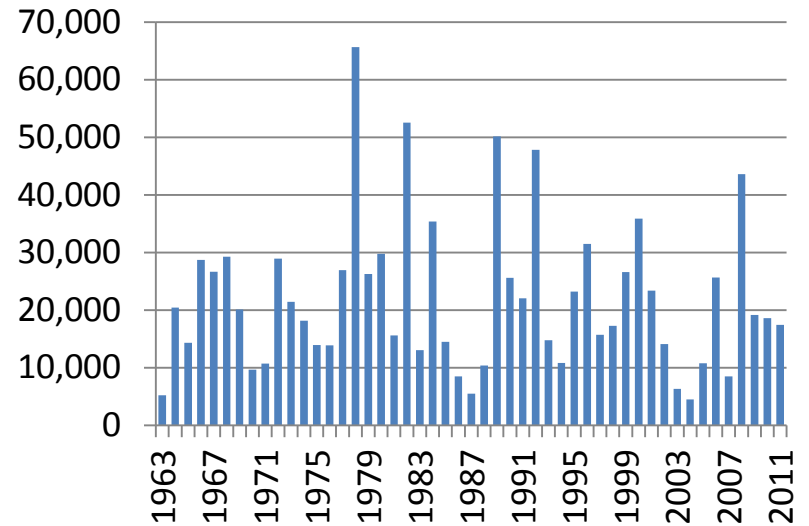


EBS walleye pollock, continued

Biomass (thousands t)



Recruitment





EBS walleye pollock, continued

- The Team agreed that the authors had provided compelling reasons to set the 2013-2014 ABCs below the maximum permissible levels.
 - The decision table shows that catches even at a 2 million t level (well below the maximum permissible ABC) would result in a significant probability of exceeding FMSY
 - The estimated strength of the 2006 year class is reduced in the current assessment (although it is still estimated to be well above average), thereby increasing the extent to which the stock and fishery are dependent on a single year class (2008).
 - The CV of the very strong 2008 year class is large relative to earlier year classes.
 - Past experience indicates that model estimates of recent year classes tend to decrease over time.



EBS walleye pollock, continued

- However, the Team was not prepared to adopt the authors' recommended policy of basing ABC on the probability of spawning biomass equaling the long-term average in five years.
- While such a policy would result in reasonable ABCs for 2013-2014, the Team was concerned that the policy might not be robust in the long term.
- Instead, the Team recommends retaining the current policy of keeping fishing mortality constant at the most recent 5-year average (0.38). This policy results in ABCs of 1.375 million t for 2013 and 1.430 million t for 2014.



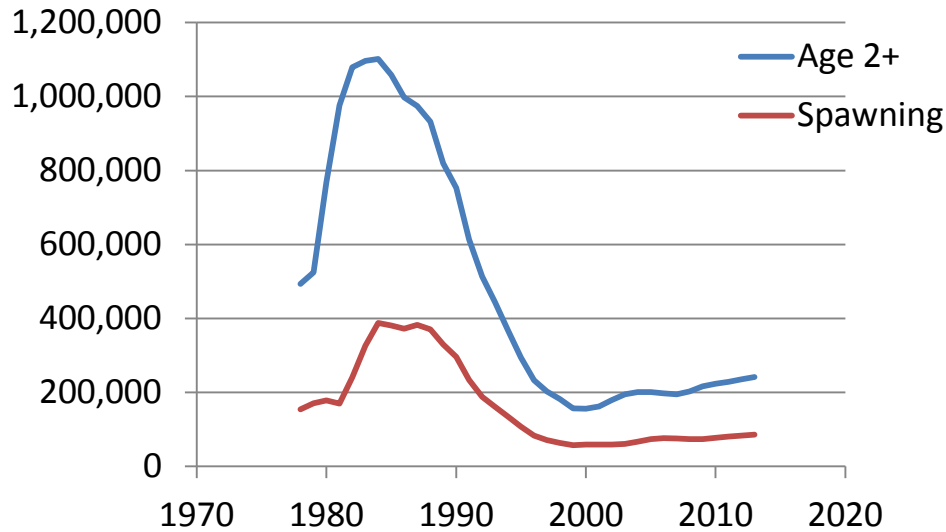
EBS walleye pollock, concluded

Area	Year	Biomass	OFL	ABC	TAC	Catch
Eastern Bering Sea	2011	9,620,000	2,450,000	1,270,000	1,252,000	1,199,243
	2012	8,340,000	2,470,000	1,220,000	1,186,000	1,202,560
	2013	8,140,000	2,550,000	1,375,000	n/a	n/a
	2014	8,080,000	2,730,000	1,430,000	n/a	n/a

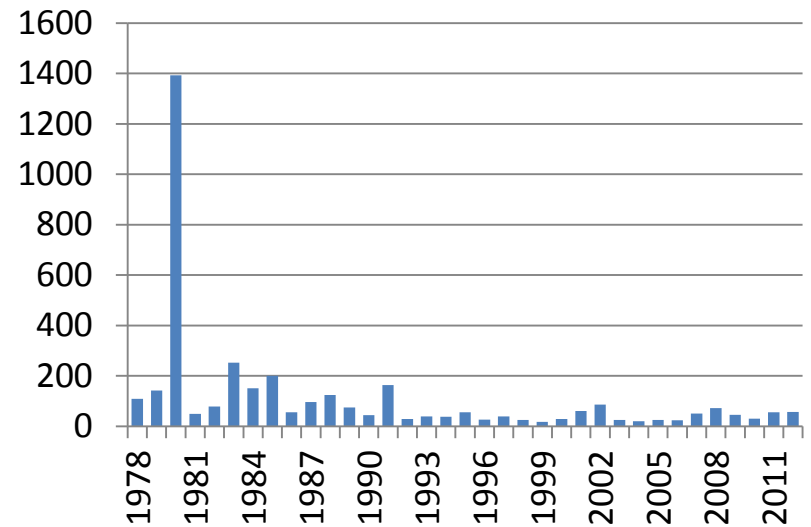


AI walleye pollock, continued

Biomass (t)



Recruitment





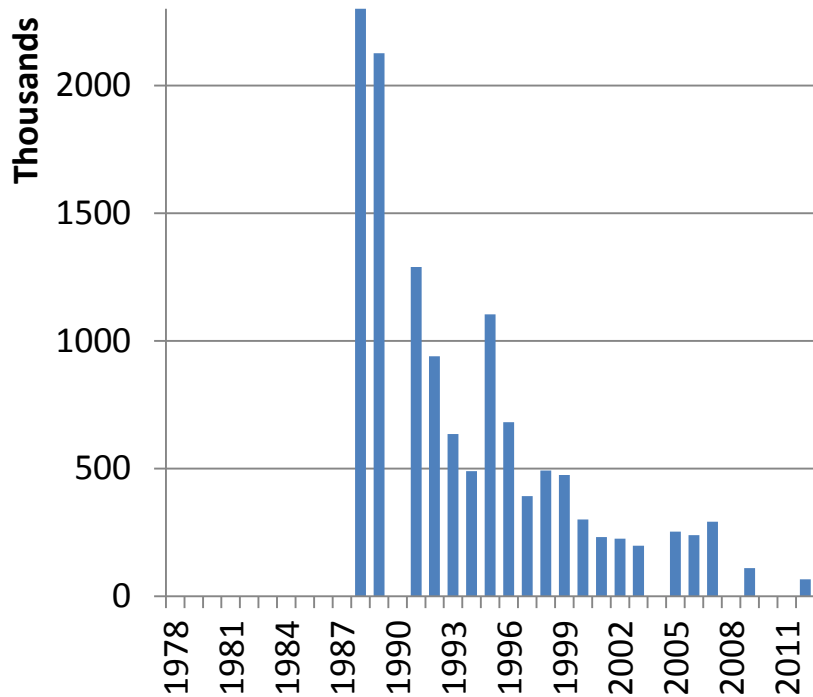
AI walleye pollock, concluded

Area	Year	Biomass	OFL	ABC	TAC	Catch
Aleutian Islands	2011	298,000	44,500	36,700	19,000	1,208
	2012	251,000	39,600	32,500	19,000	972
	2013	266,000	45,600	37,300	n/a	n/a
	2014	293,000	48,600	39,800	n/a	n/a

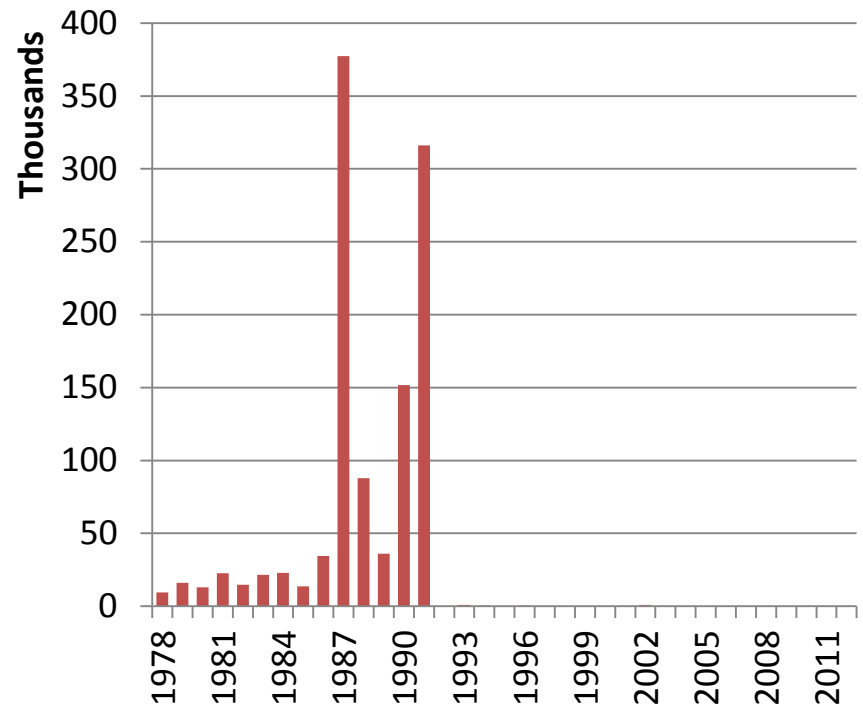


Bogoslof walleye pollock, continued

Biomass (t)



Catch (t)





Bogoslof walleye pollock (concluded)

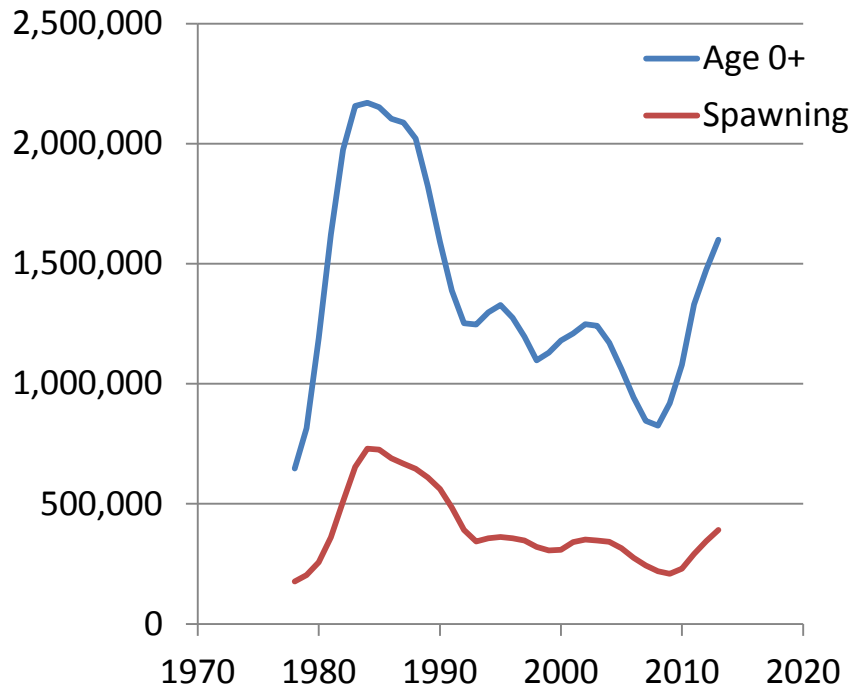
- OFL/ABC alternatives discussed:
 - The Plan Team agreed with the authors' recommended ABC and OFL values (Tier 5 rule, assuming $M = 0.20$)

Area	Year	Biomass	OFL	ABC	TAC	Catch
Bogoslof	2011	110,000	22,000	156	150	140
	2012	110,000	22,000	16,500	500	79
	2013	67,100	13,400	10,100	n/a	n/a
	2014	67,100	13,400	10,100	n/a	n/a

