Update on groundfish stock trends for the Gulf of Alaska

Report of the
Gulf of Alaska Groundfish
Plan Team meeting
Nov 14–18th, 2011

GOA Plan Team Members

James Ianelli (co-chair)	AFSC
Diana Stram (co-chair)	NPFMC
Kristen Green	ADFG
Henry Cheng	WDF (joint)
Mike Dalton	AFSC
~~Bob Foy~~	~~AFSC~~
Nancy Friday	NMML
Chris Lunsford	AFSC
~~Sarah Gaichas~~	~~AFSC~~
Ken Goldman	ADFG
Steven Hare	IPHC
Jon Heifetz	AFSC
Sandra Lowe	AFSC
Tom Pearson	AKR
Nick Sagalkin	ADFG
Leslie Slater	USFWS (joint)
Paul Spencer	AFSC
Craig Faunce	**AFSC (observer)**

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Specification process

CIE review
Model development

Summer
- Surveys
- Age reading
- Data

September
- 1st Plan Team
  - New data
  - modeling

October
- Council meeting
- Presentation of reviews

Nov
- 2nd Plan Team meeting
  - Full assessment

December
- Council meeting
- Final TAC specification

SAFE
Report

Harvest Control Rules

Based on data quality

Tier 1 – Age-structured assessment, well-defined stock-recruitment relationship

Tier 3 – Age-structured assessment

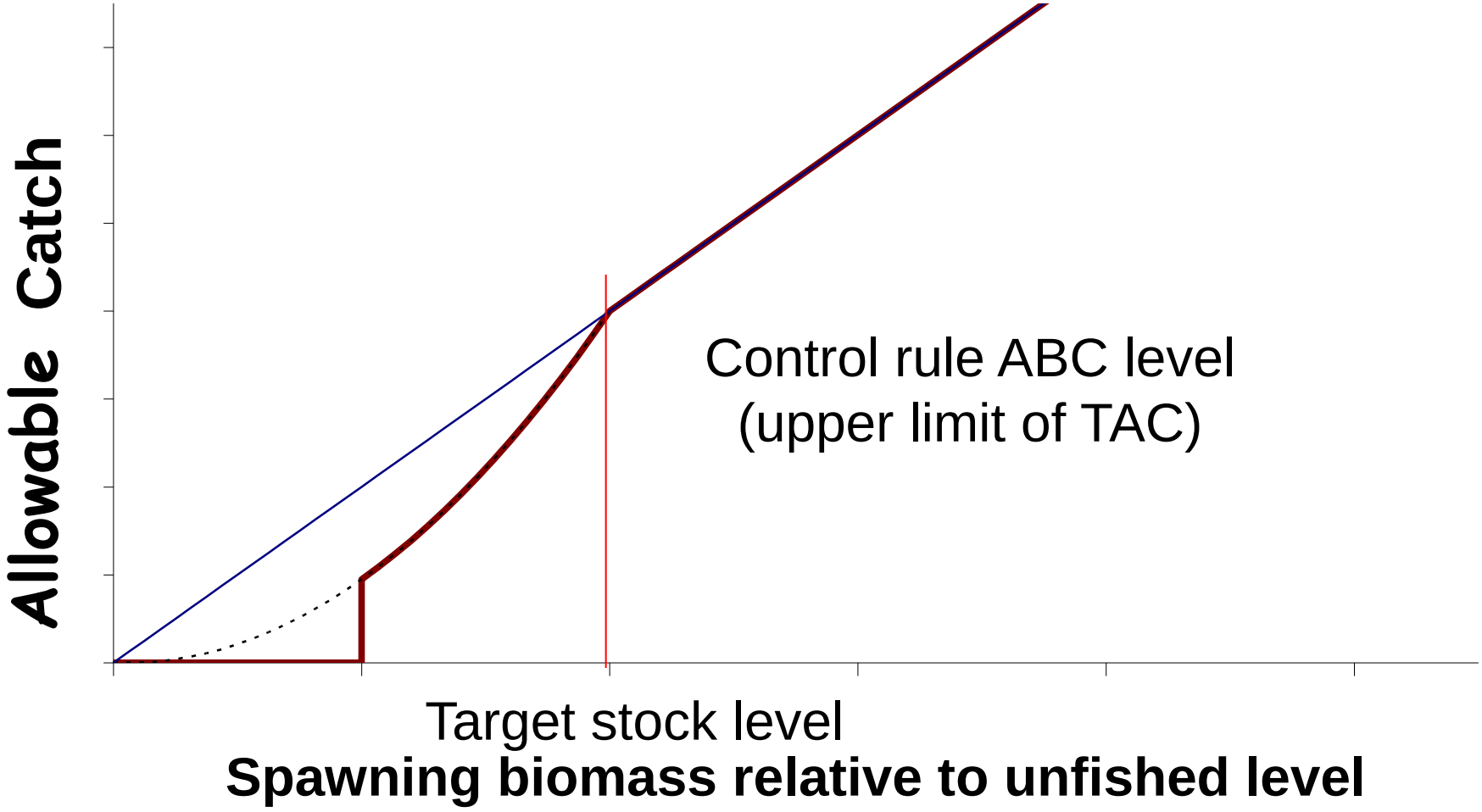
Tier 4 – Reliable biomass estimate, selectivity and maturity

Tier 5 -- Reliable survey biomass estimates and estimate of natural mortality

Tier 6 – Reliable catch history data

North Pacific and Bering Sea Groundfish

Rate declines, catch declines faster…



ABC specifications

Team recommendations where ABC < maximum permissible:

	% of Max Permissible
Pollock	84%
Demersal shelf rockfish	77%

GOA

Biennial cycle—survey year for GOA

11 stocks in Tier 3

(mostly above *B40%*)

2 in Tier 4

9 in Tier 5, and

5 in Tier 6

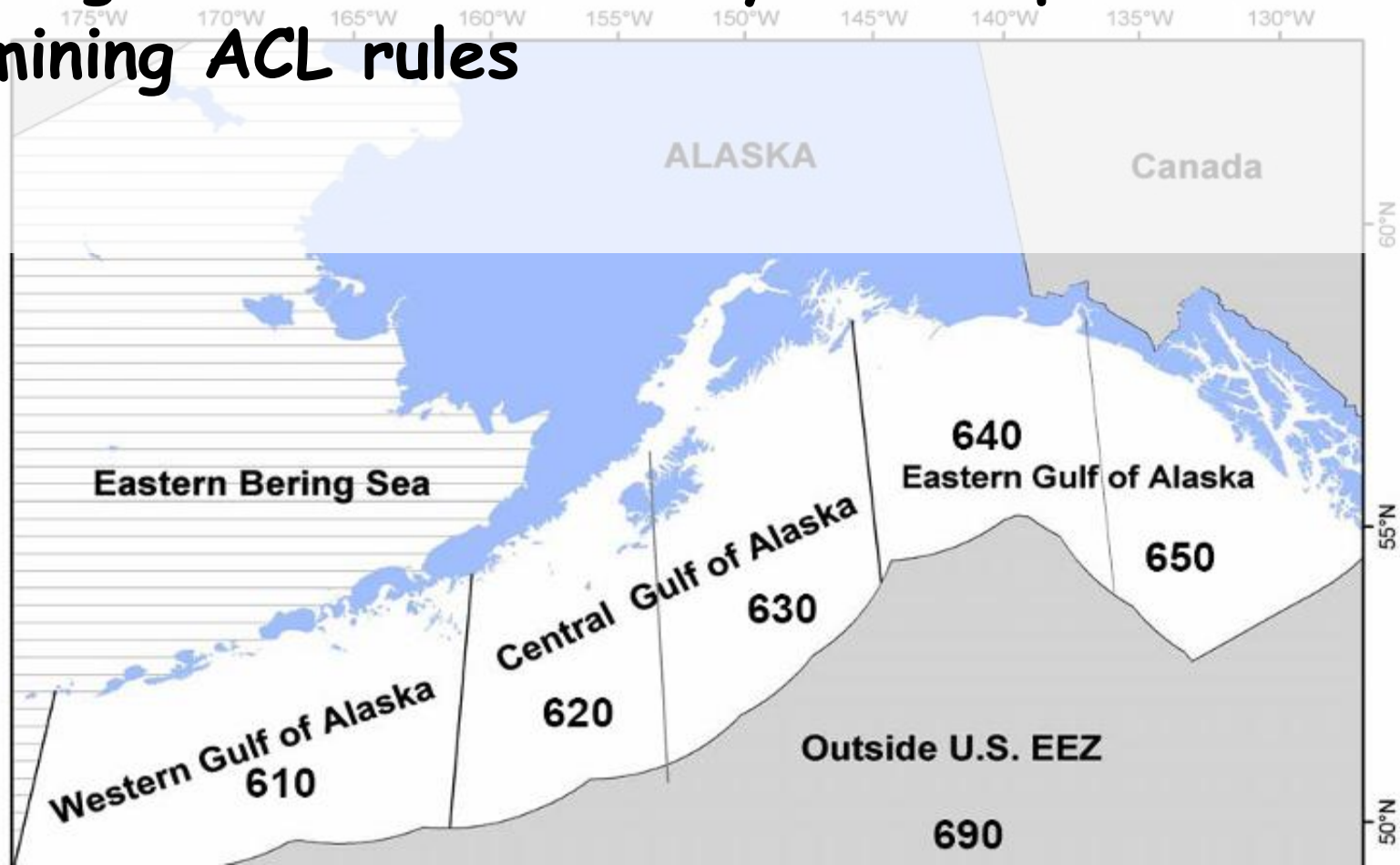
Note some hybrid groups

Overview

ABC by NMFS management areas…

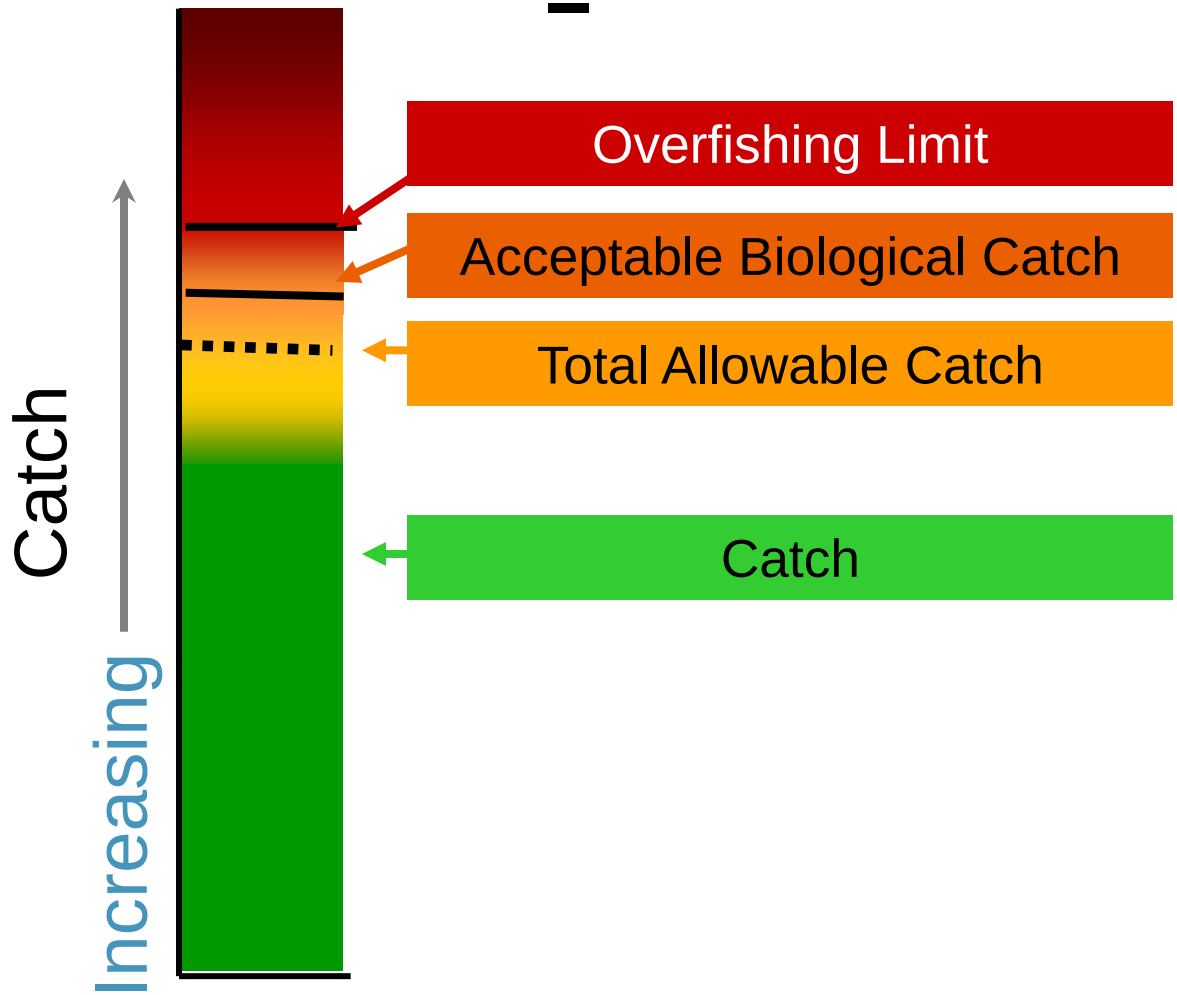
But ACLs are at resolution of OFL apportionments

Exceeding ACL 2 times in 4 years requires re-examining ACL rules

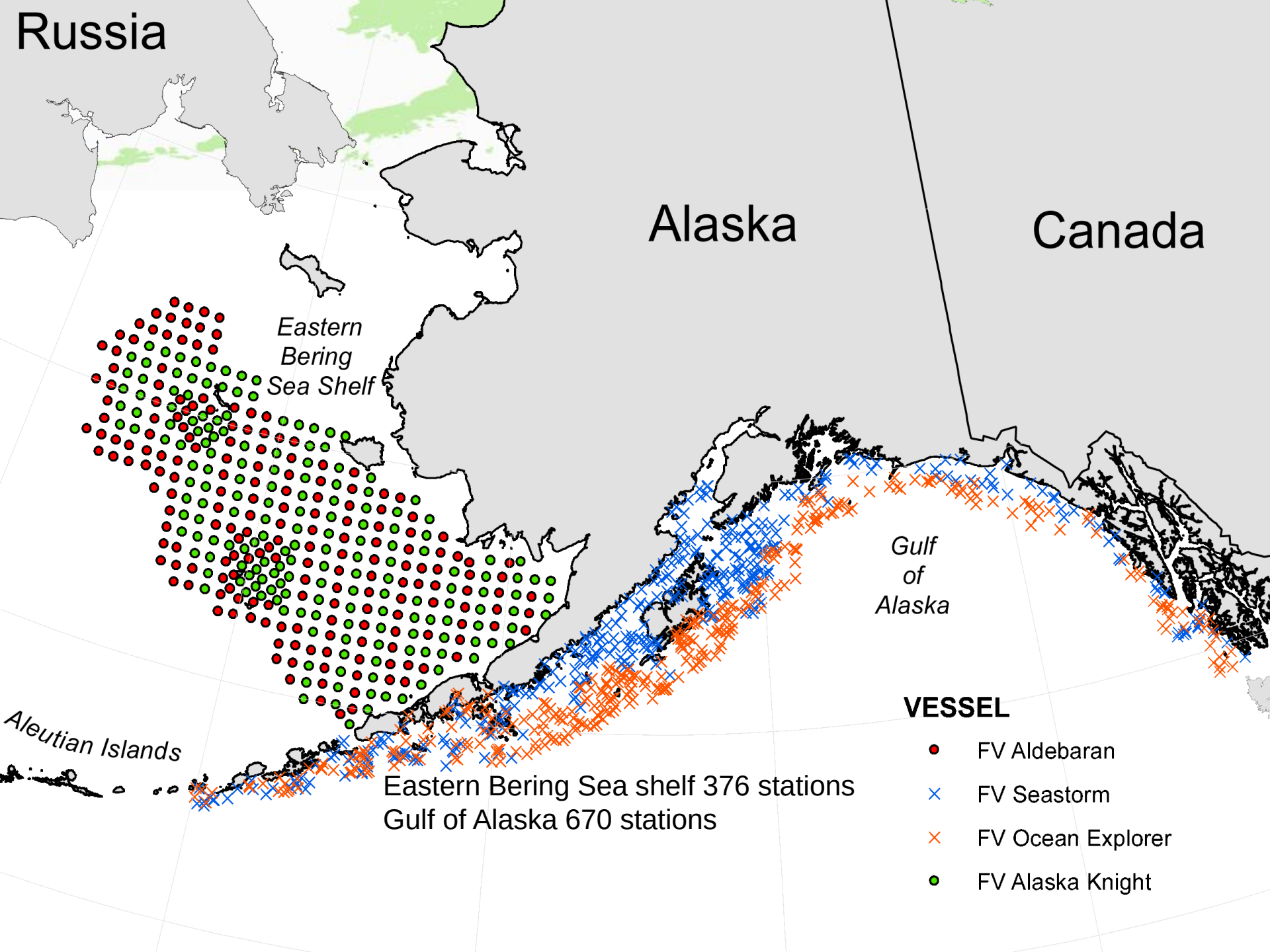


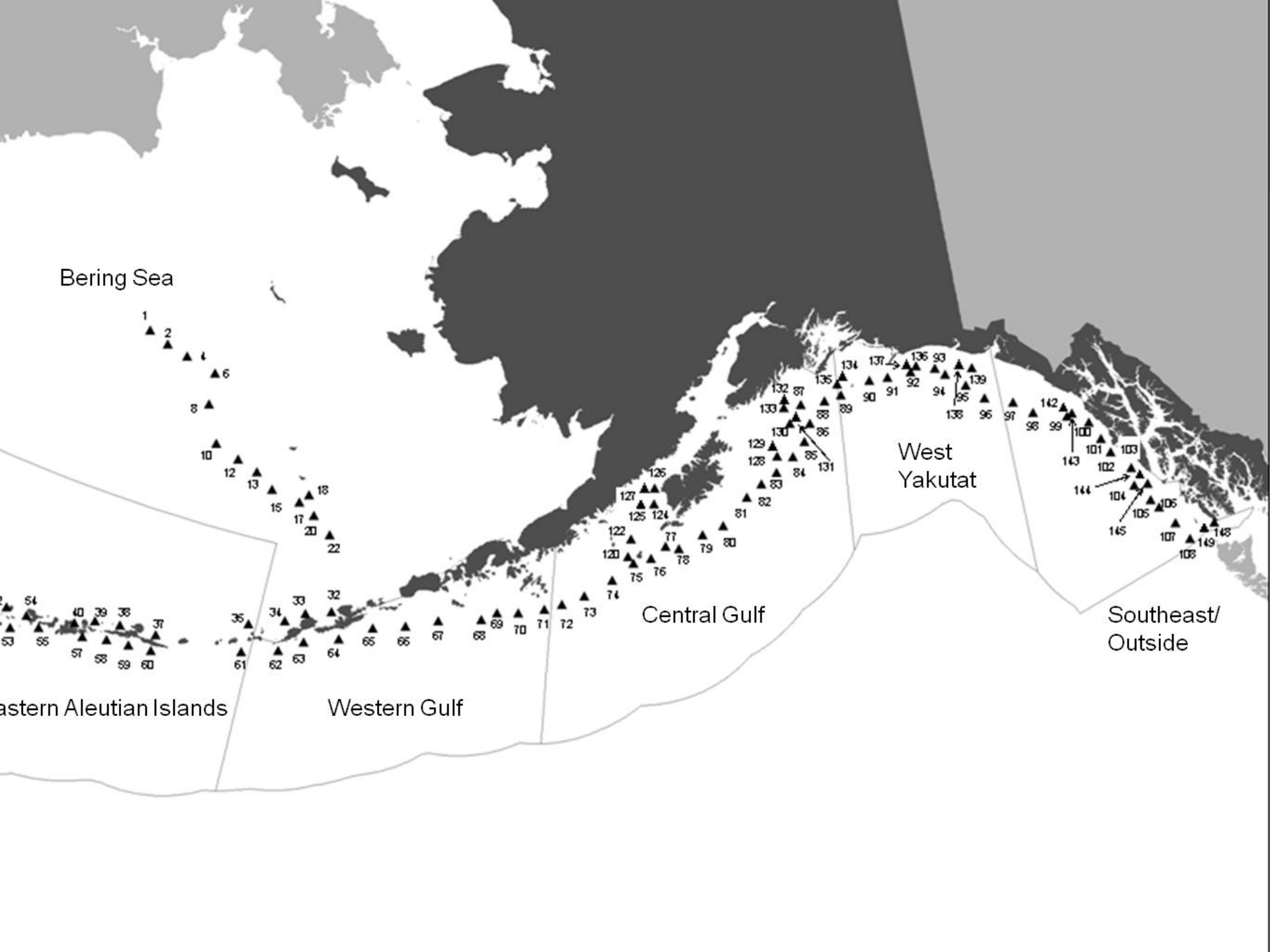
Biological Benchmarks

OFL ≥ **ABC** = **ACL** ≥TAC

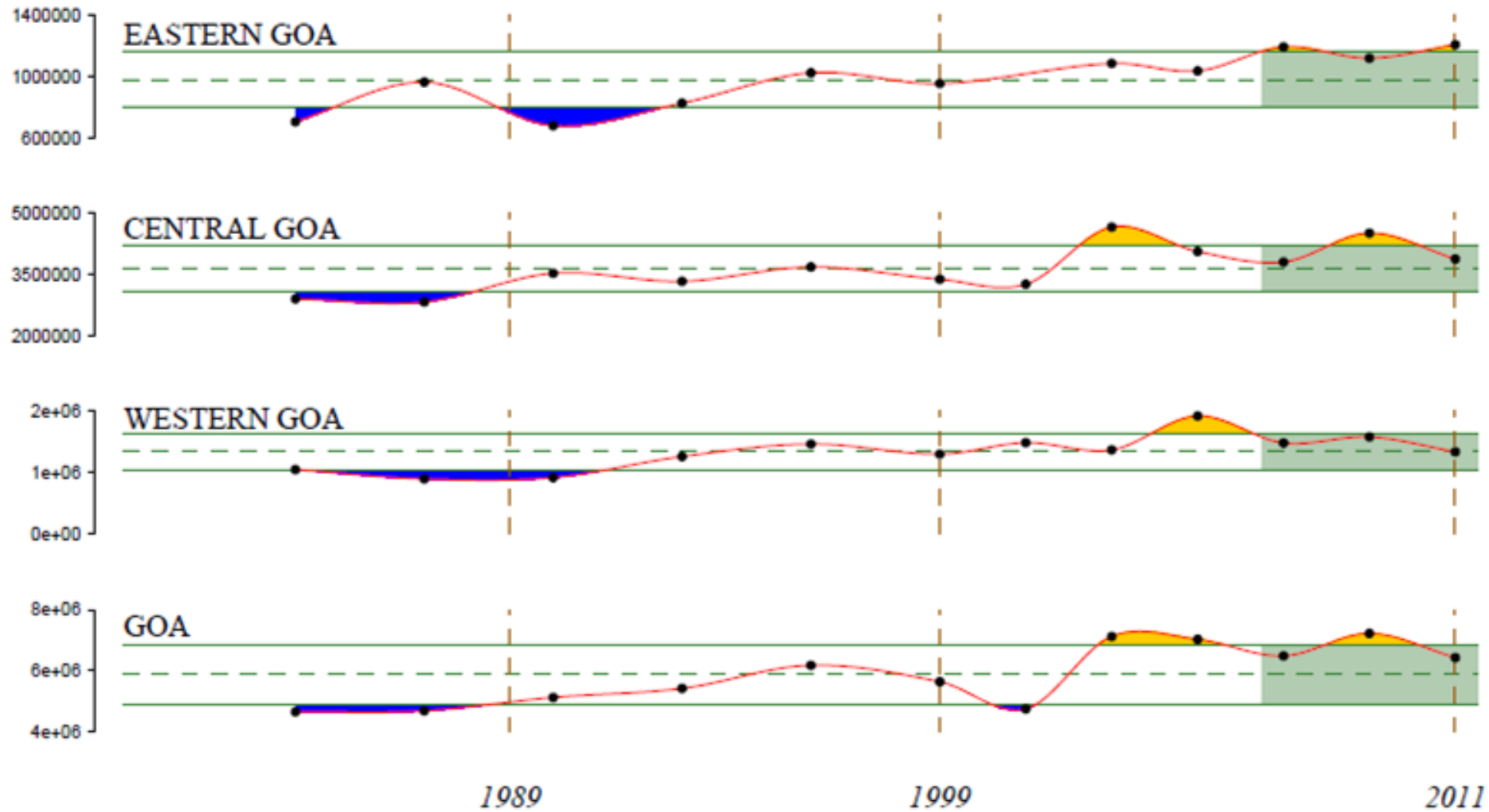


Annual Catch Limit

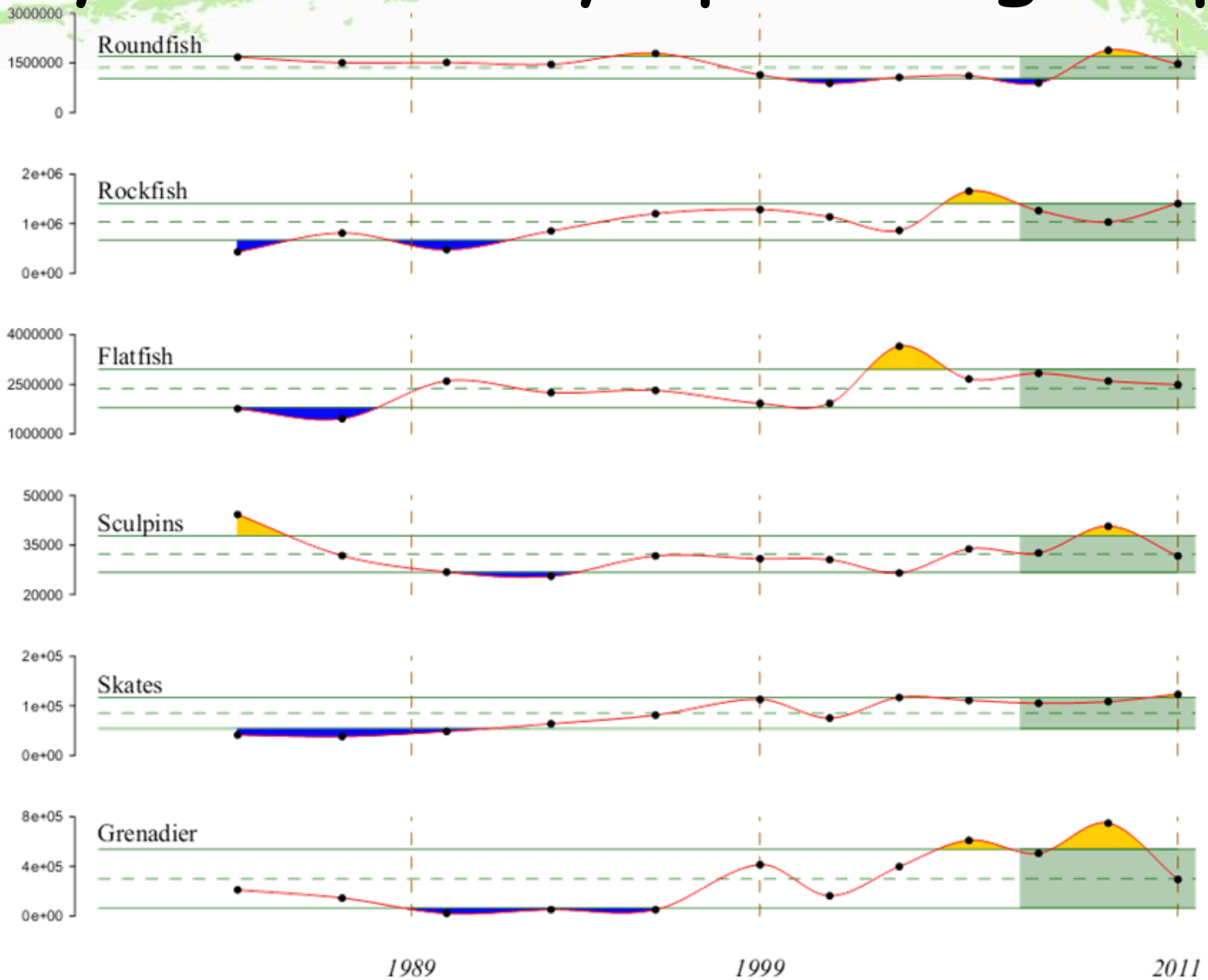

Russia
Alaska
Canada
Eastern
Bering
Sea Shelf
Gulf
of
Alaska
Aleutian Islands
Eastern Bering Sea shelf 376 stations
Gulf of Alaska 670 stations
VESSEL
FV Aldebaran
FV Seastorm
FV Ocean Explorer
FV Alaska Knight


Bering Sea