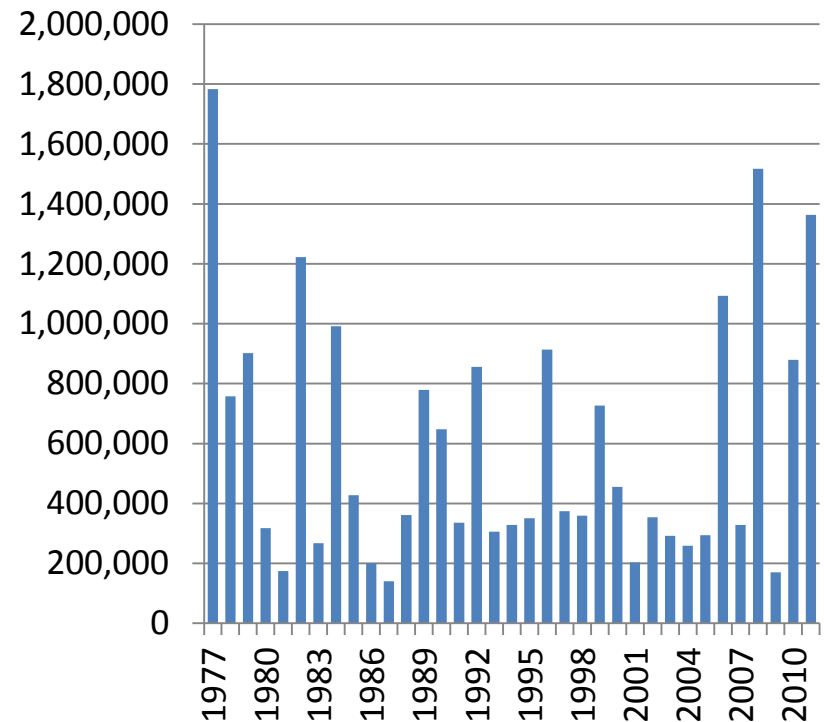


Pacific cod, continued

Biomass (t)

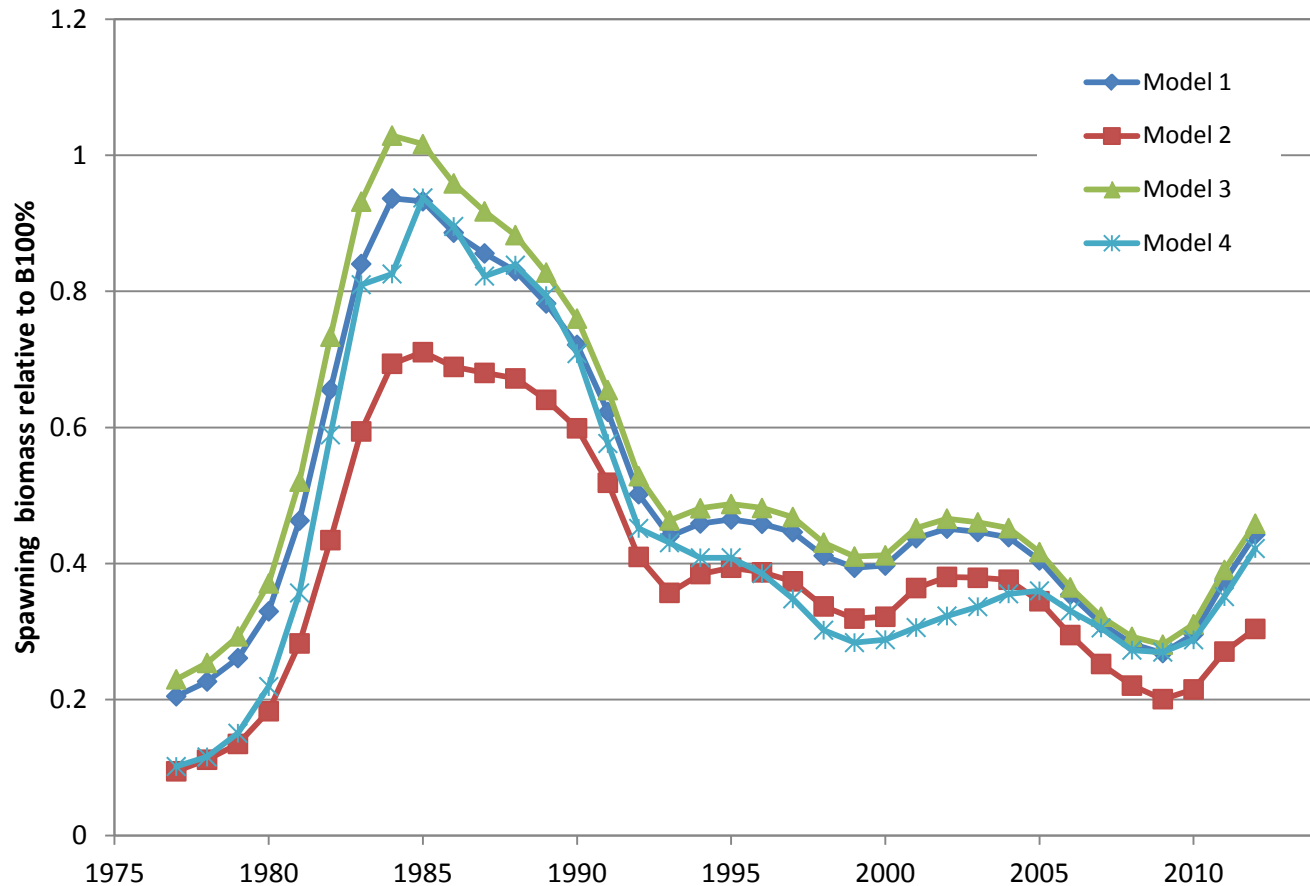


Recruitment





Pacific cod, continued





Pacific cod, continued

- Model changes/alternatives, continued:
 - The assessment author presented an update of preliminary versions of an AI model, which tended to produce estimates of ABC substantially lower than recent catches. This report was provided for information and feedback. The Team had no decisions to make. There will be further discussion at the May meeting.
- Plan Team recommendations for next year's assessment:
 - Team strongly supports field research on catchability and analysis of 2012 results



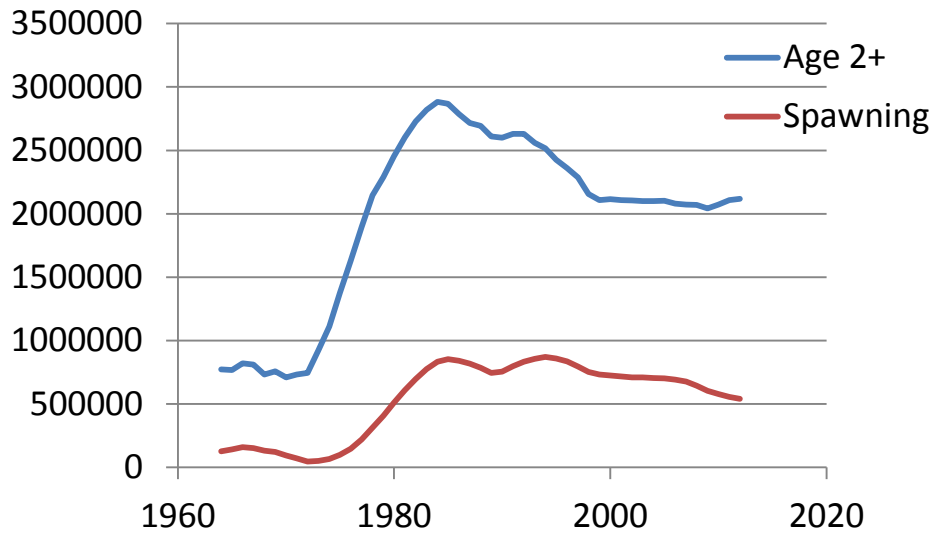
Pacific cod, concluded

Area	Year	Age 3+ biomass	OFL	ABC	TAC*	Catch
BS/AI	2011	1,560,000	272,000	235,000	227,950	219,866
	2012	1,620,000	369,000	314,000	275,000	223,939
	2013	1,510,000	359,000	307,000	n/a	n/a
	2014	1,670,000	379,000	323,000	n/a	n/a

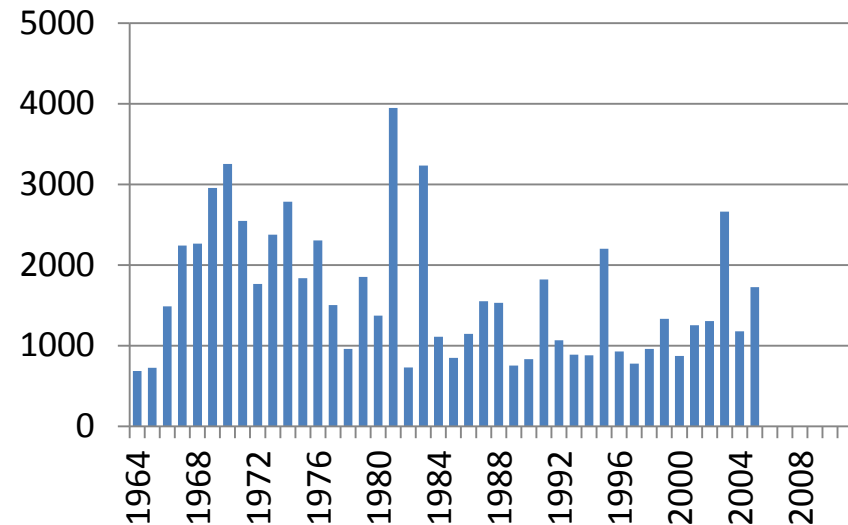


Yellowfin sole, continued

Biomass (t)



Recruitment





Yellowfin sole, concluded

Area	Year	Age 6+ Biomass	OFL	ABC	TAC	Catch
BSAI	2011	1,960,000	262,000	239,000	196,000	151,167
	2012	1,950,000	222,000	203,000	202,000	137,716
	2013	1,960,000	220,000	206,000	NA	NA
	2014	1,960,000	219,000	206,000	NA	NA

Greenland turbot

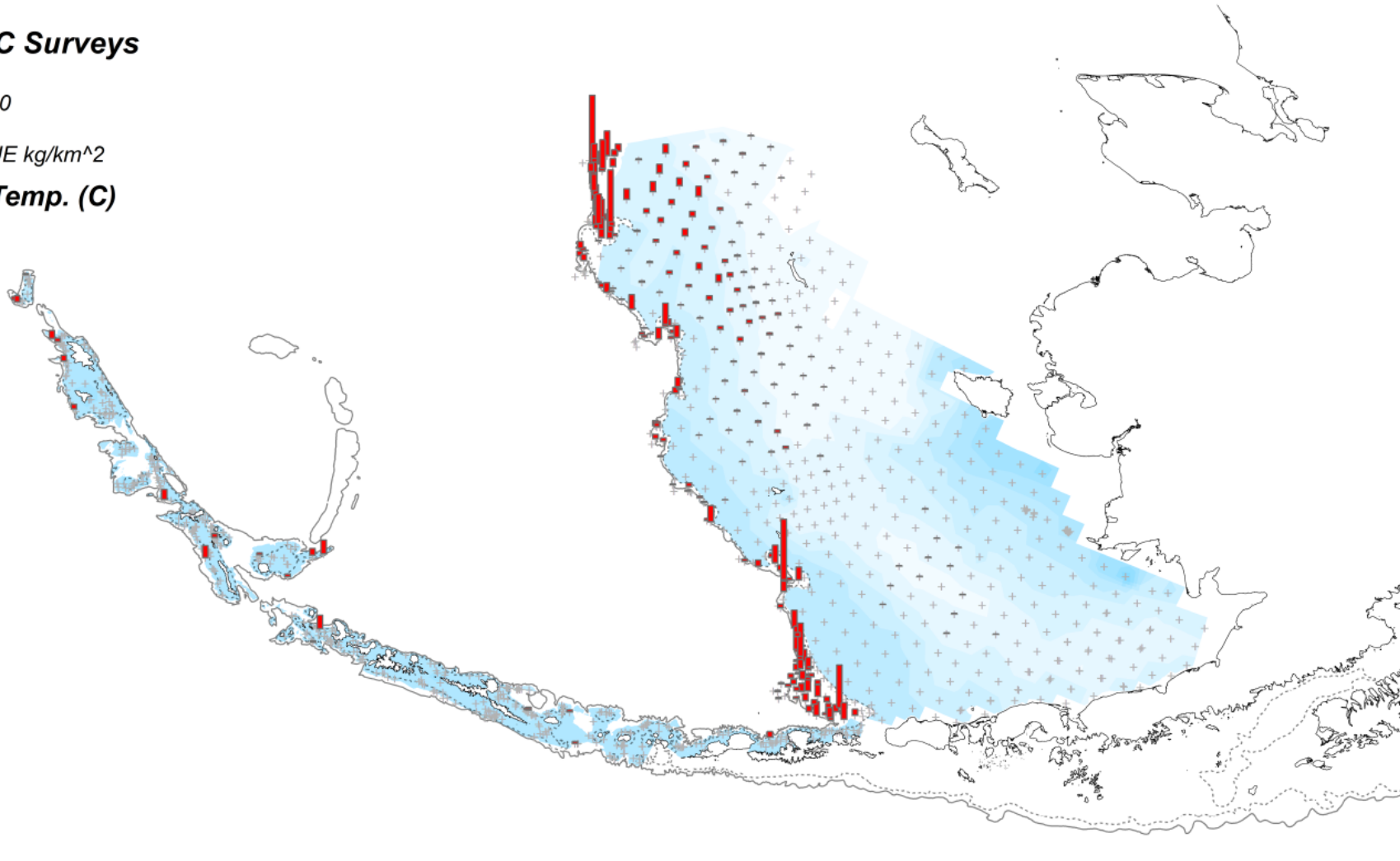
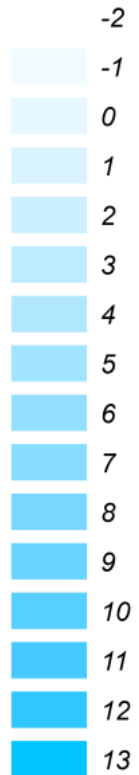


2012 AFSC Surveys

3,700

CPUE kg/km²

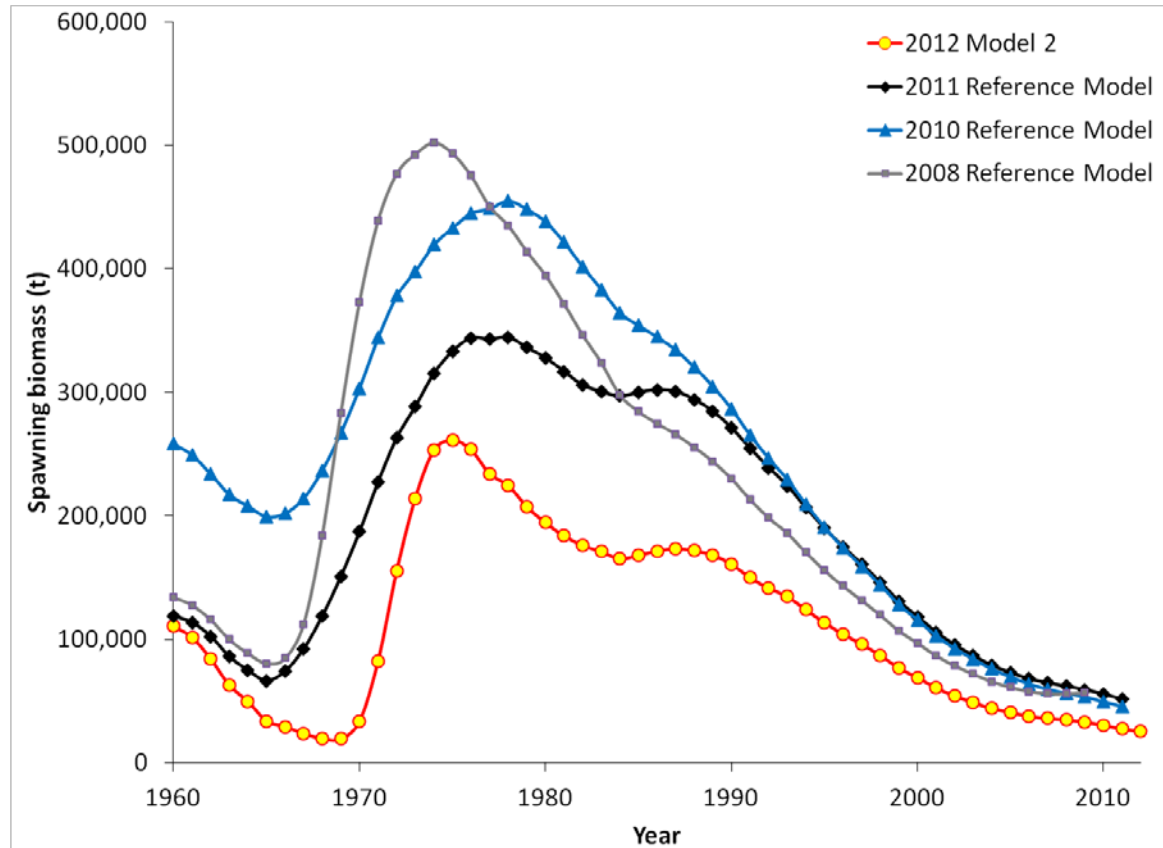
Bottom Temp. (C)



Comparison with past assessments



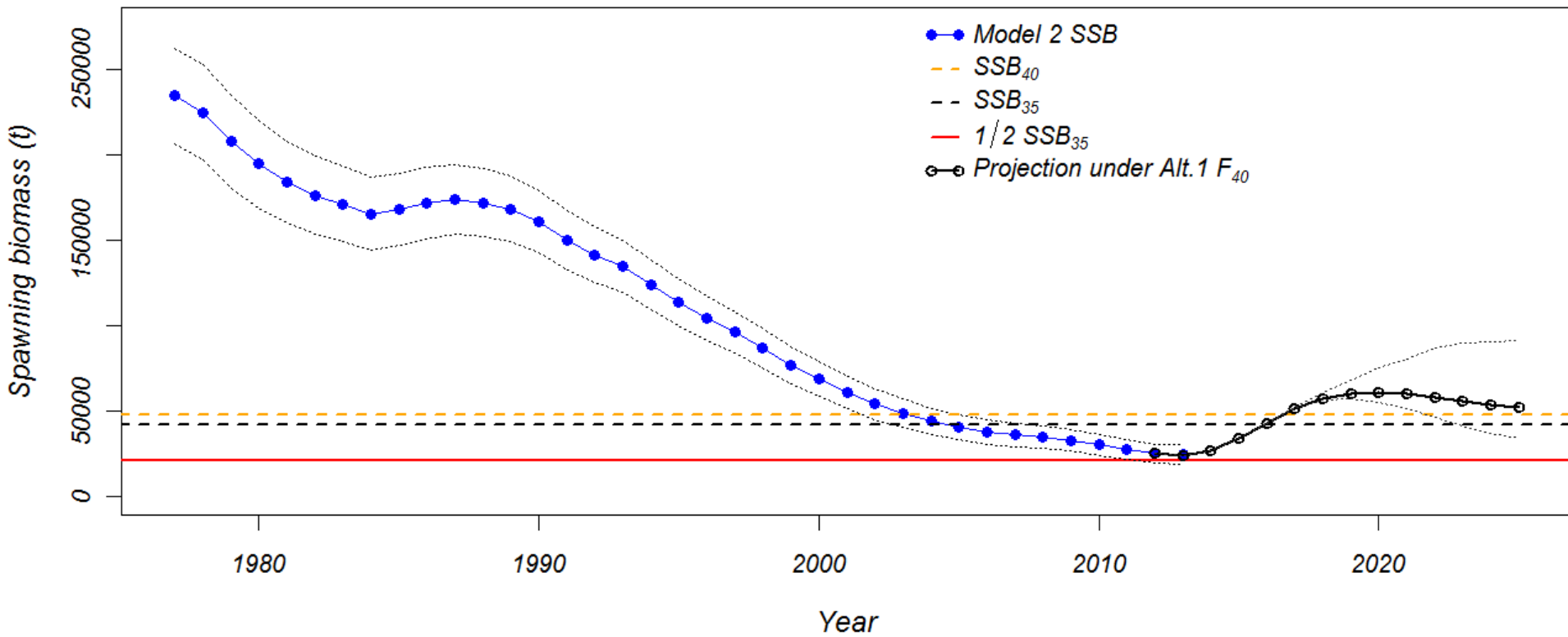
- Lower female spawning and total age 1+ biomass than previous years' assessments



Model 2 – Not overfished



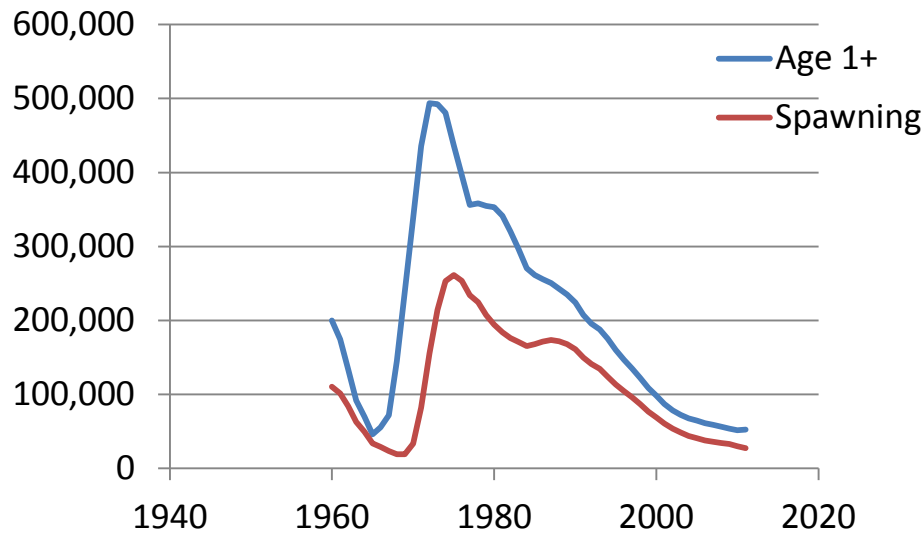
- 2012 estimated to be at $B_{21.1\%}$
- 2013 estimated to be at $B_{19.7\%}$



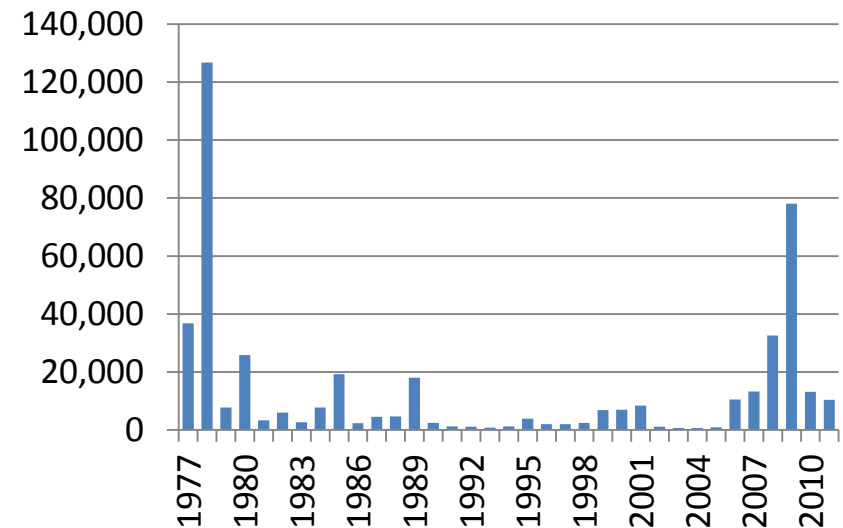


Greenland turbot, continued

Biomass (thousands t)



Recruitment





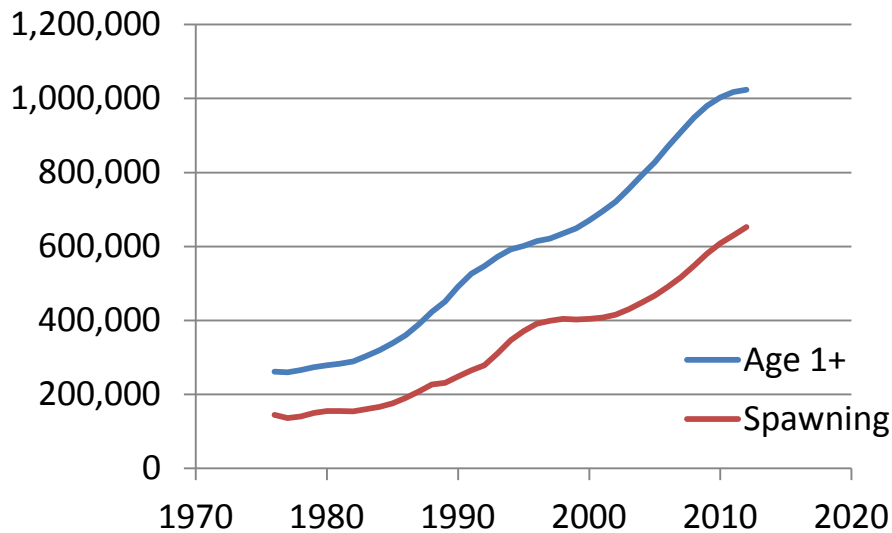
Greenland turbot, concluded

Area	Year	Age 1+ Biomass	OFL	Subarea	ABC	TAC	Catch
BSAI	2011	74,000	7,220		6,140	5,050	3,642
BSAI	2012	76,900	11,700		9,660	8,660	4,401
BSAI	2013	81,000	2,540		2,060	n/a	n/a
BSAI	2014	94,800	3,270		2,650	n/a	n/a

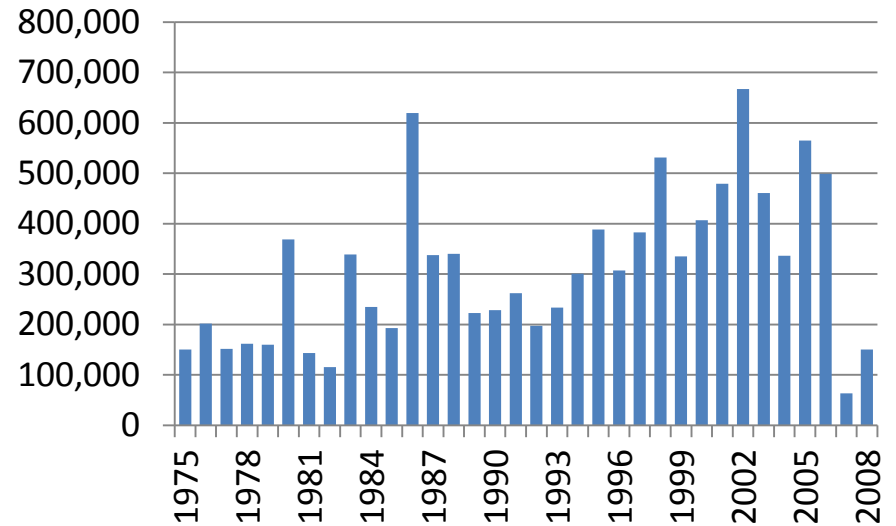


Arrowtooth flounder, continued

Biomass (t)