astern Aleutian Islands
Western Gulf
Central Gulf
West
Yakutat
Southeast/
Outside

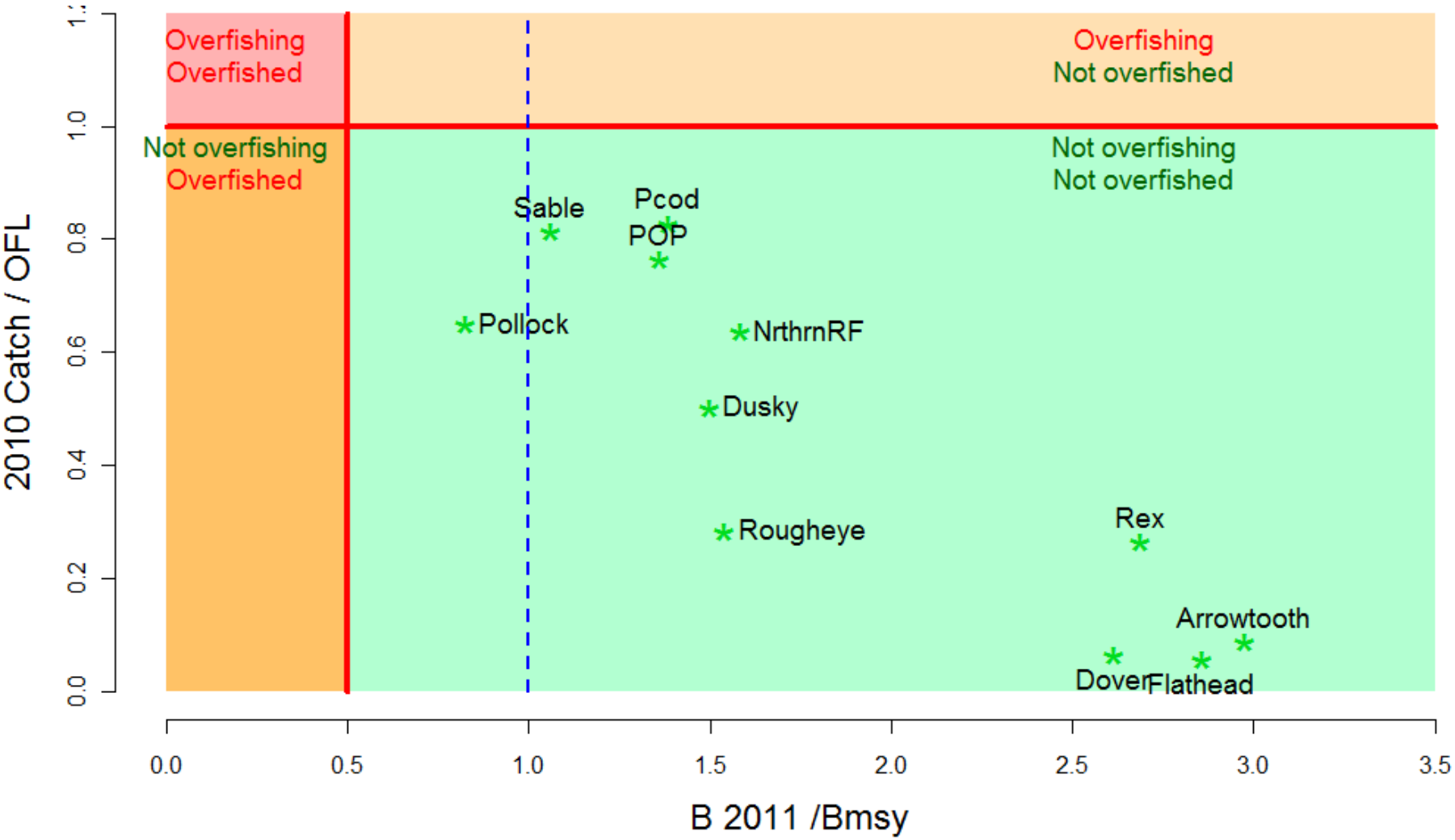
Survey "on" year—total groundfish biomass by region



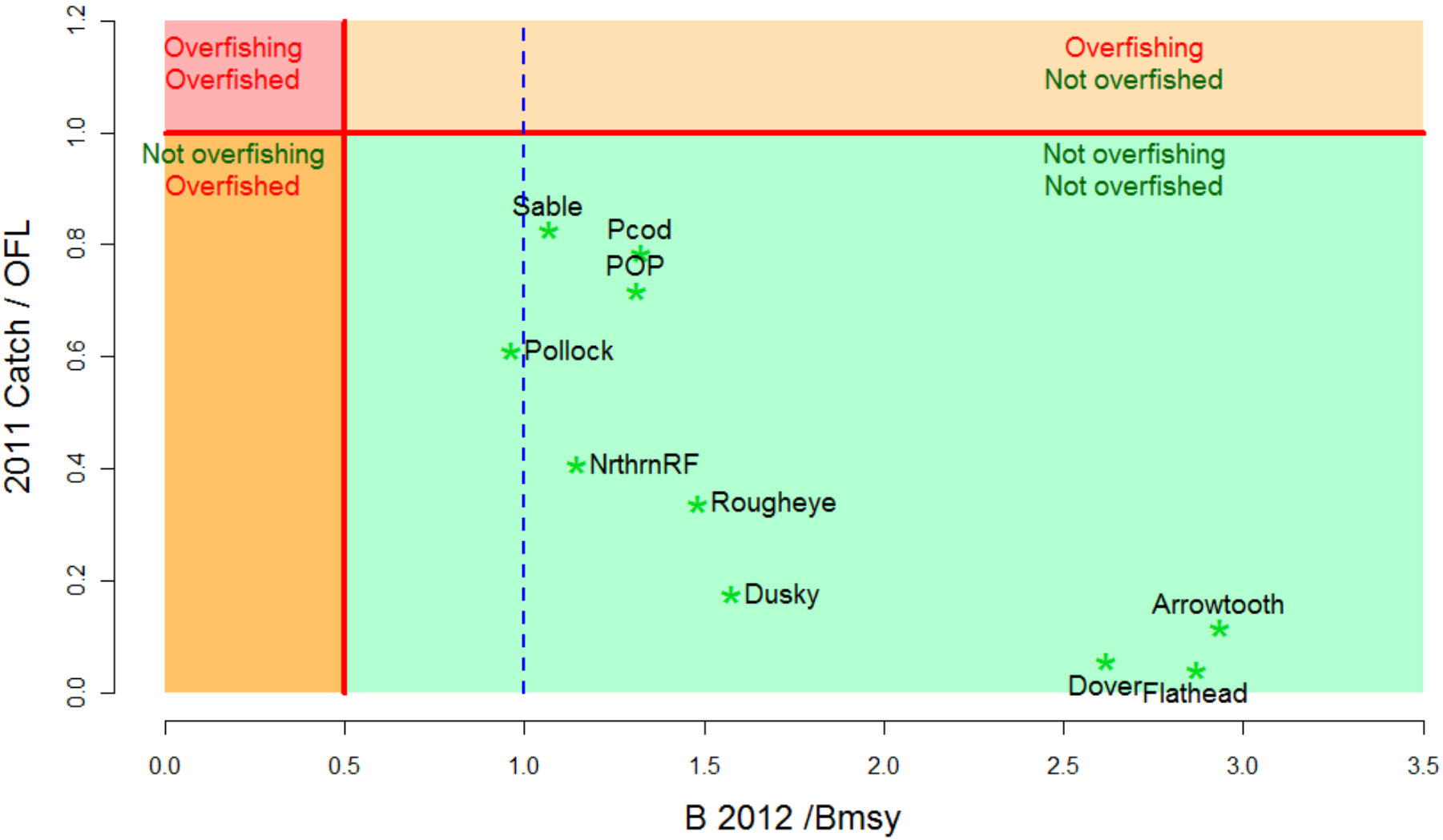
Survey biomass by species group



2010


Overfishing
Overfished
Overfishing
Not overfished
Not overfishing
Overfished
Not overfishing
Not overfished
Sable
Pcod
POP
Pollpck
NrthrnRF
Dusky
Rougheye
Rex
Arrowtooth
Dover
Flathead
2010 Catch / OFL
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
B 2011 /Bmsy

2011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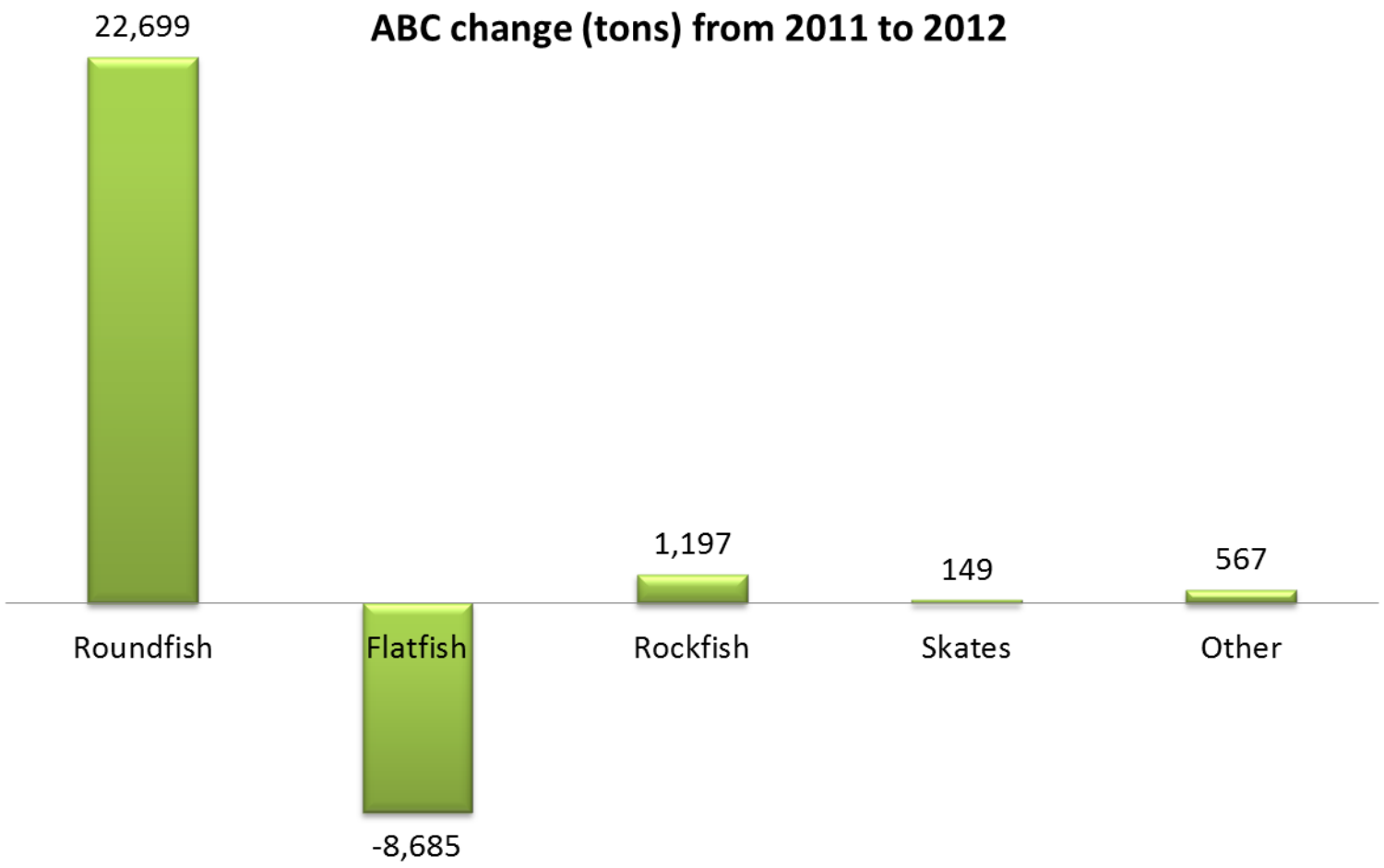
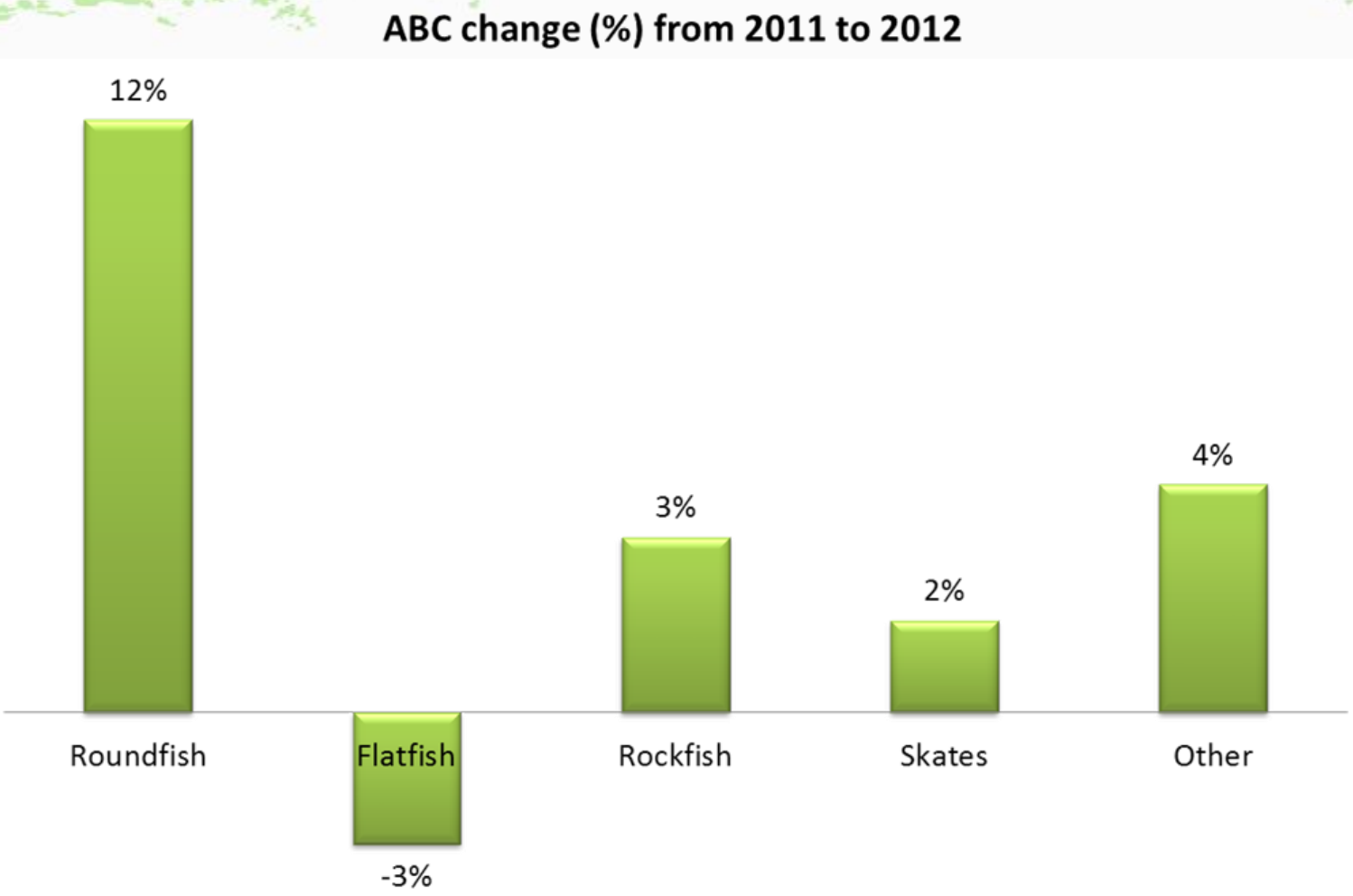
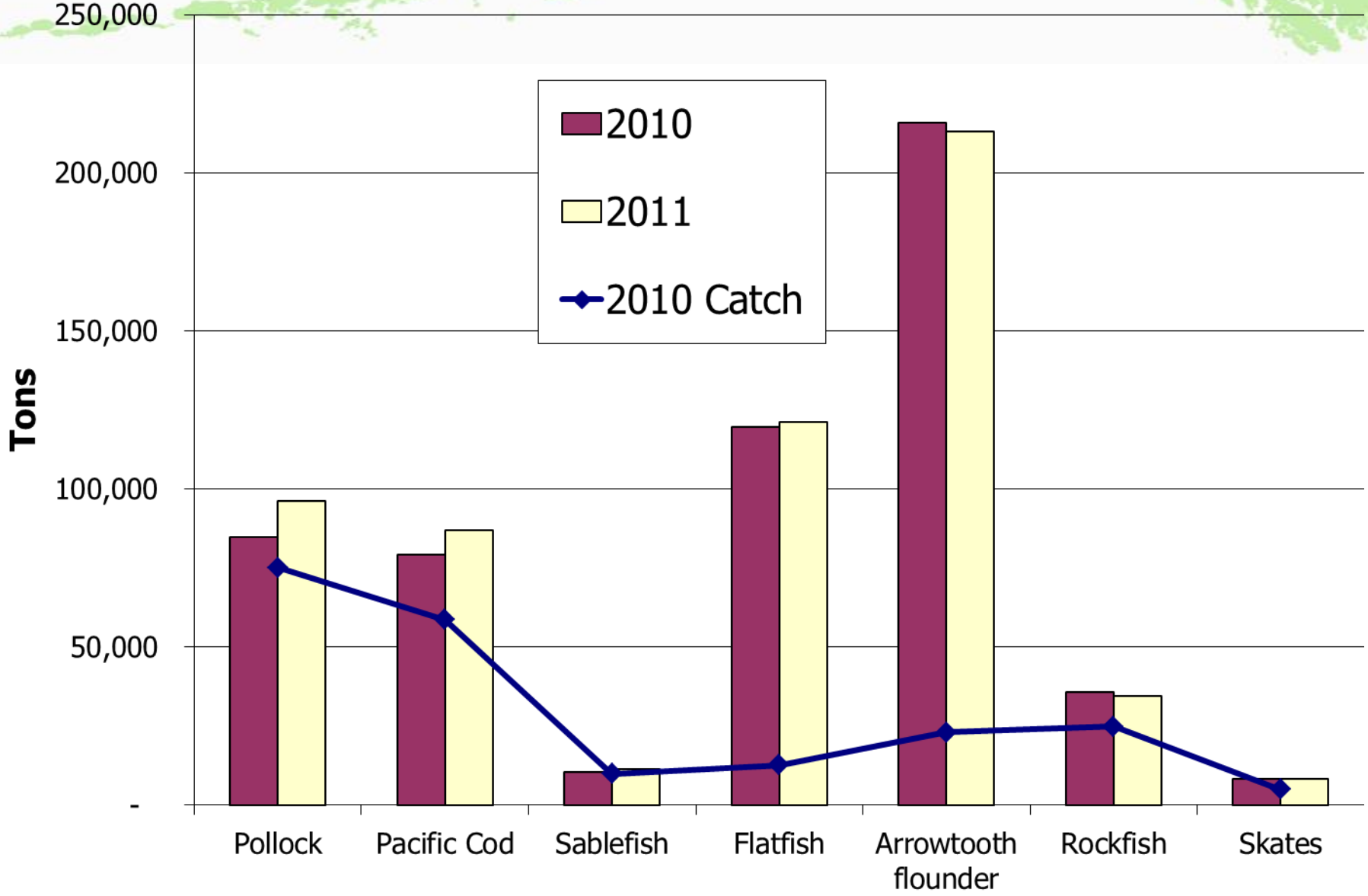

ABC change (tons) from 2011 to 2012
22,699
-8,685
1,197
149
567
Roundfish
Flatfish
Rockfish
Skates
Other

Gulf of Alaska groundfish assessments



GOA Catch and ABC levels



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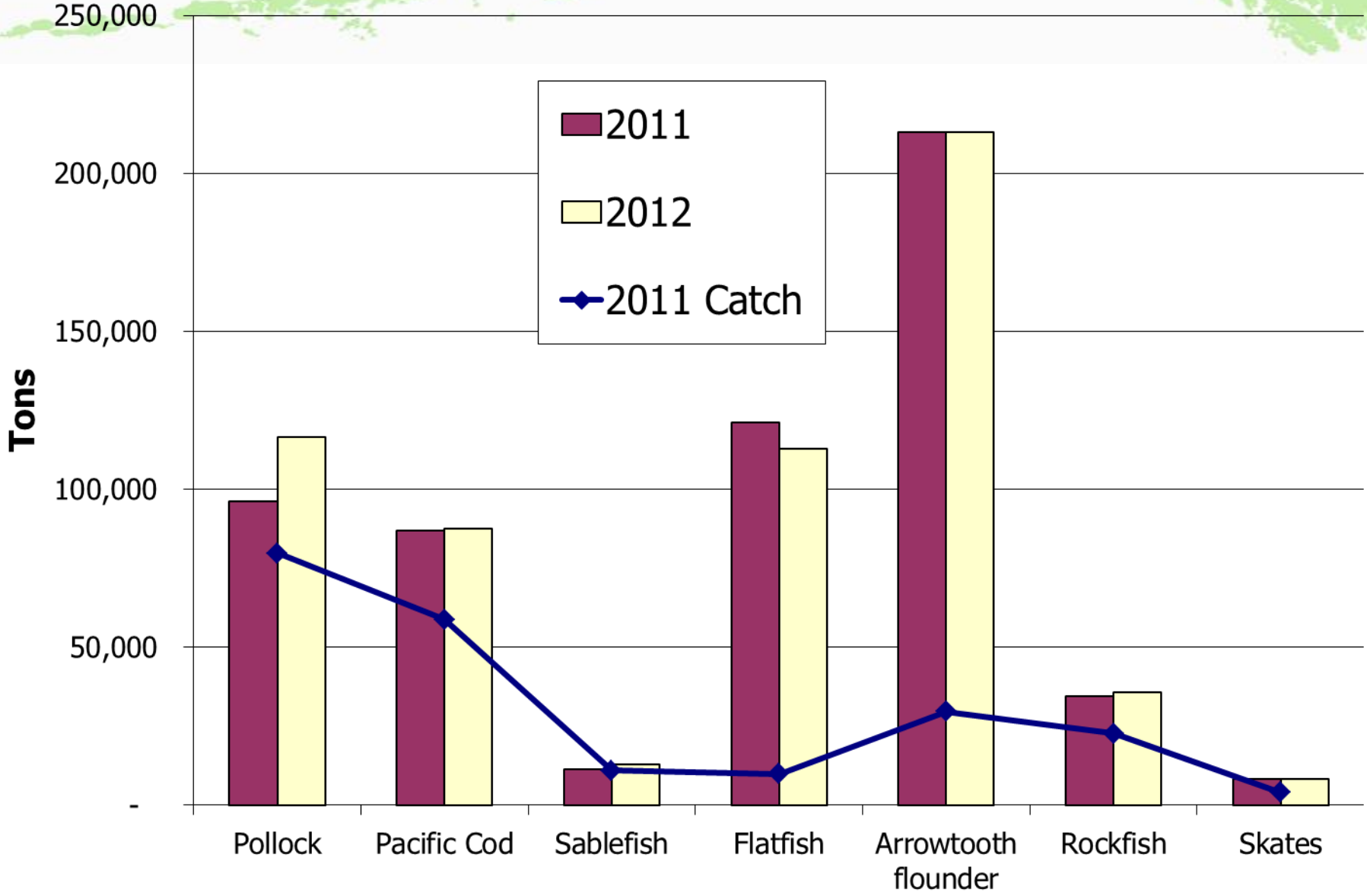


ACL compliance—must account for total catch

Supplemental catch data

1. Non-commercial removals:

   Research, EFP, subsistence, personal use, recreational

2. HFICE

   Halibut Fishery Incidental Catch Estimation

Issue in assessments/ABC specification

ISSUE: treatment of EFP catch

Plan Team reiterated that as with research catch, it is to be accounted prior to ABC/TAC specifications