Recruitment





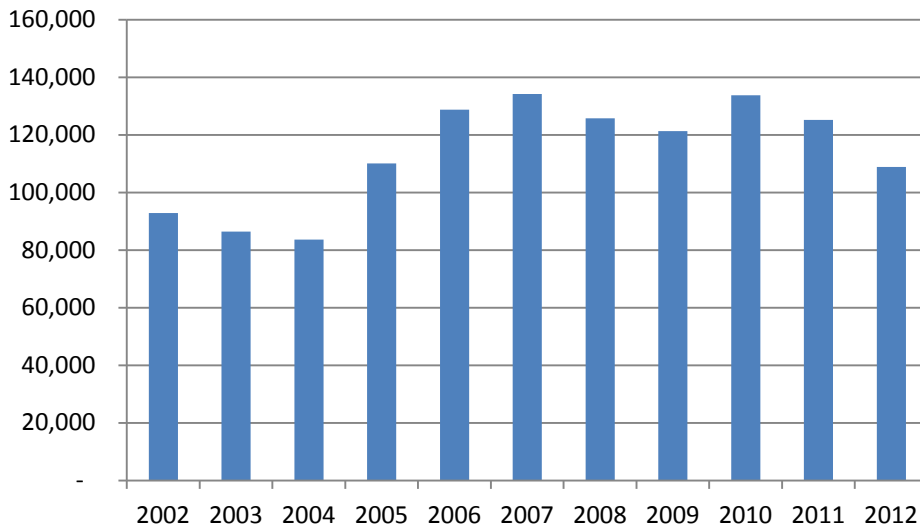
Arrowtooth flounder, concluded

Area	Year	Age 1+ Bio	OFL	ABC	TAC	Catch
BSAI	2011	1,120,000	186,000	153,000	25,900	20,612
	2012	1,130,000	181,000	150,000	25,000	22,227
	2013	1,130,000	186,000	152,000	n/a	n/a
	2014	1,130,000	186,000	152,000	n/a	n/a

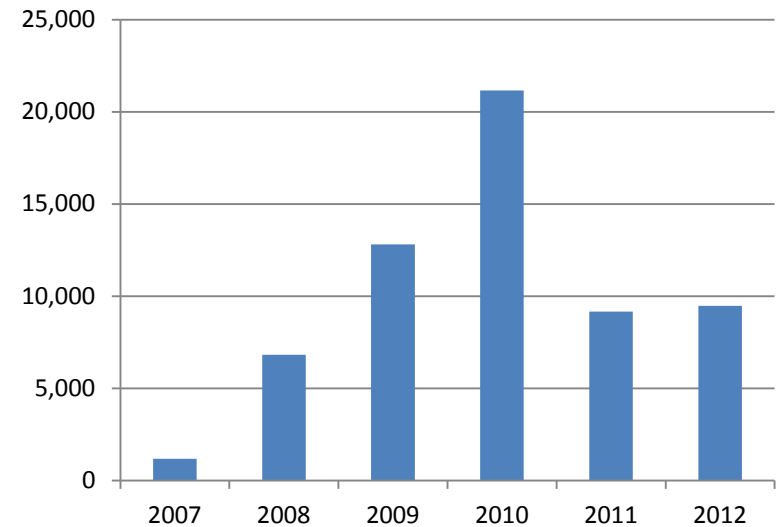


Kamchatka flounder, continued

Biomass (t)



Catch (t)





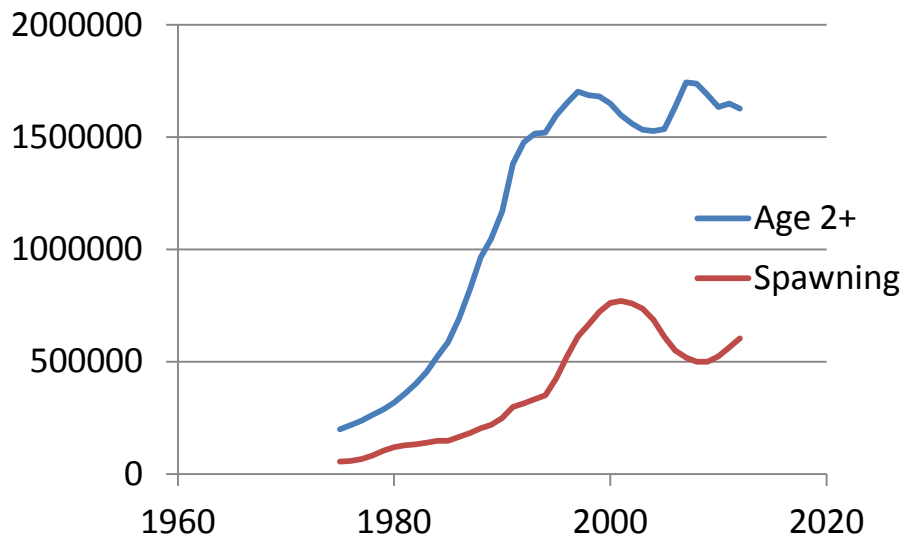
Kamchatka flounder, concluded

Area	Year	Age 1+ Bio	OFL	ABC	TAC	Catch
BSAI	2011	129,000	23,600	17,700	17,700	9,934
	2012	125,000	24,800	18,600	17,700	9,558
	2013	125,000	16,300	12,200	n/a	n/a
	2014	125,000	16,300	12,200	n/a	n/a

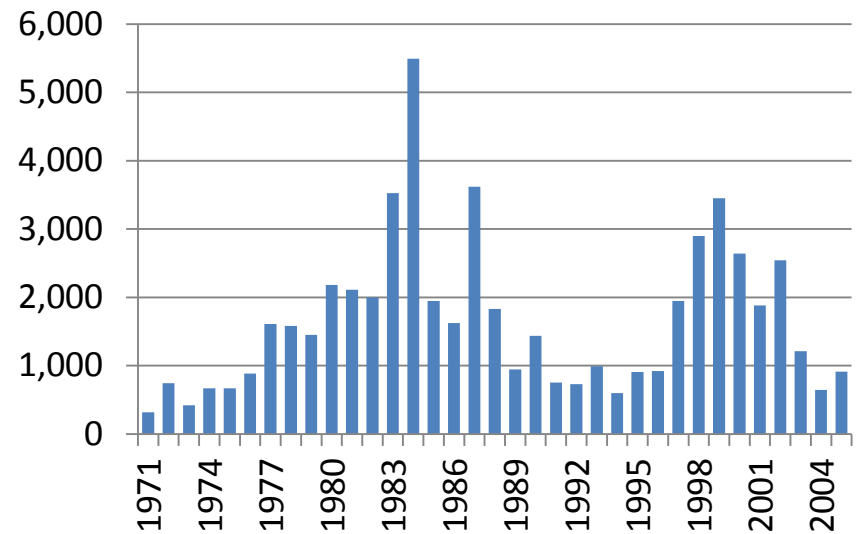


Northern rock sole, continued

Biomass (t)



Recruitment





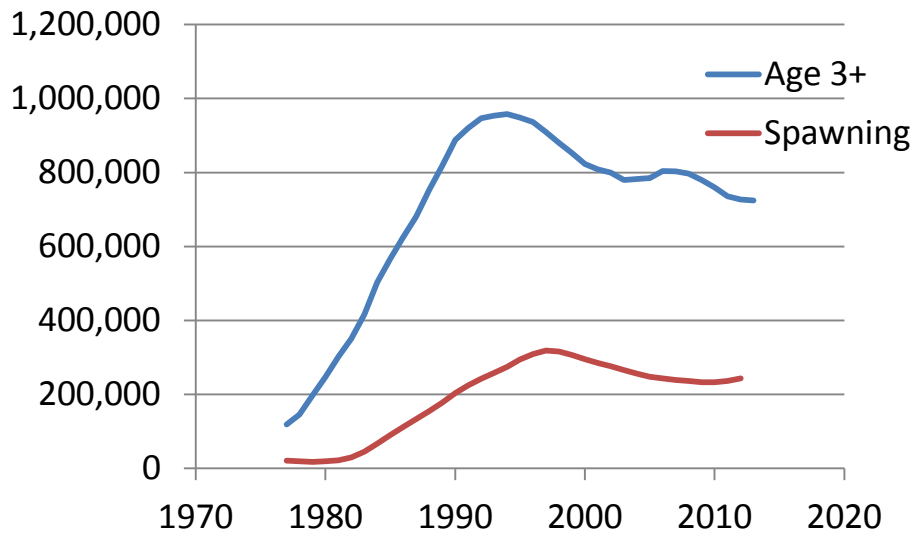
Northern rock sole, concluded

Area	Year	Age 6+ Bio.	OFL	ABC	TAC	Catch
BSAI	2011	1,870,000	248,000	224,000	85,000	60,632
	2012	1,860,000	231,000	208,000	87,000	75,806
	2013	1,470,000	241,000	214,000	n/a	n/a
	2014	1,390,000	229,000	204,000	n/a	n/a

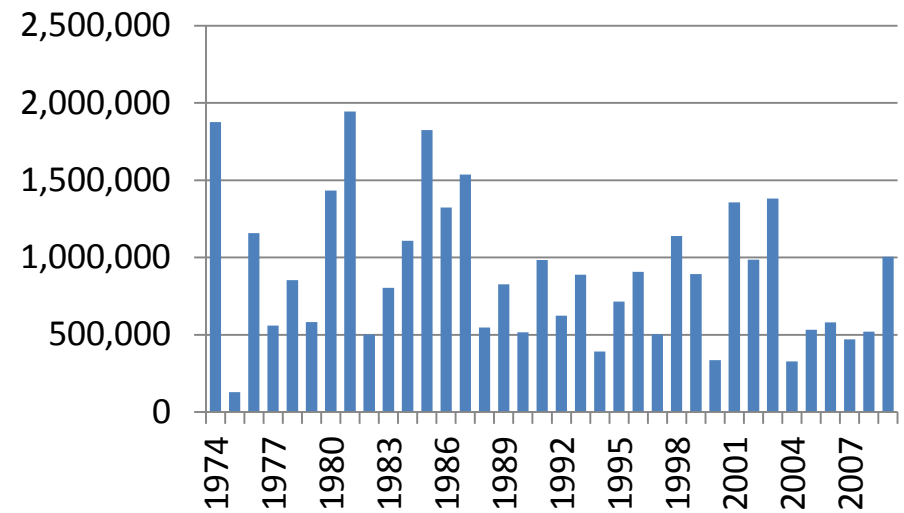


Flathead sole, continued

Biomass (t)



Recruitment





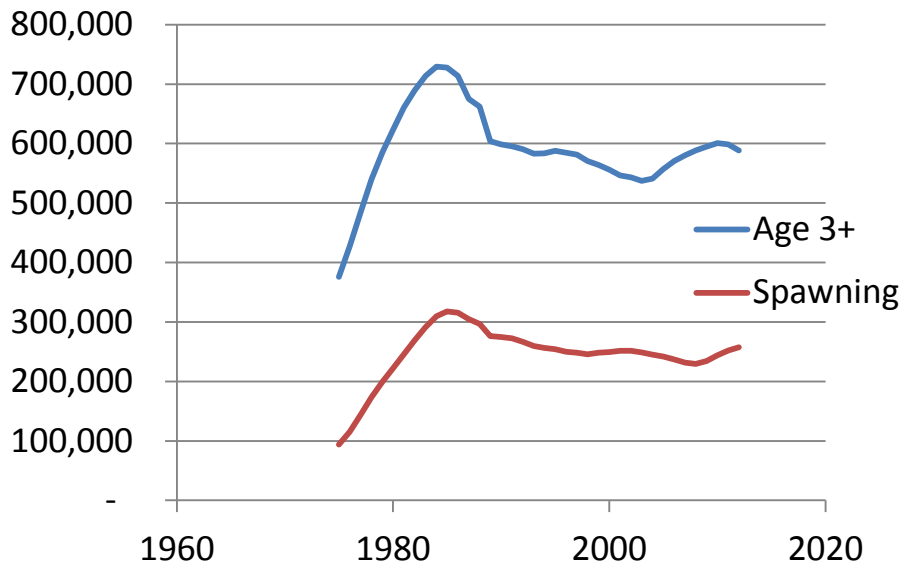
Flathead sole, concluded

Area	Year	Age 3+ Bio.	OFL	ABC	TAC	Catch
BSAI	2011	791,000	83,300	69,300	41,500	13,556
	2012	811,000	84,500	70,400	34,100	11,012
	2013	748,000	81,500	67,900	n/a	n/a
	2014	748,000	80,100	66,700	n/a	n/a

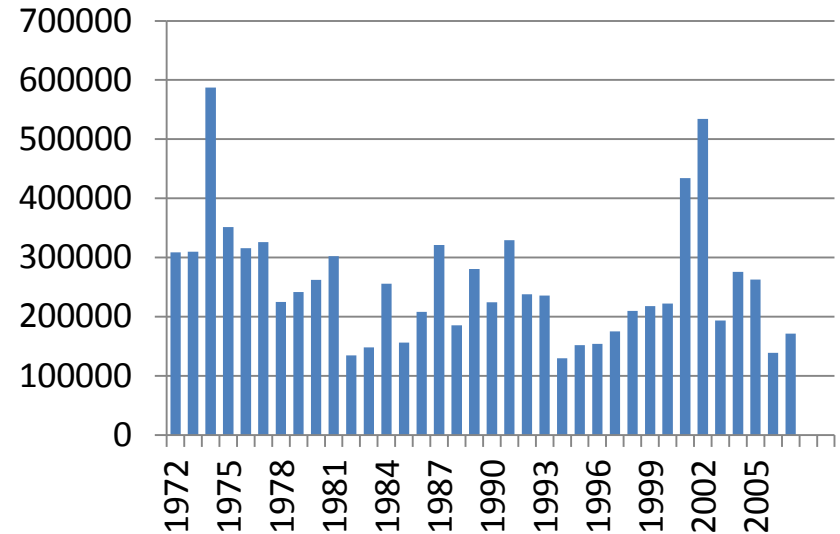


Alaska plaice, continued

Biomass (t)



Recruitment





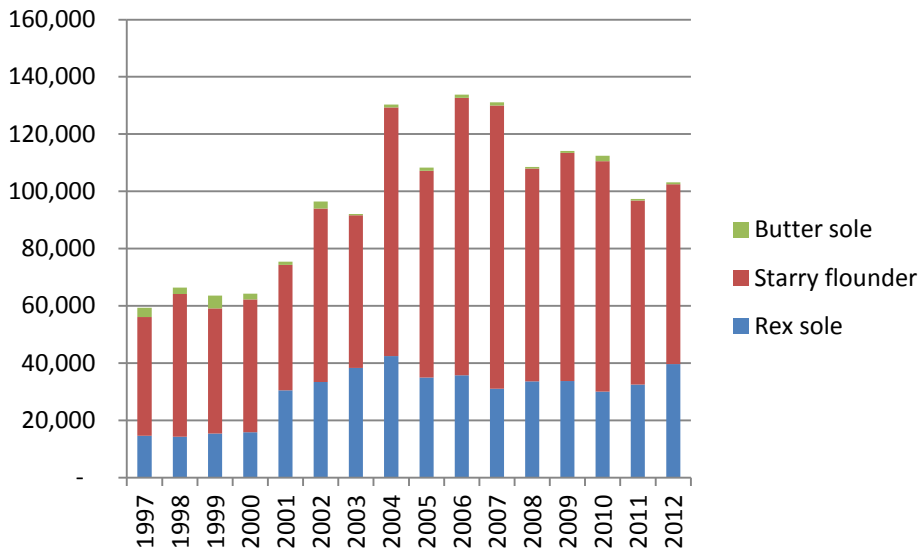
Alaska plaice, concluded

Area	Year	Age 3 + Bio	OFL	ABC	TAC	Catch
BSAI	2011	780,000	79,100	65,100	16,000	23,656
	2012	606,000	64,600	53,400	24,000	16,124
	2013	589,000	67,000	55,200	n/a	n/a
	2014	580,000	60,200	55,800	n/a	n/a

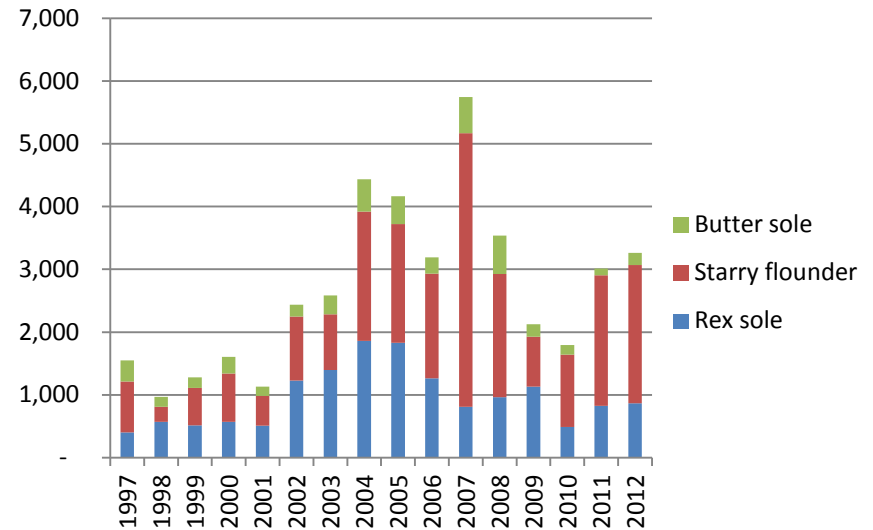


Other flatfish, continued

Biomass (t)



Catch (t)





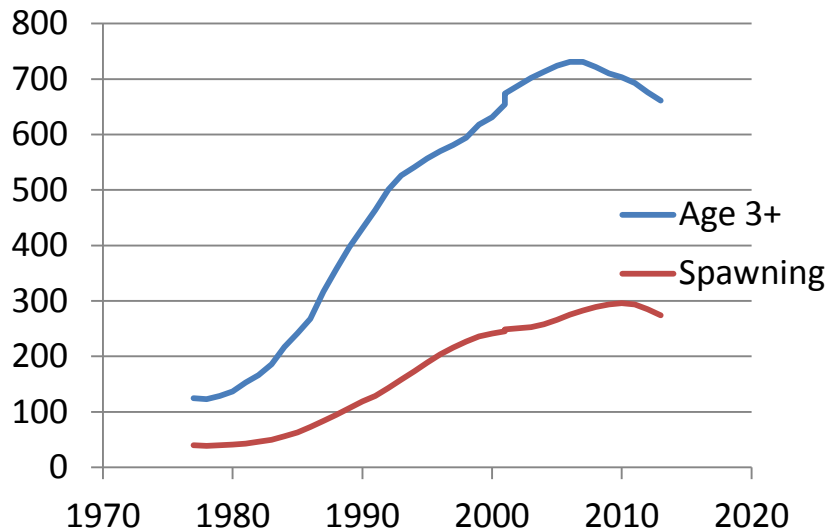
Other flatfish, concluded

Area	Year	Total Bio.	OFL	ABC	TAC	Catch
BSAI	2011	127,000	19,500	14,500	3,000	3,176
	2012	111,000	17,100	12,700	3,200	3,452
	2013	114,000	17,800	13,300	n/a	n/a
	2014	114,000	17,800	13,300	n/a	n/a

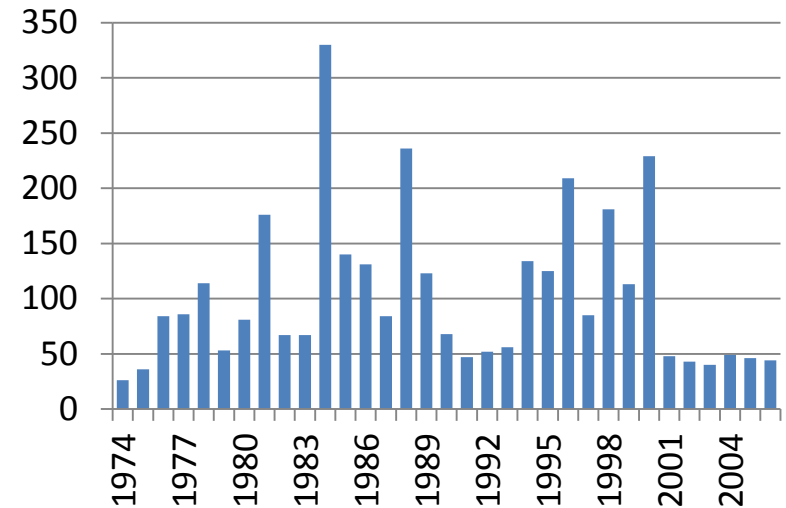


Pacific ocean perch, continued

Biomass (thousands t)



Recruitment





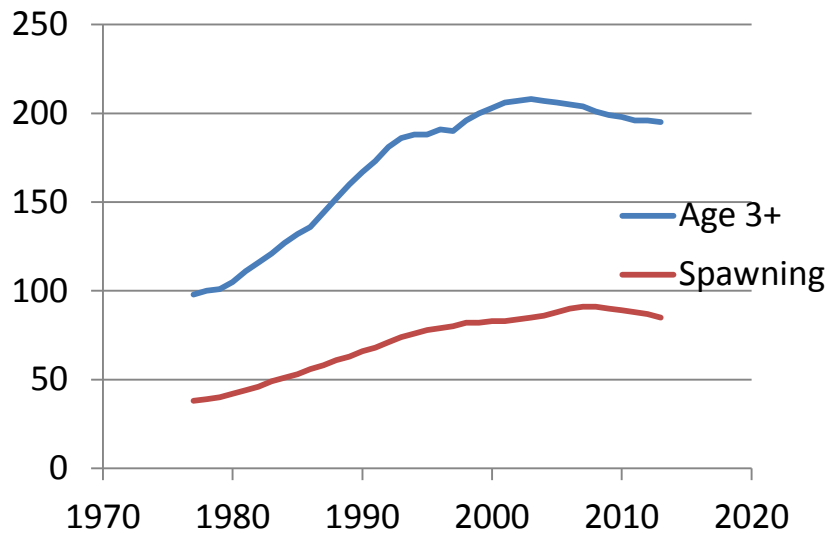
Pacific ocean perch, concluded

Area	Year	Age 3+ Bio	OFL	Subarea	ABC	TAC	Catch
BSAI	2011	601,000	36,300		24,700	24,700	24,002
BSAI	2012	594,000	35,000		24,700	24,700	21,837
BSAI	2013	663,000	41,900		35,100	n/a	n/a
BSAI	2014	639,000	39,500		33,100	n/a	n/a

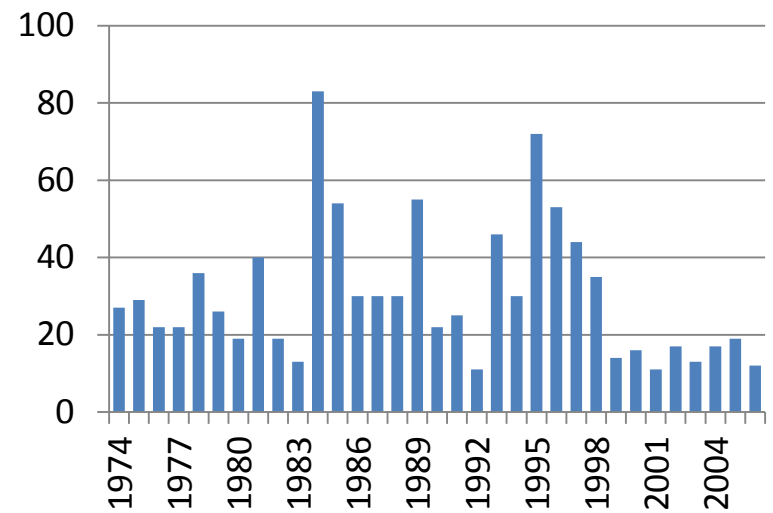


Northern rockfish, continued

Biomass (thousands t)