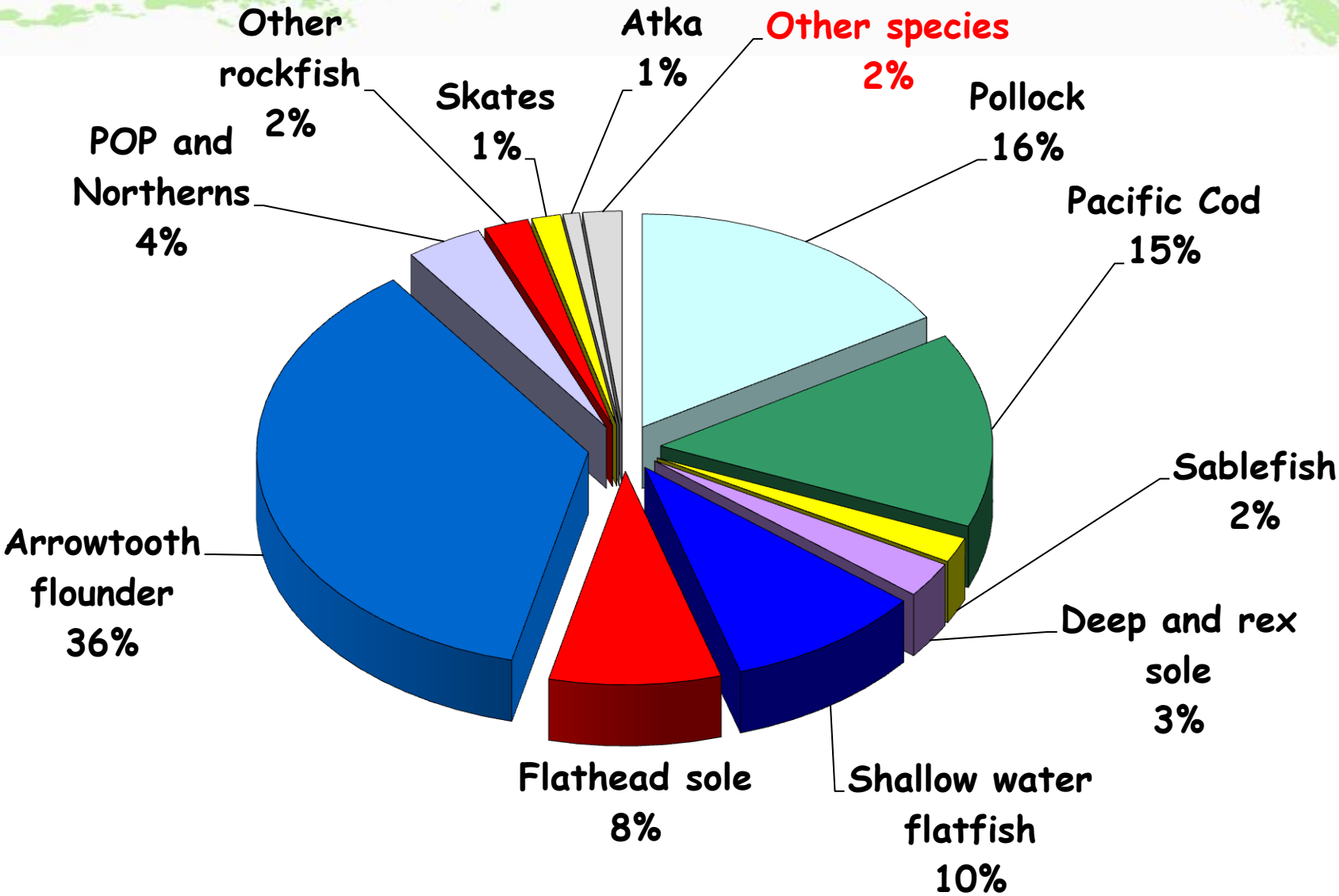
- Alternative would be untenable allocation issue

Recommendation to account for research catch in projecting future ABCs and OFLs

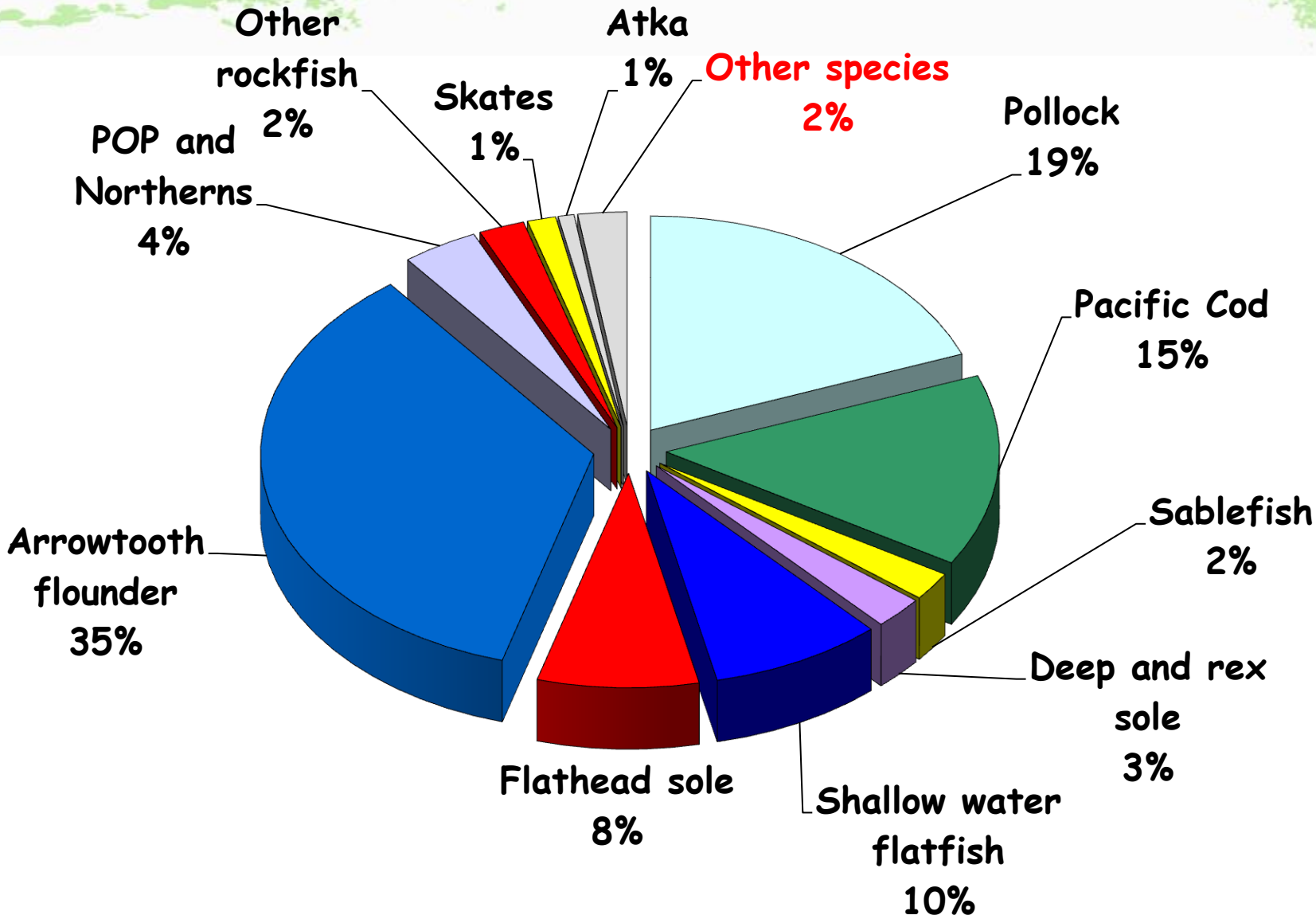
Particular issue for GOA pollock

- Need 1,000 tons to test salmon excluders

GOA 2011 ABC's: 587,525 t



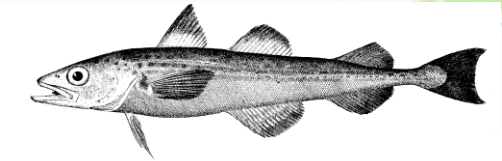
GOA 2012 ABC's: 606,048 t



Species overviews

1. **2011 ABC/Catch and recommended changes**
2. **Highlights**
   - New data
   - Analytic approach (changes)
3. **Stock status and trend**
4. **ABC/OFL**
   - Tier history and candidacy
   - 2012, 2013 maxABC; recommended ABC

ABC



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Skates	4,016	8,273	8,422	up 149 (2%)
Other Species	2,135	13,795	14,362	up 567 (4%)
Total	219,744	590,121	606,048	up 15,927 (3%)

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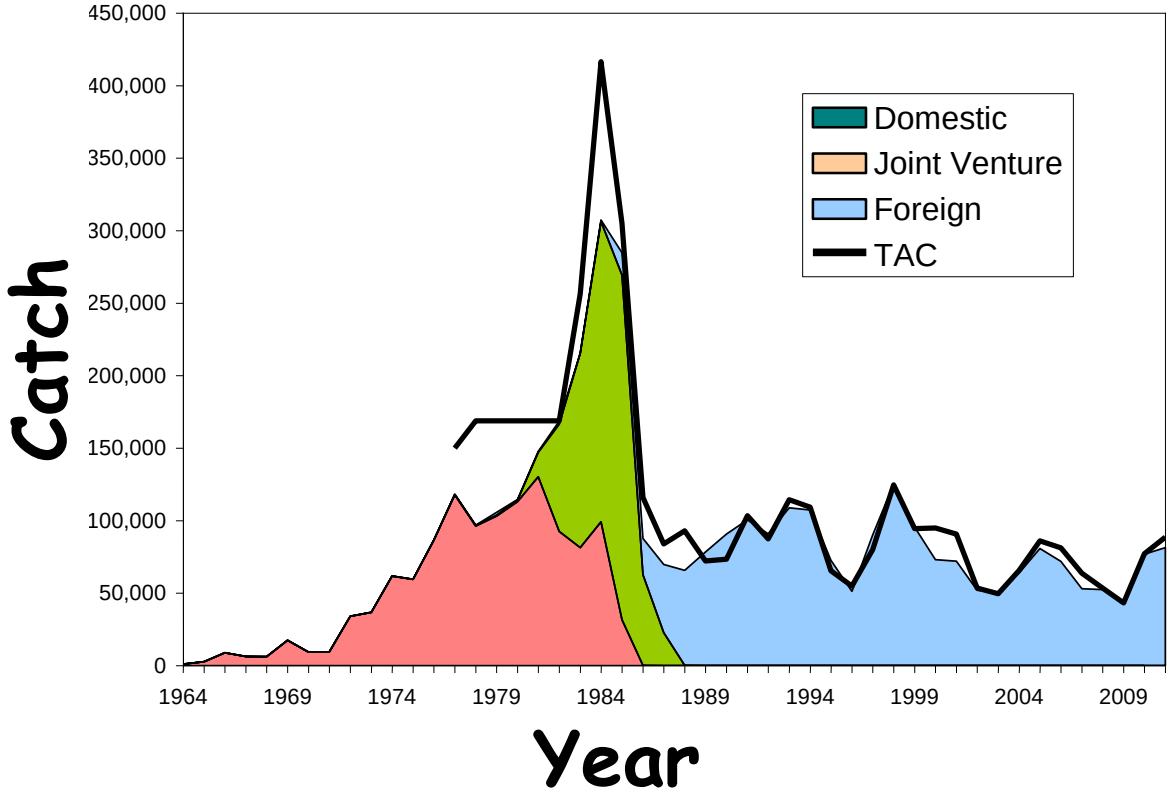
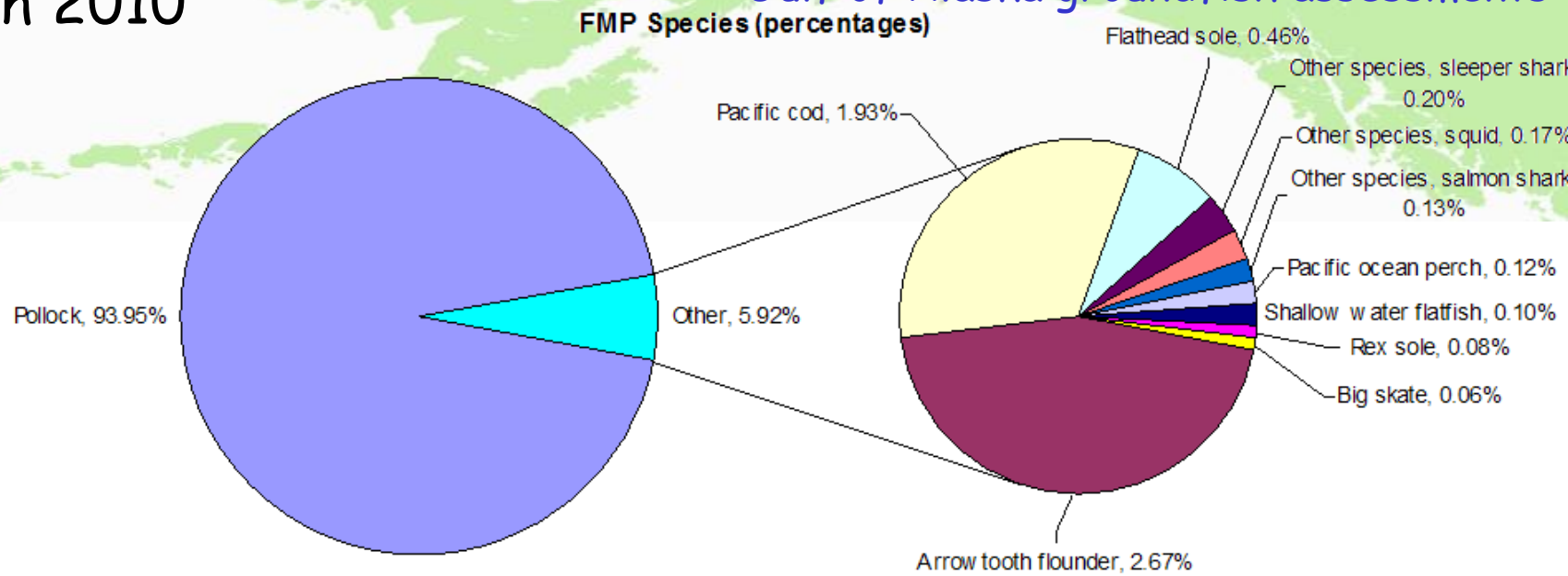
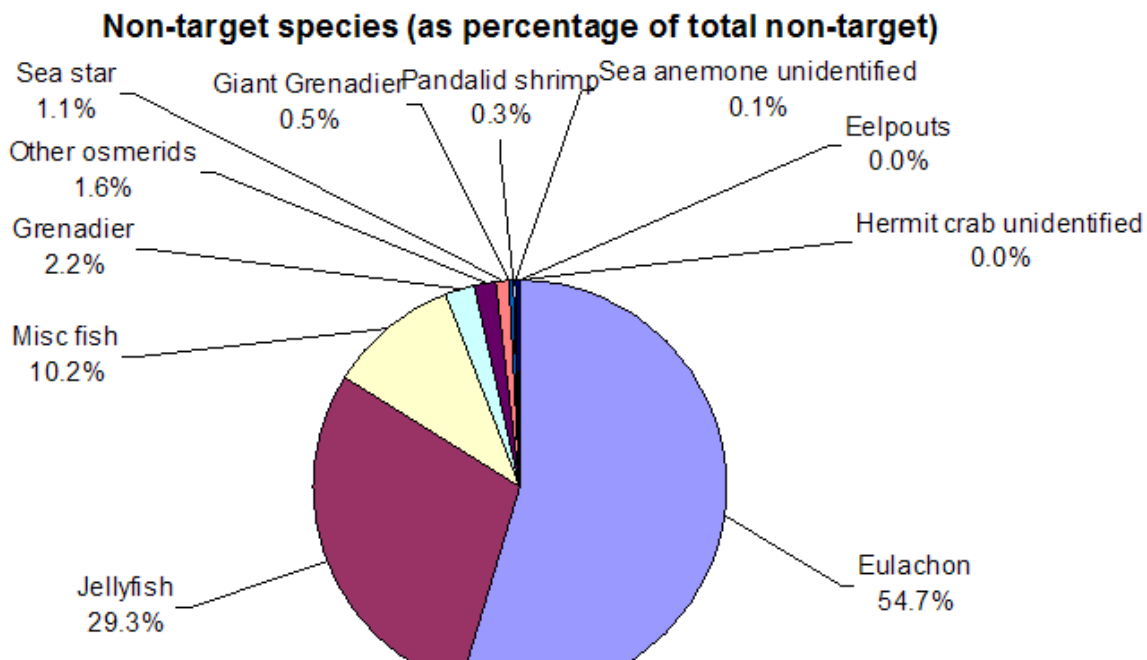
GOA Pollock