Recruitment





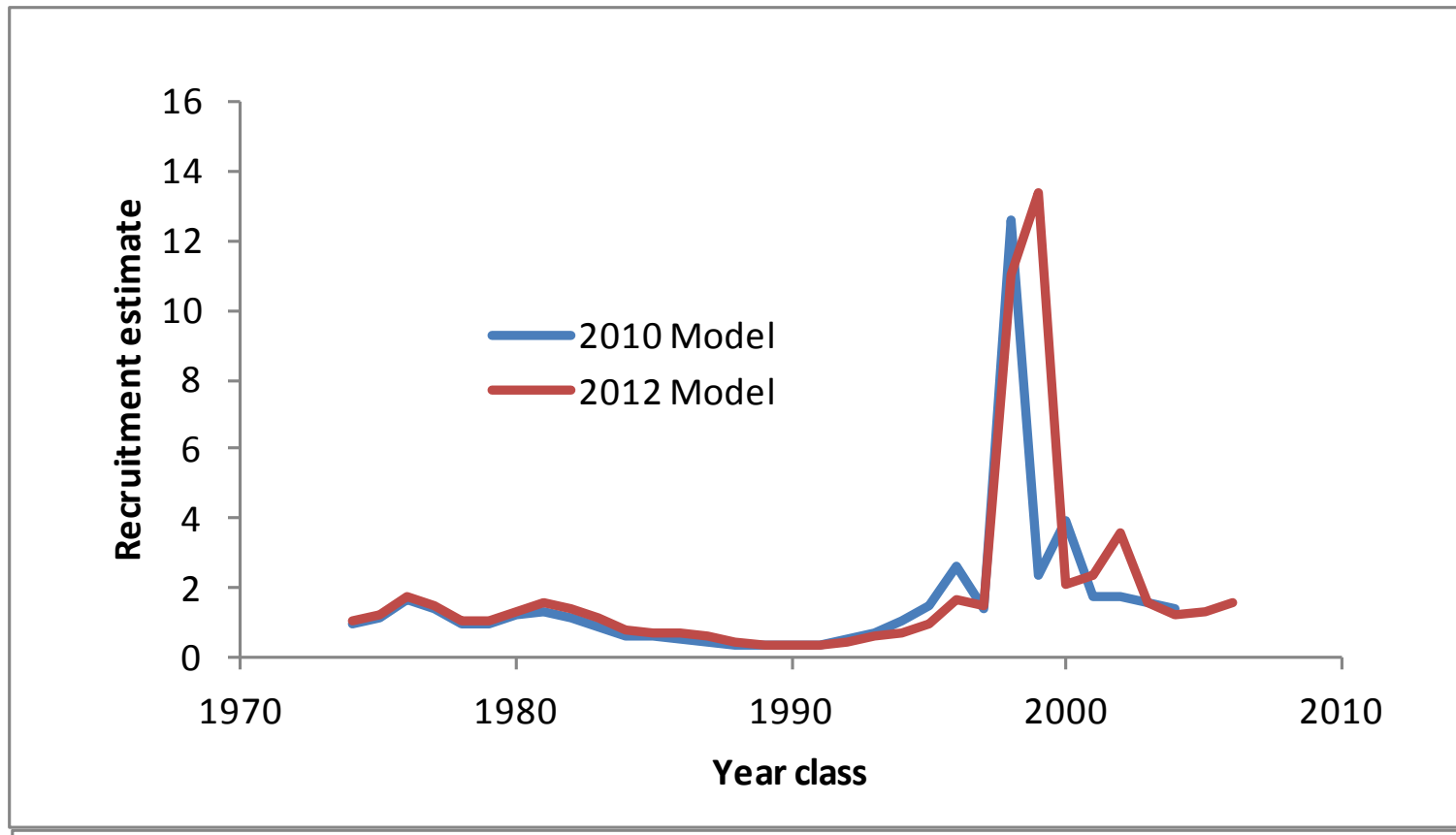
Northern rockfish, concluded

Area	Year	Age 3+ Bio.	OFL	ABC	TAC	Catch
BSAI	2011	201,000	10,600	8,670	4,000	2,764
	2012	202,000	10,500	8,610	4,700	2,474
	2013	195,000	12,200	9,850	n/a	n/a
	2014	196,000	12,000	9,320	n/a	n/a

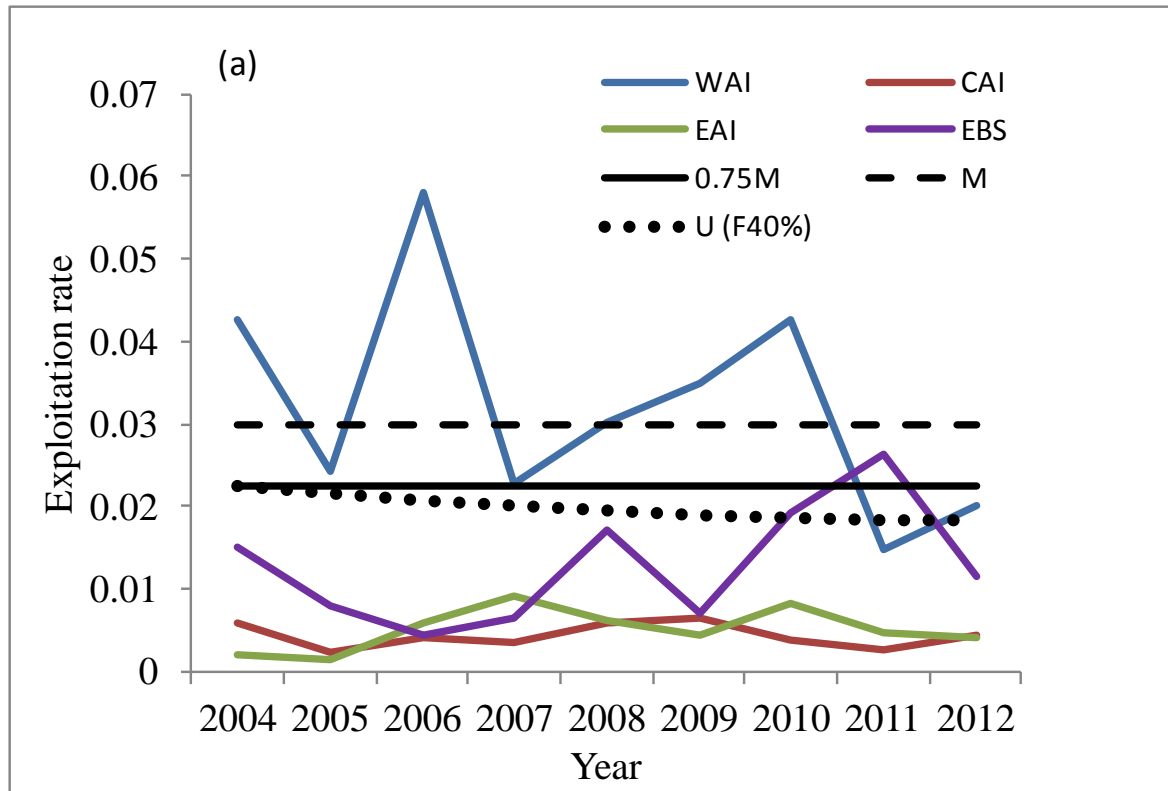
Black-spotted/rougheye rockfish

How do we define $B_{40\%}$?

Recruitment estimates from 2012 model show very strong 1998 and 1999 year classes



Area-specific exploitation rates

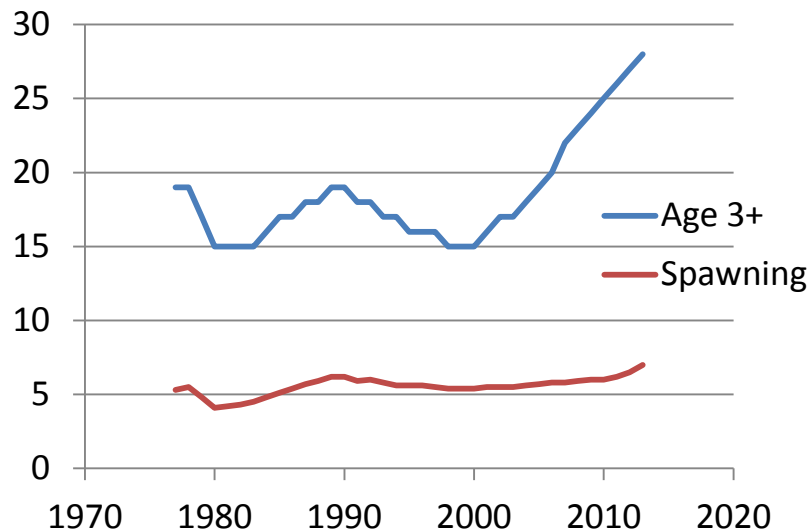


High exploitation rates in the WAI

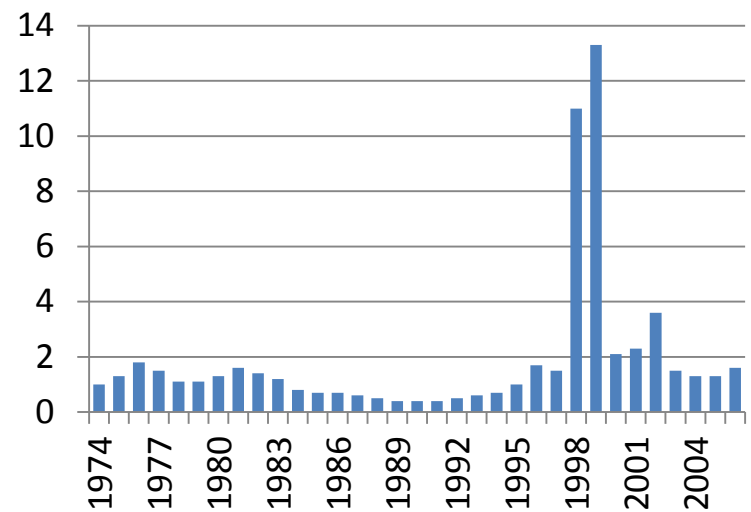


AI blackspotted/rougheye, continued

Biomass (thousands t)



Recruitment





AI blackspotted/rougheye, concluded

Area/sub area	Year	Total Bio¹.	OFL	ABC	TAC	Catch
BSAI	2011	24,200	549	454	454	170
	2012	24,900	576	475	475	204
	2013	28,000	691	569	n/a	n/a
	2014	29,000	704	604	n/a	n/a

If 1998 and 1999 year classes included in calculations:

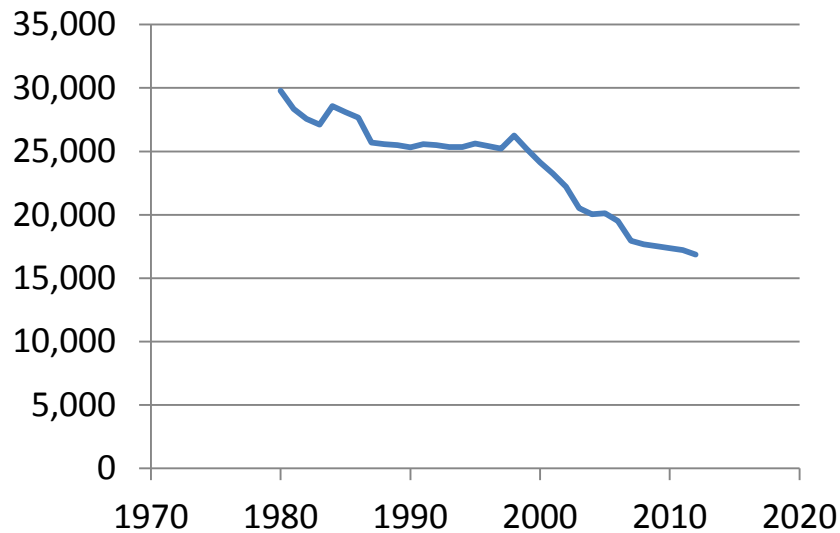
2013 ABC: 378 t

2013 OFL: 462 t

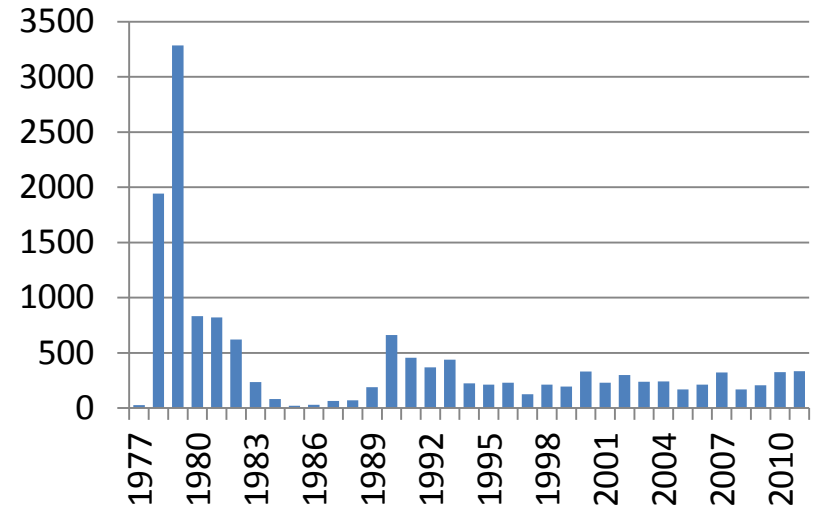


Shortraker rockfish, continued

Biomass (t)



Catch (t)





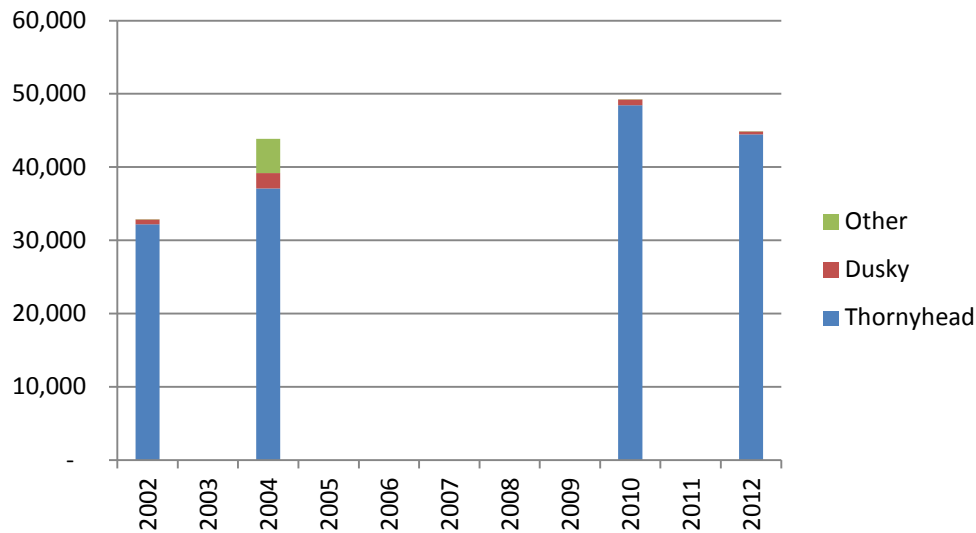
Shortraker rockfish, concluded

Area	Year	Survey Biomass	OFL	ABC	TAC	Catch
BSAI	2011	17,500	524	393	393	334
	2012	17,500	524	393	393	305
	2013	16,400	493	370	n/a	n/a
	2014	16,400	493	370	n/a	n/a