1. 2011 winter surveys cancelled
2. Summer acoustic survey—qualitative
   June 12 to August 12
3. 2011 NMFS bottom trawl survey estimate ~ 2009
4. CIE review planned for 2012

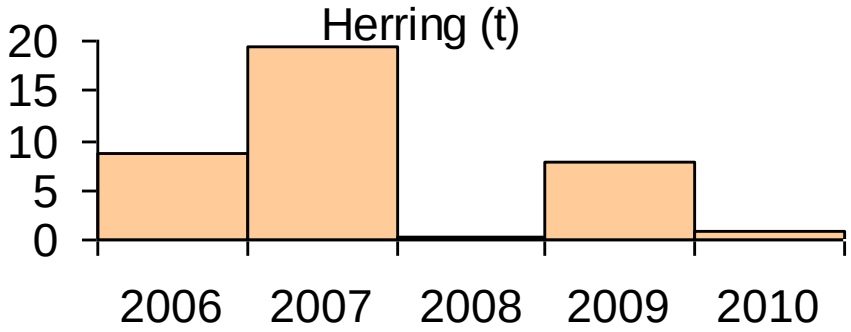


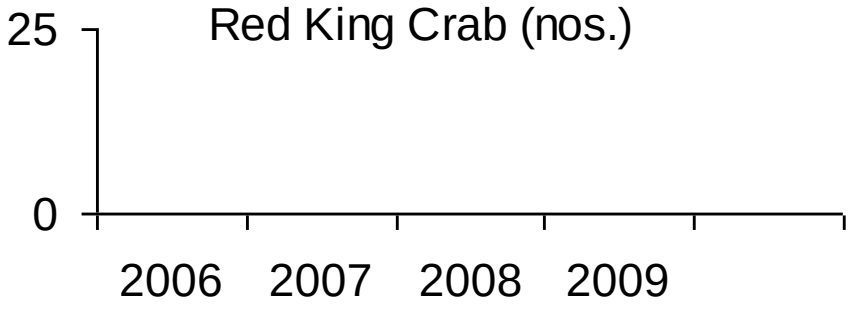
Bycatch 2010

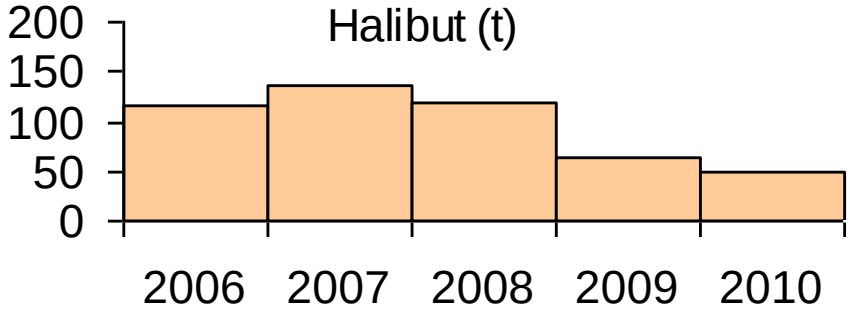


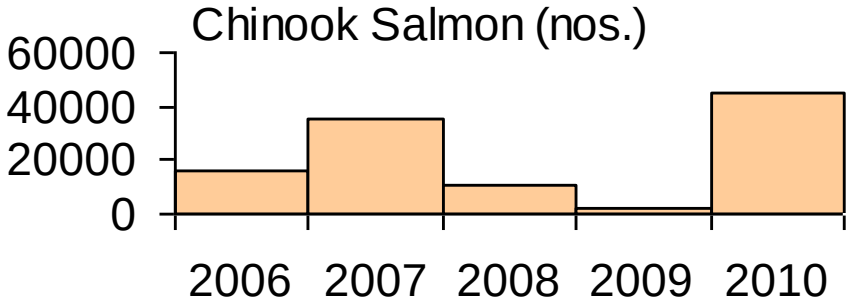


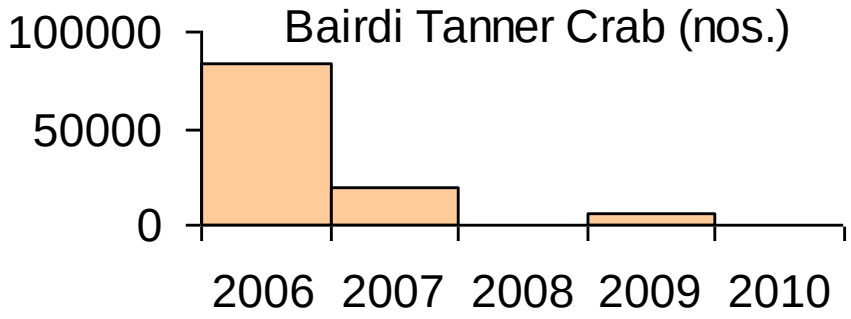
Prohibited species bycatch 2006-2010

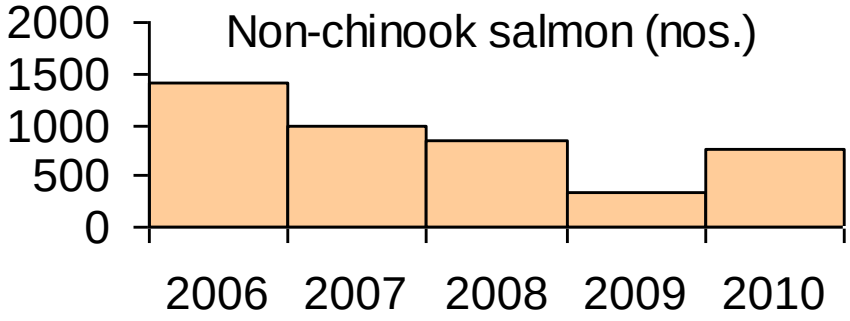


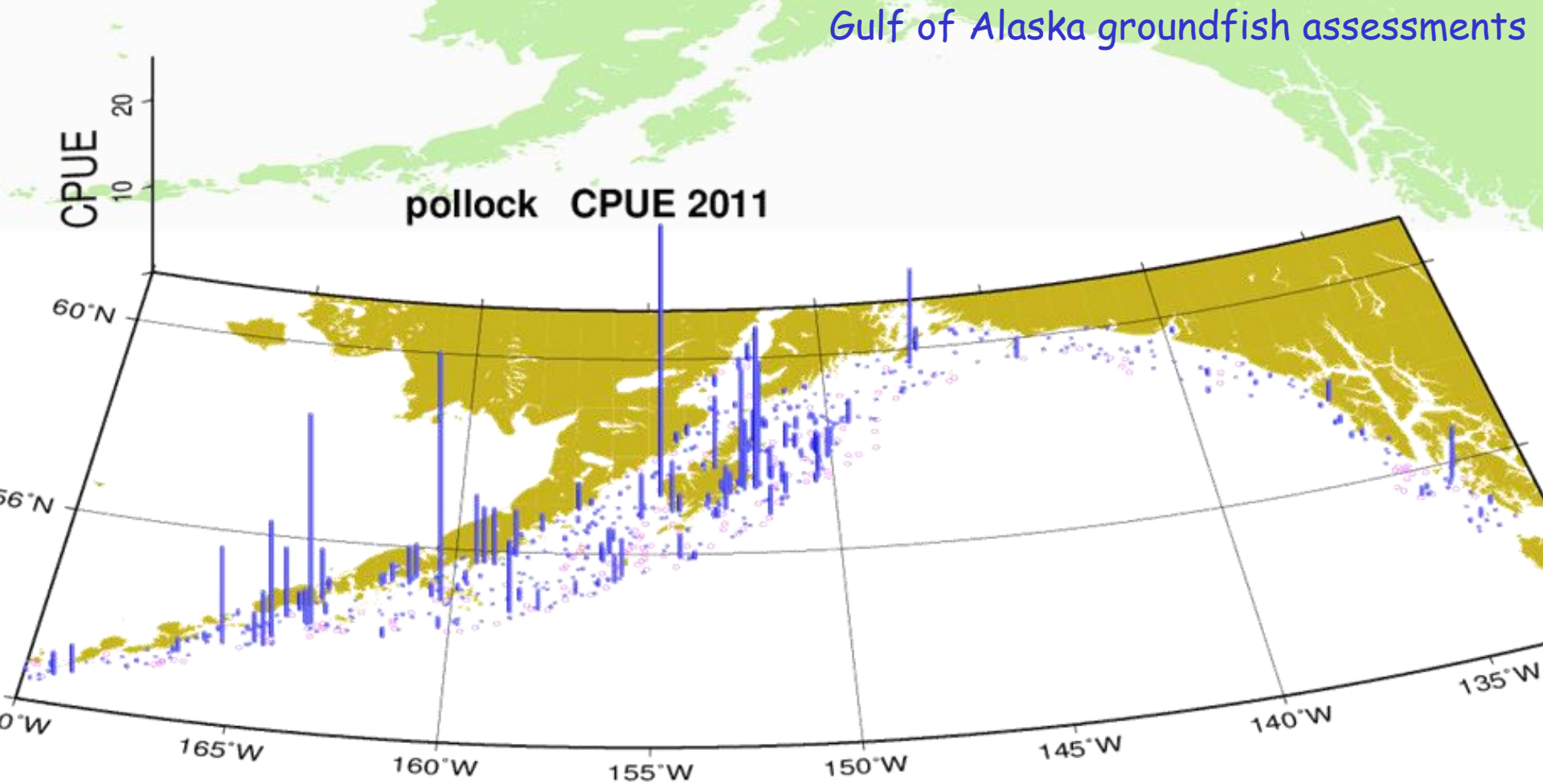








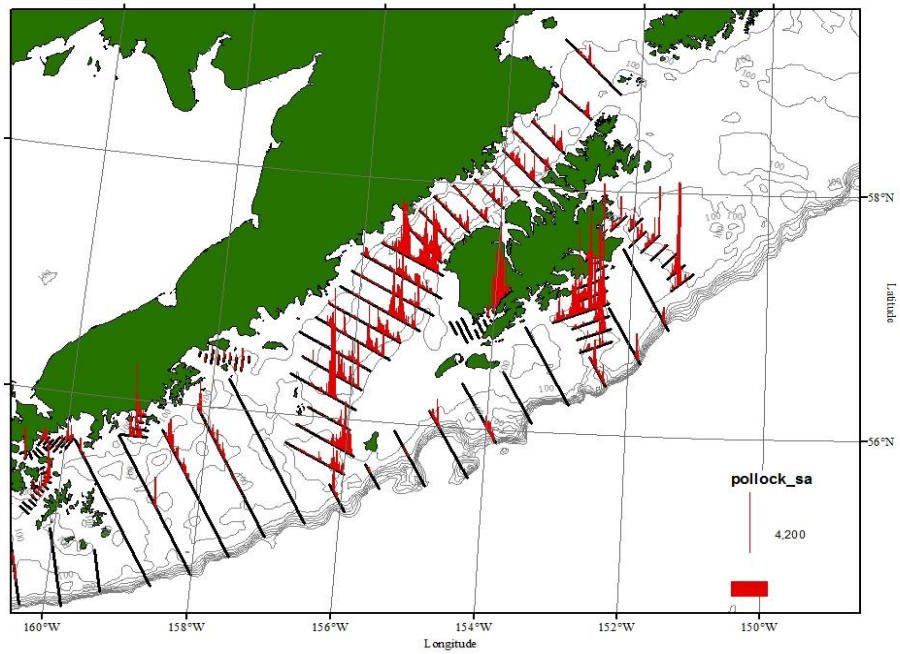


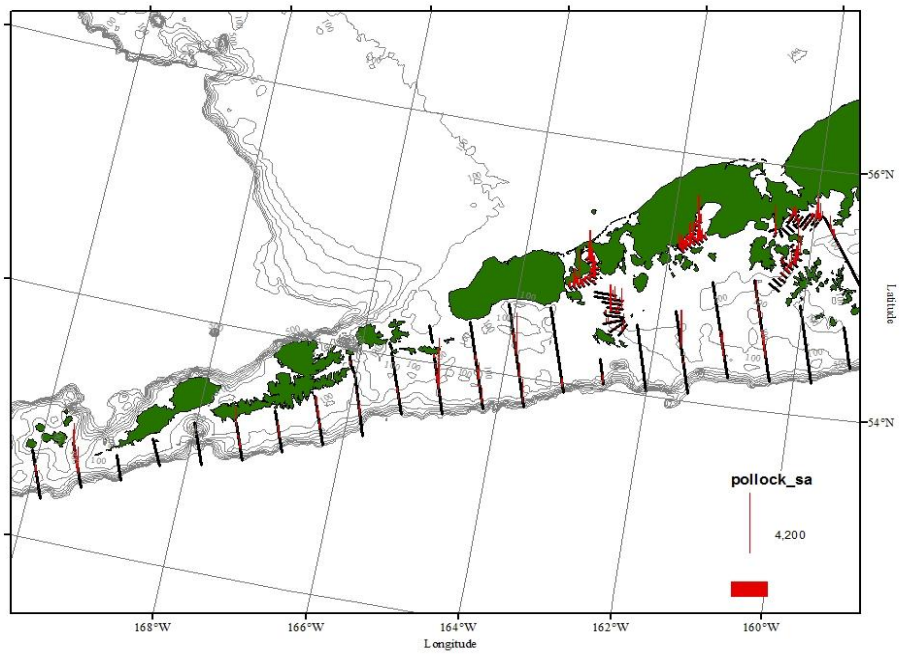


2011 NMFS bottom trawl survey

New: Summer acoustic survey

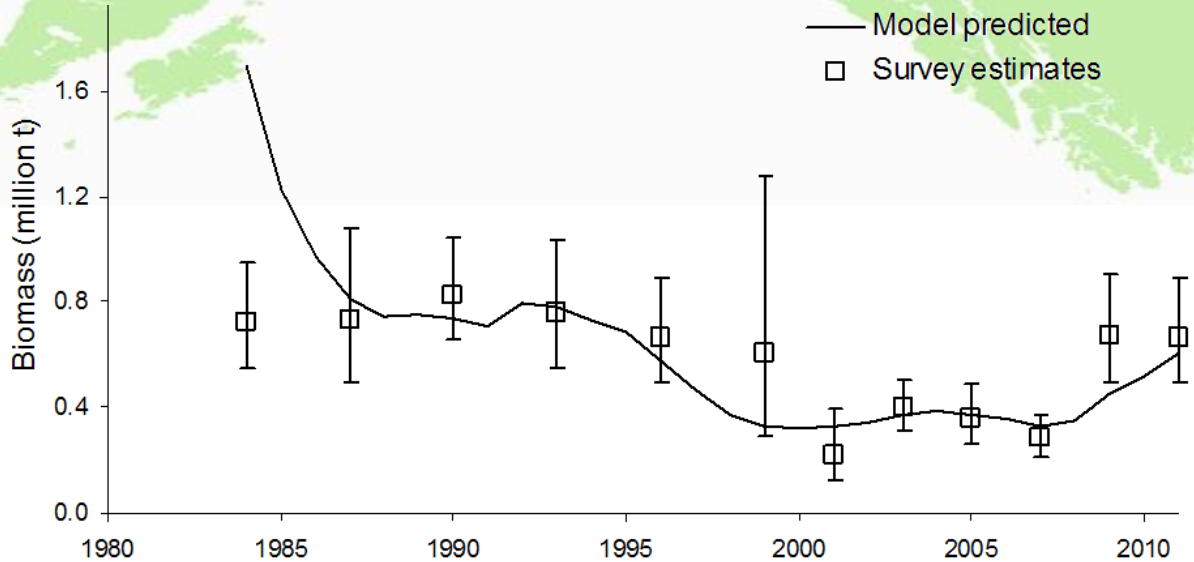
June 12 to August 12, 2011



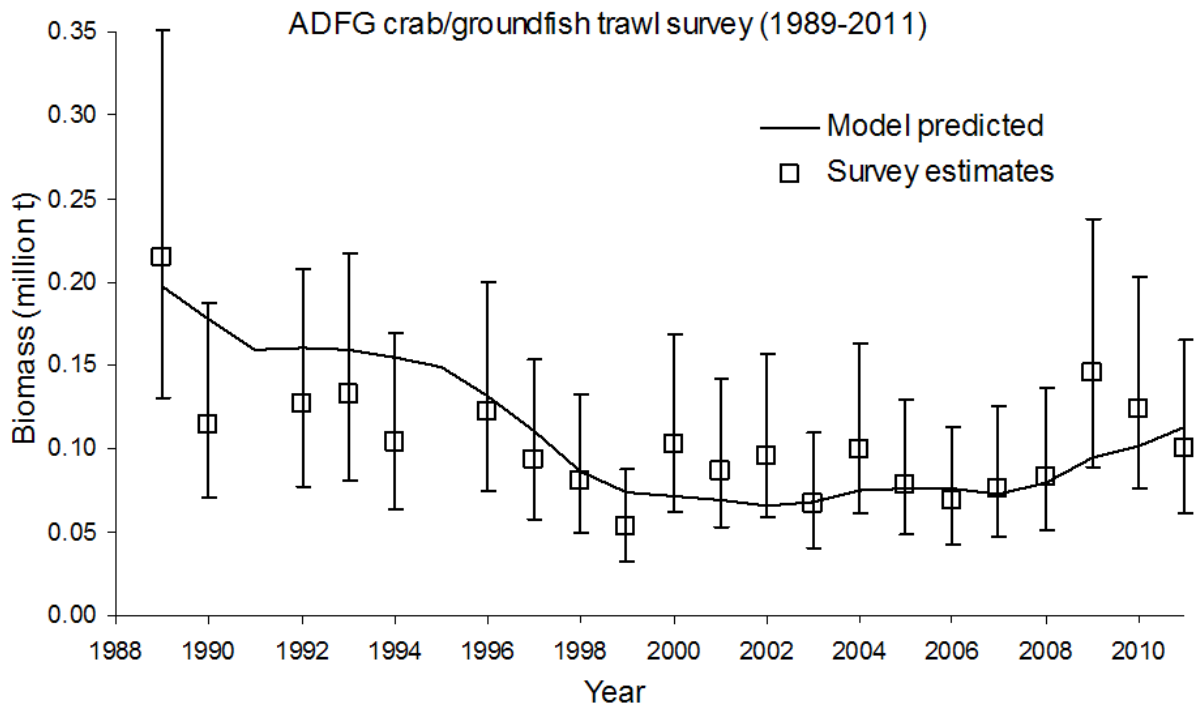


Gulf of Alaska groundfish assessments