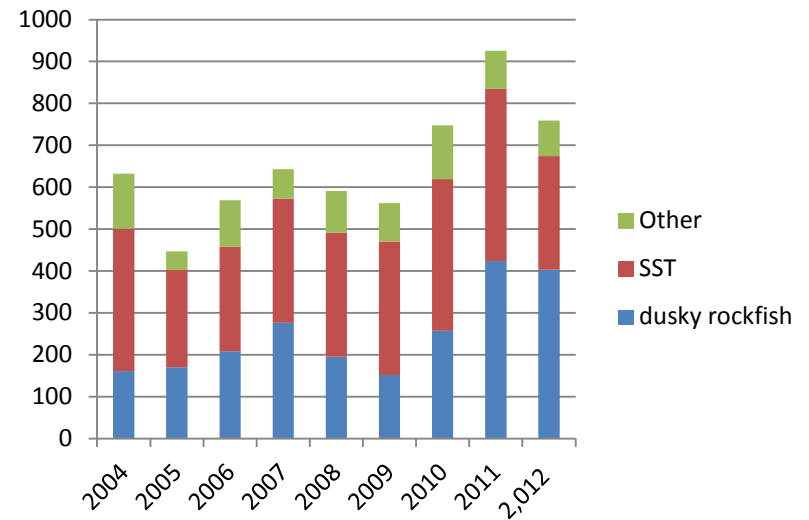


Other rockfish, continued

Biomass (t)



Catch (t)





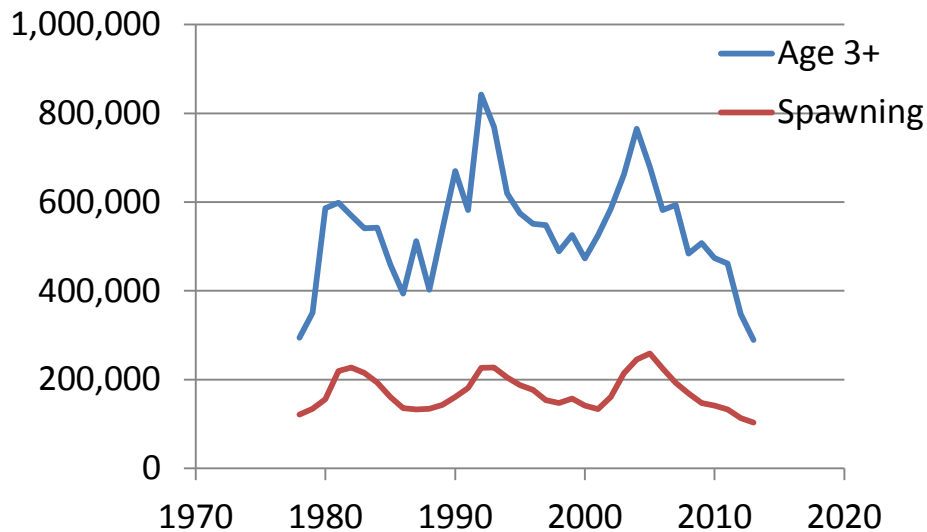
Other rockfish, concluded

Area	Year	Survey Biomass	OFL	ABC	TAC	Catch
BSAI	2011	48,900	1,700	1,280	1,070	939
	2012	48,900	1,700	1,280	1,070	924
	2013	47,700	1,540	1,160	n/a	n/a
	2014	47,700	1,540	1,160	n/a	n/a

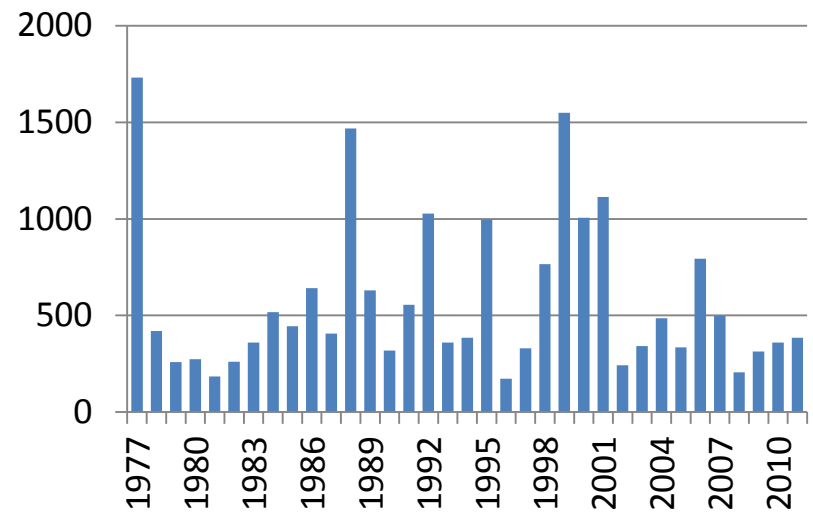


Atka mackerel, continued

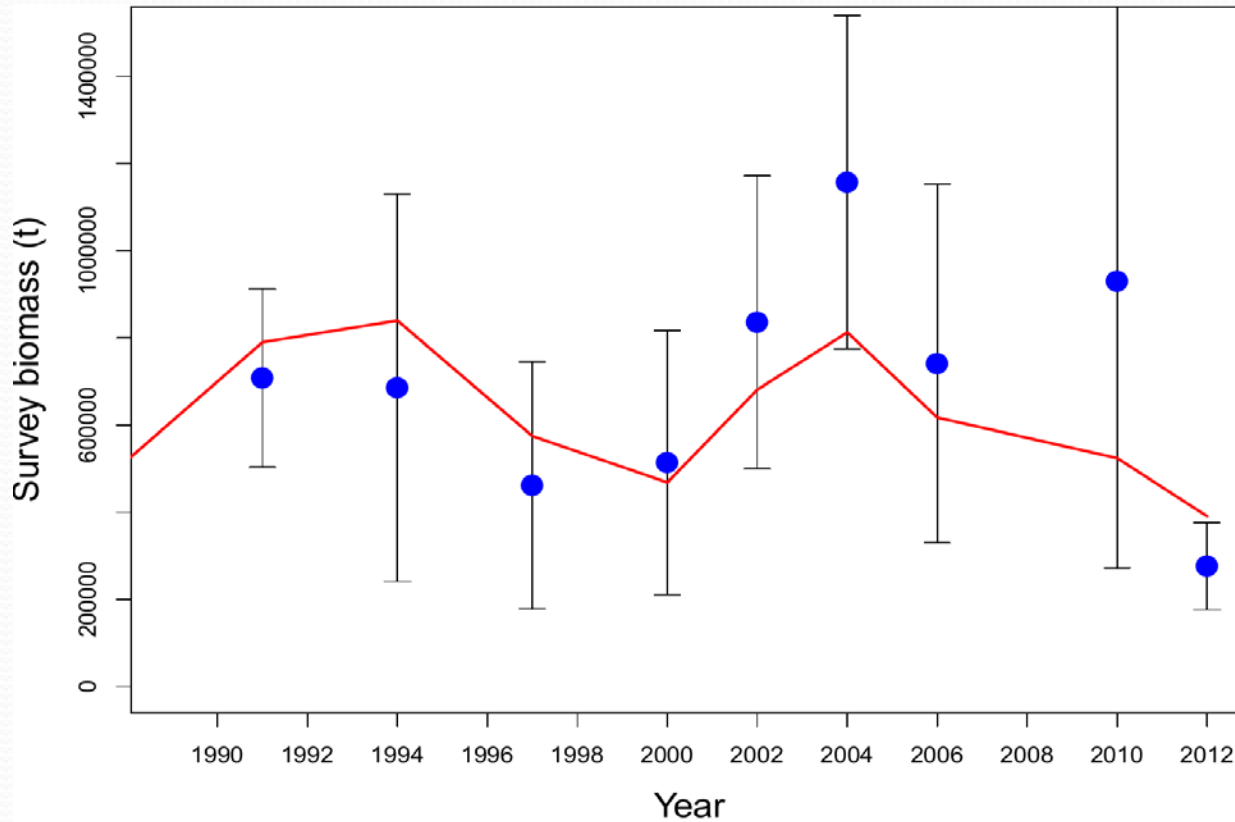
Biomass (thousands t)



Recruitment



Atka mackerel



Observed (dots) and predicted (trend line) survey biomass estimates in metric tons for Bering Sea/Aleutian Islands Atka mackerel. Error bars represent two standard errors (based on sampling) from the survey estimates



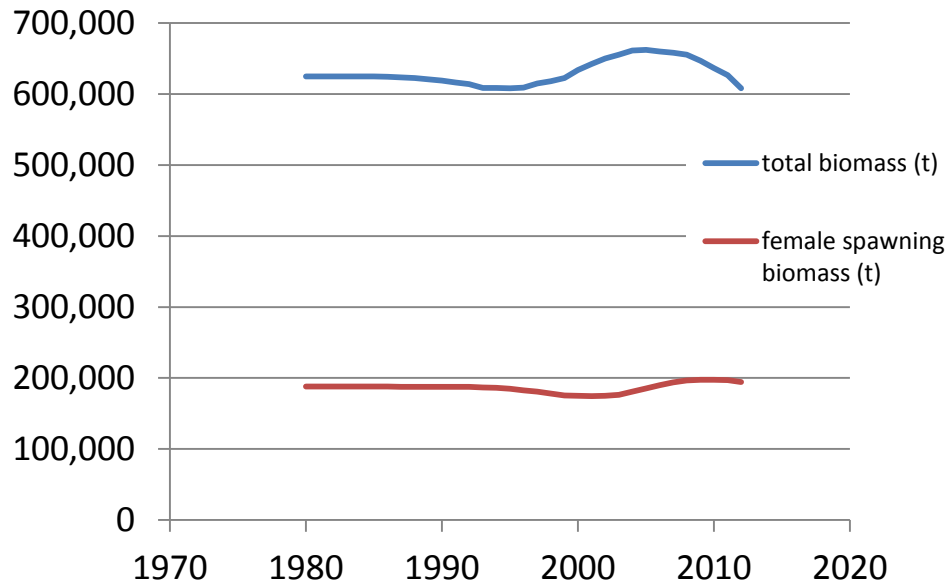
Atka mackerel, concluded

Area	Year	Age 3+ Biomass	OFL	ABC	TAC	Catch
BSAI	2011	438,000	101,000	85,300	53,100	51,807
BSAI	2012	405,000	96,500	81,400	50,763	47,755
BSAI	2013	289,000	57,700	50,000	n/a	n/a
BSAI	2014		56,500	48,900	n/a	n/a

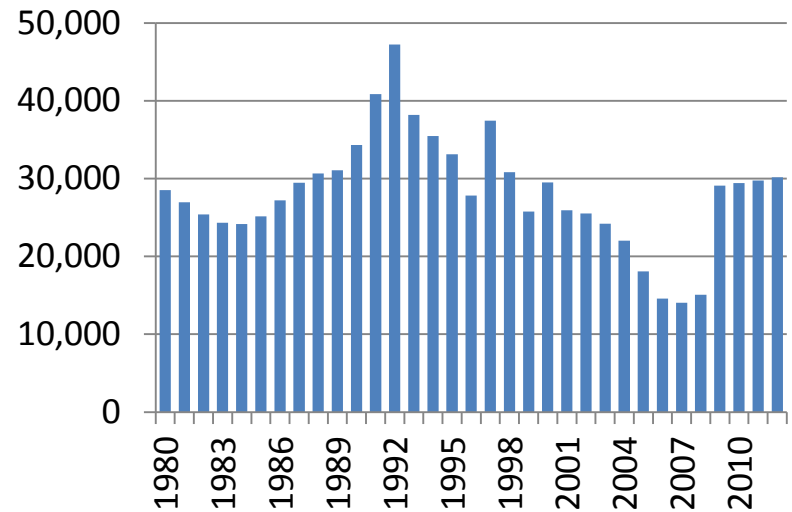


Alaska skate, continued

Biomass (thousands t)