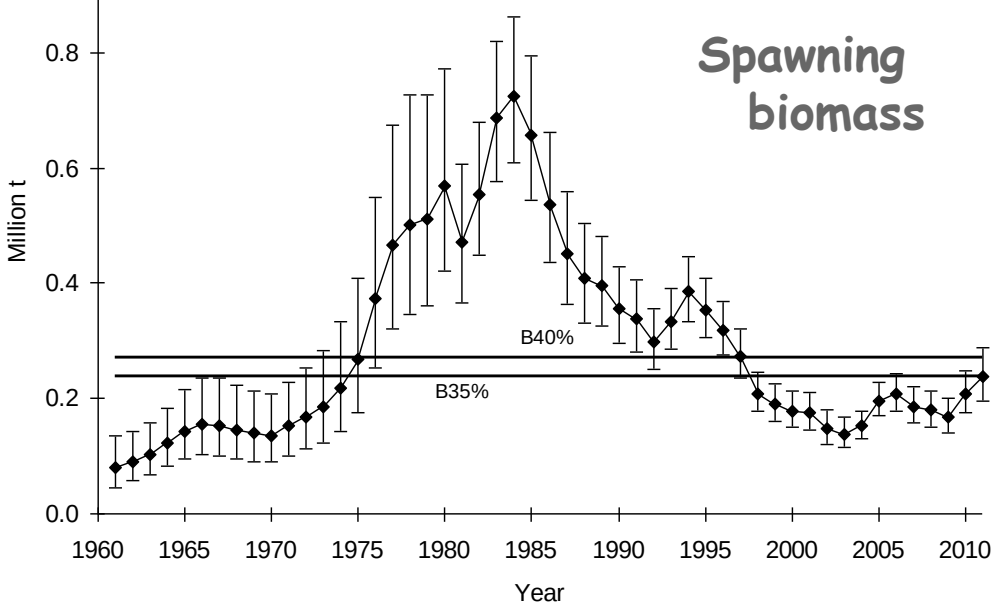
Fit to NMFS bottom trawl survey

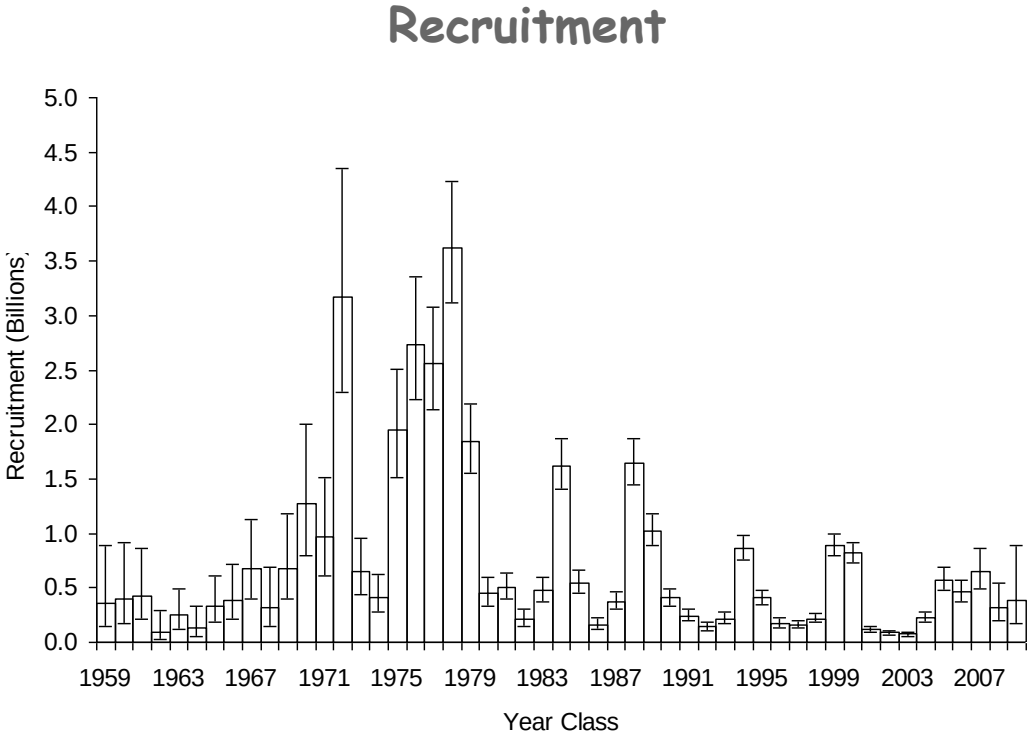


Fit to ADFG survey



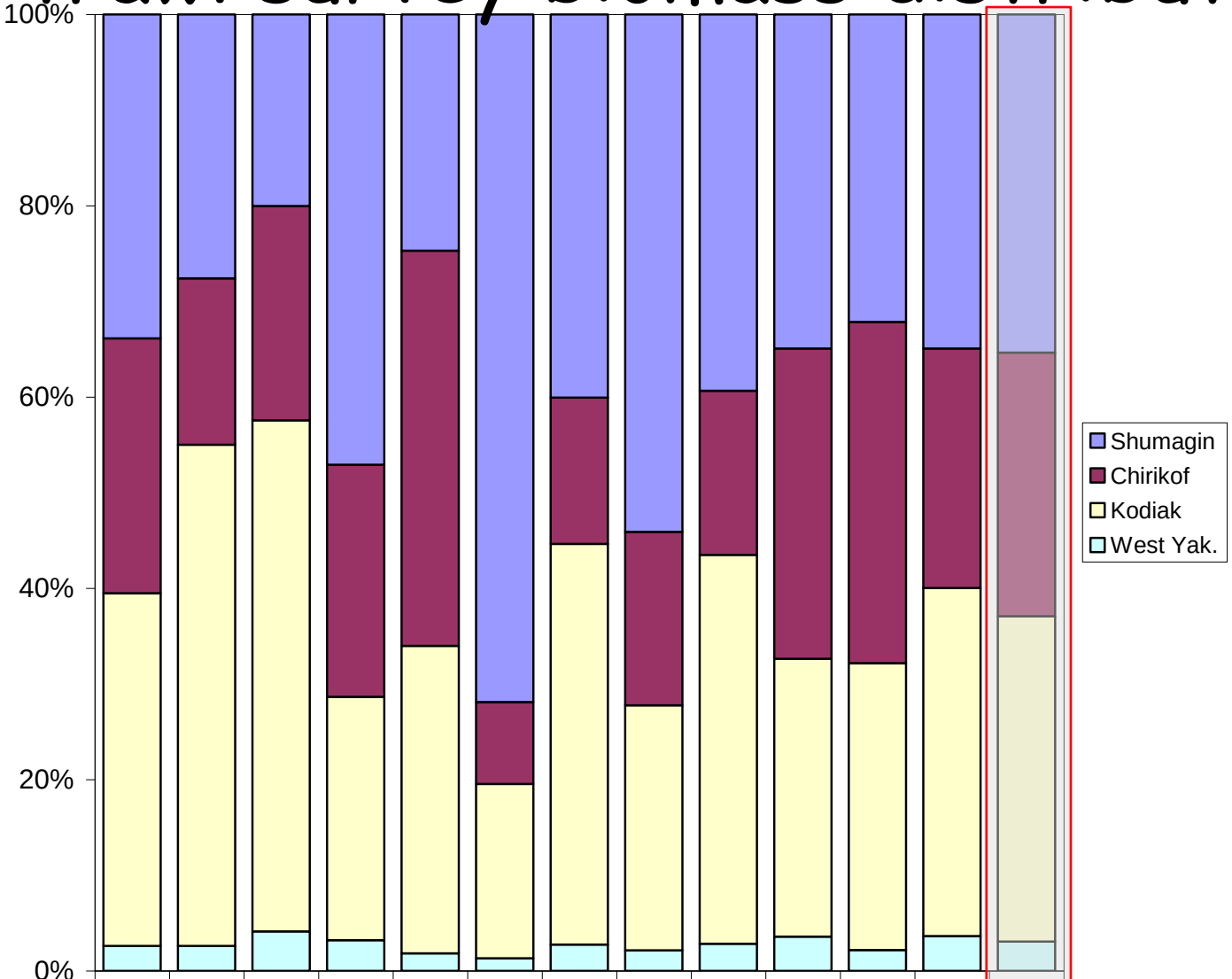
GOA pollock model results





NMFS trawl survey biomass distribution

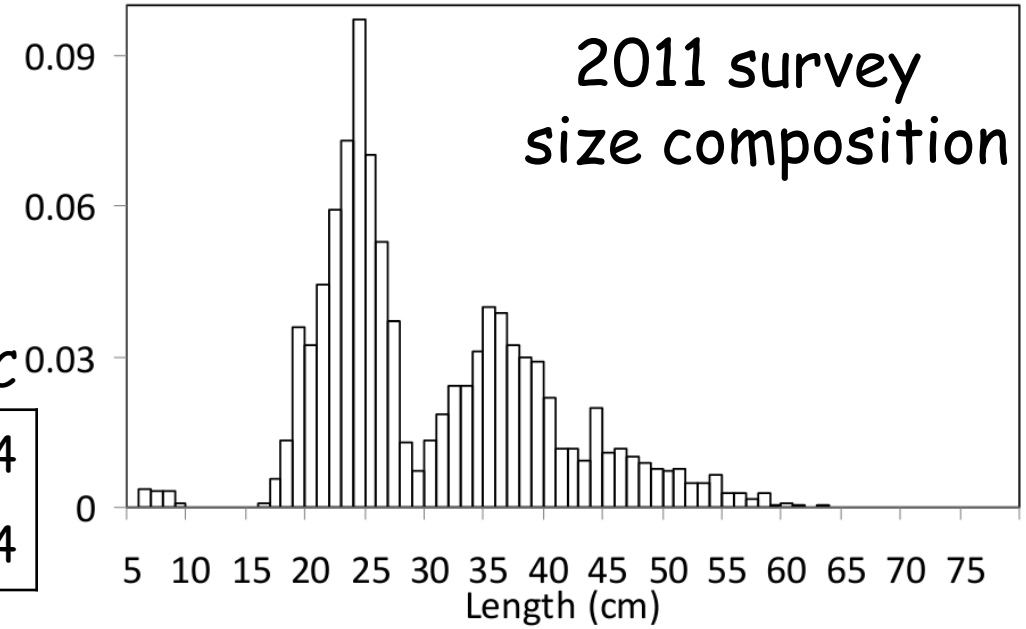
GOA pollock ABC apport.

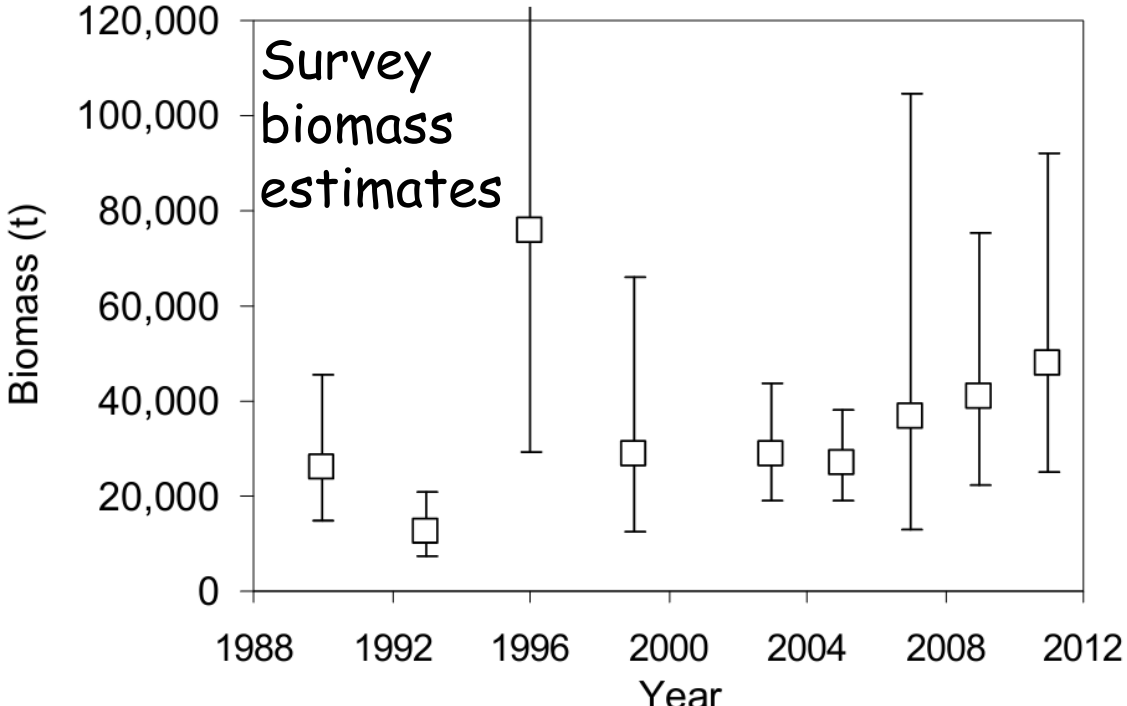


	1984	1987	1990	1993	1996	1999	2001	2003	2005	2007	2009	2011	4 survey avg
Shumagin	33.88%	27.60%	20.03%	47.08%	24.69%	71.90%	40.06%	54.09%	39.35%	34.94%	32.16%	34.93%	35.35%
Chirikof	26.64%	17.38%	22.41%	24.27%	41.32%	8.55%	15.30%	18.14%	17.16%	32.42%	35.66%	25.04%	27.57%
Kodiak	36.87%	52.40%	53.42%	25.44%	32.16%	18.23%	41.88%	25.62%	40.64%	29.06%	29.99%	36.38%	34.02%
West Yak.	2.62%	2.62%	4.13%	3.20%	1.83%	1.32%	2.76%	2.15%	2.85%	2.59%	2.18%	3.65%	3.07%