Recruitment





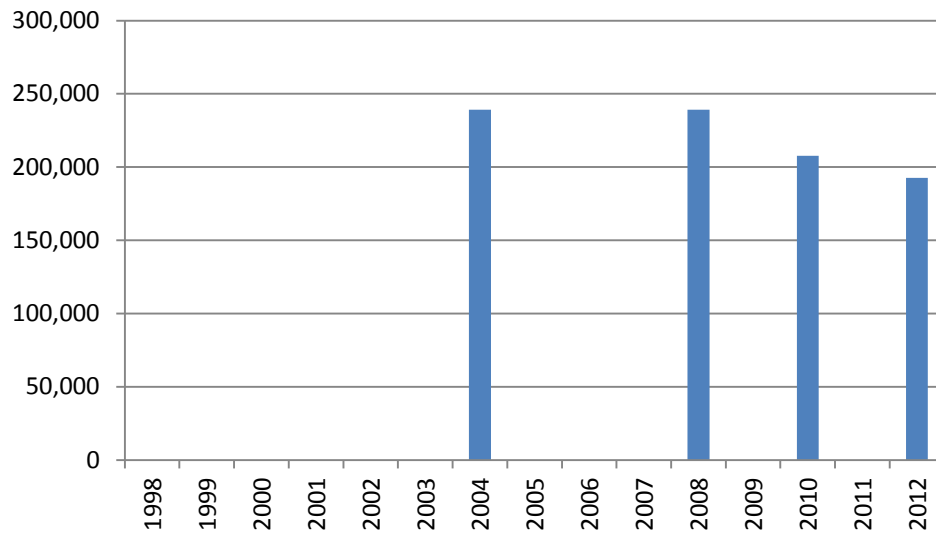
Alaska skate, concluded

Area	Year	Age 0+ Biomass	OFL	ABC	TAC	Catch
BSAI	2011	612,000	37,800	37,500	16,500	23,135
	2012	645,000	39,100	32,600	24,700	22,338
	2013	745,000	45,800	38,800	n/a	n/a
	2014	725,000	44,100	37,300	n/a	n/a

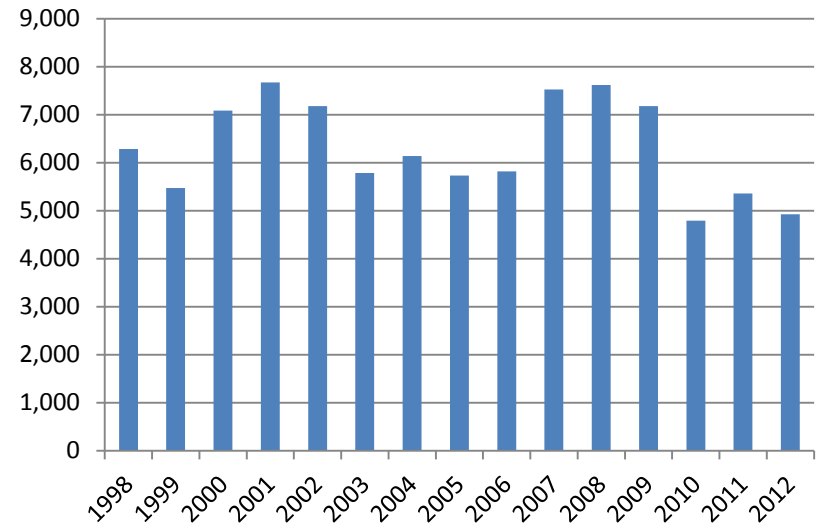


Sculpins, continued

Biomass (t)



Catch (t)





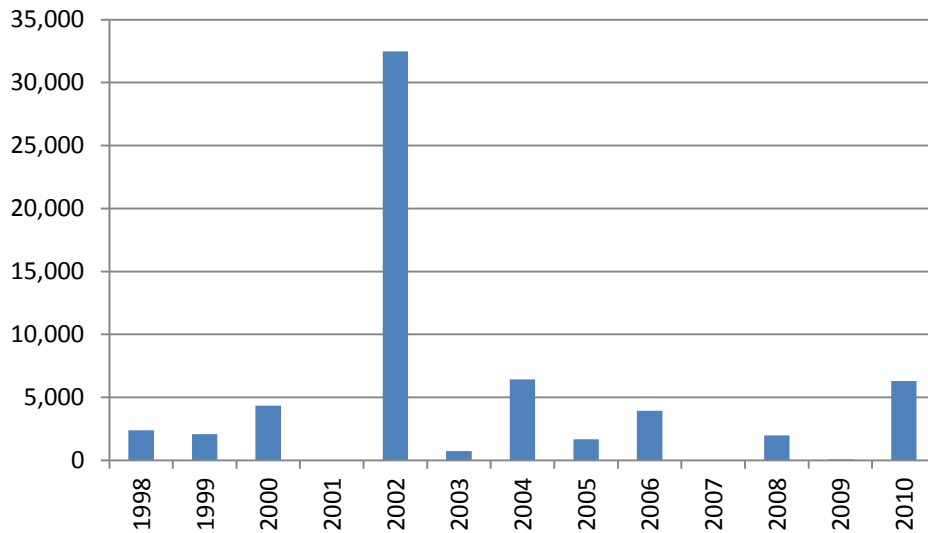
Sculpins, concluded

Area	Year	Biomass	OFL	ABC	TAC	Catch
BSAI	2011	208,000	58,300	43,700	5,200	5,358
	2012	208,000	58,300	43,700	5,200	5,469
	2013	216,000	56,400	42,300	n/a	n/a
	2014	216,000	56,400	42,300	n/a	n/a

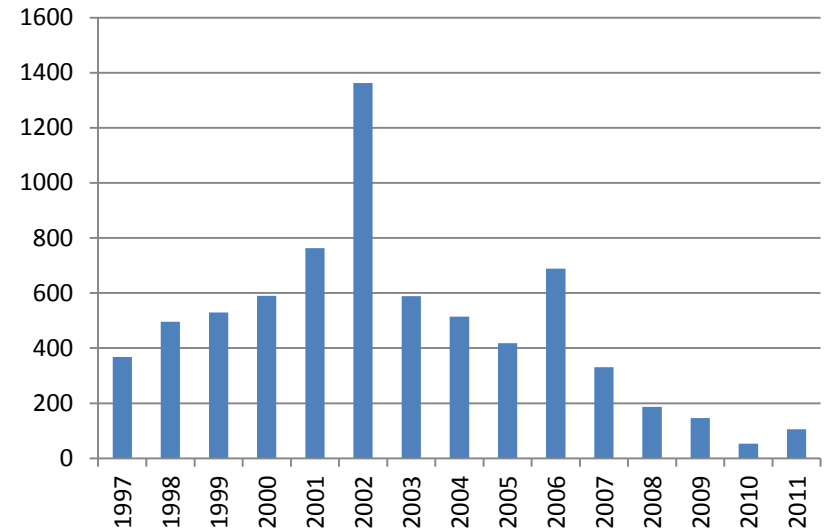


Sharks, continued

Biomass (t)



Catch (t)





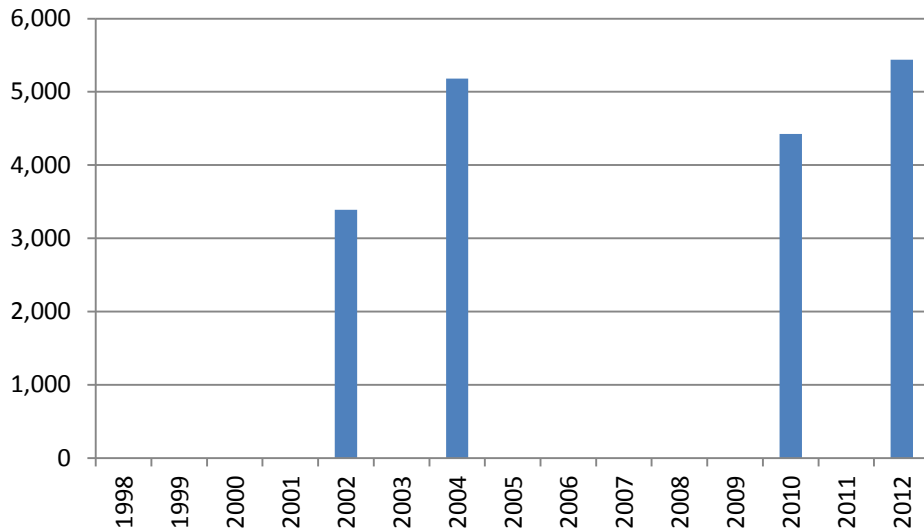
Sharks, concluded

Area	Year	Biomass	OFL	ABC	TAC	Catch
BS/AI	2011	n/a	1,360	1,020	50	172
	2012	n/a	1,360	1,020	200	81
	2013	n/a	1,360	1,020	n/a	n/a
	2014	n/a	1,360	1,020	n/a	n/a

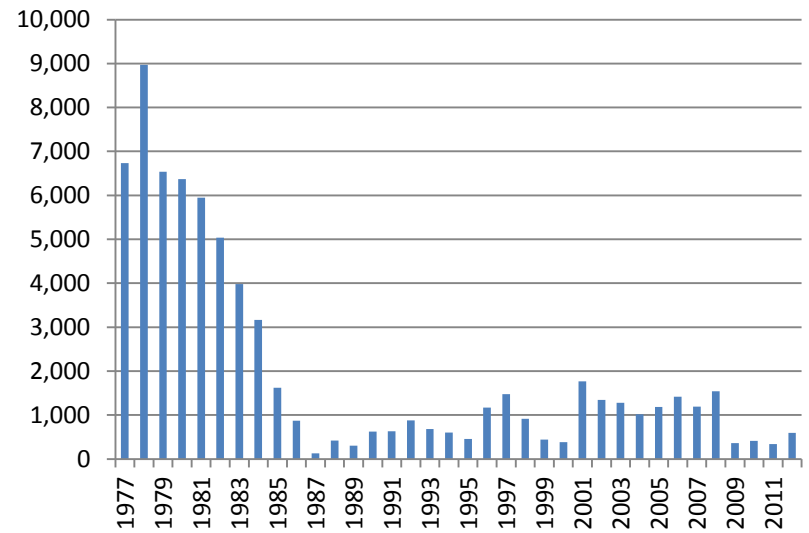


Squid, continued

Biomass (t)



Catch (t)





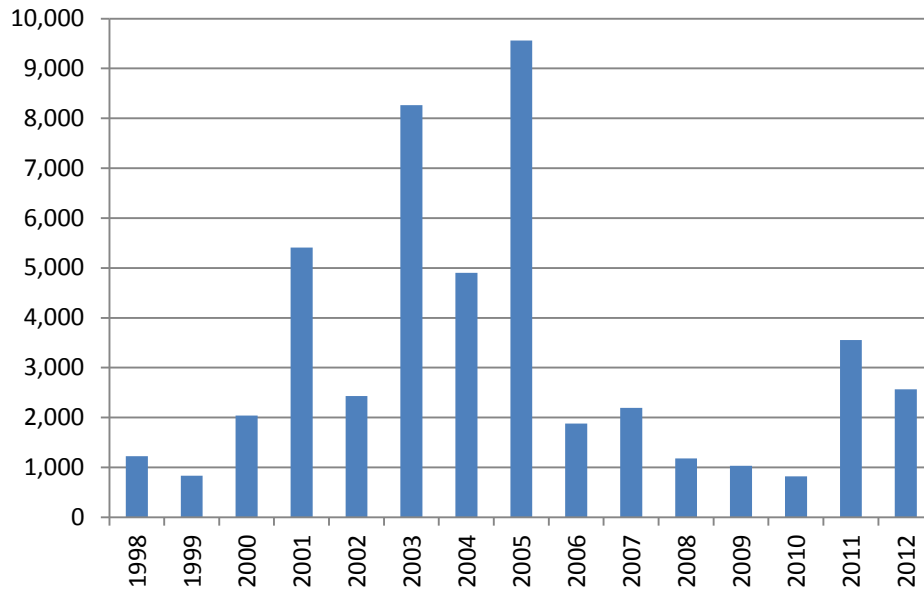
Squids, continued

Area	Year	Biomass	OFL	ABC	TAC	Catch
BSAI	2011	n/a	2,620	1,970	1,970	336
	2012	n/a	2,620	1,970	425	678
	2013	n/a	2,620	1,970	n/a	n/a
	2014	n/a	2,620	1,970	n/a	n/a

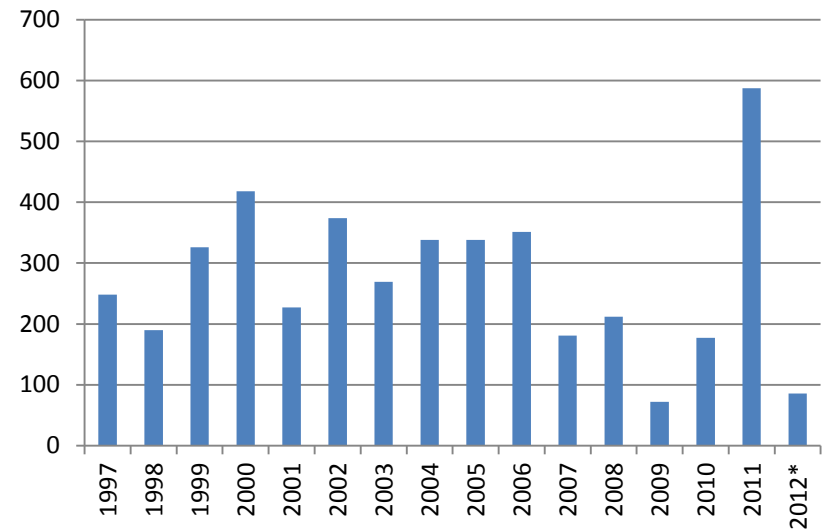


Octopus, continued

Biomass (t)



Catch (t)





Octopus, concluded

Area	Year	Biomass	OFL	ABC	TAC	Catch
BSAI	2011	n/a	528	396	150	587
	2012	n/a	3,450	2,590	900	132
	2013	n/a	3,450	2,590	n/a	n/a
	2014	n/a	3,450	2,590	n/a	n/a