EGOA pollock (Tier 5)

EGOA Pollock	Biomass	OFL	ABC
2012	47,885	14,366	10,774
2013		14,366	10,774





GOA-wide 2012 ABC:

108,440 t

22% more than 2011

GOA pollock ABC considerations

Notes

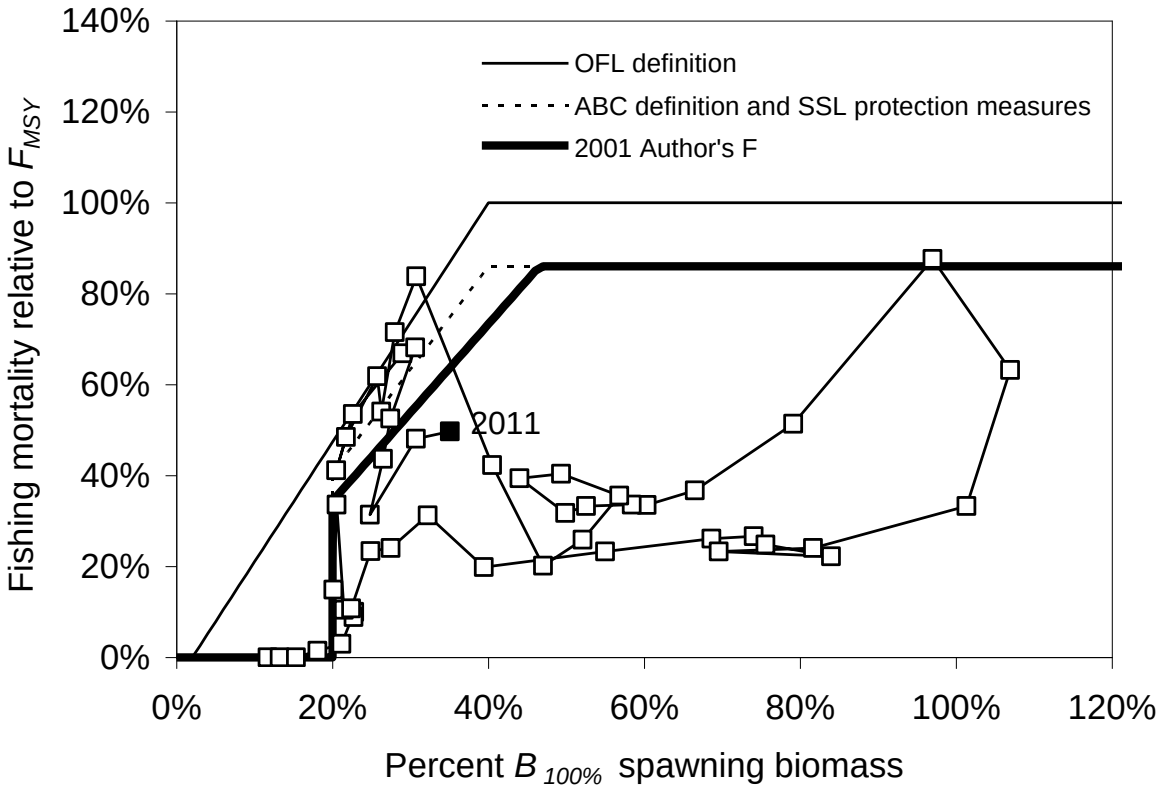
ADFG PWS 2,770 t

Previously 1,650 t

Pollock	Biomass	OFL	ABC
2012	863,840	143,720	105,670
2013		155,400	114,560

Tier 3b

2012 SSB 34% of $B_{100\%}$



ABC Summary
Pacific cod

Species	2011 Catch	ABC 2011	ABC 2012	Change
Pollock	79,805	96,215	116,444	up 20,229 (21%)
Pacific Cod	58,836	86,800	87,600	up 800 (1%)
Sablefish	11,057	11,290	12,960	up 1,670 (15%)
Flatfish	9,929	121,245	112,828	down 8,417 (7%)
Arrowtooth flounder	29,703	213,150	212,882	down 268 (0%)
Rockfish	22,650	34,653	35,850	up 1,197 (3%)
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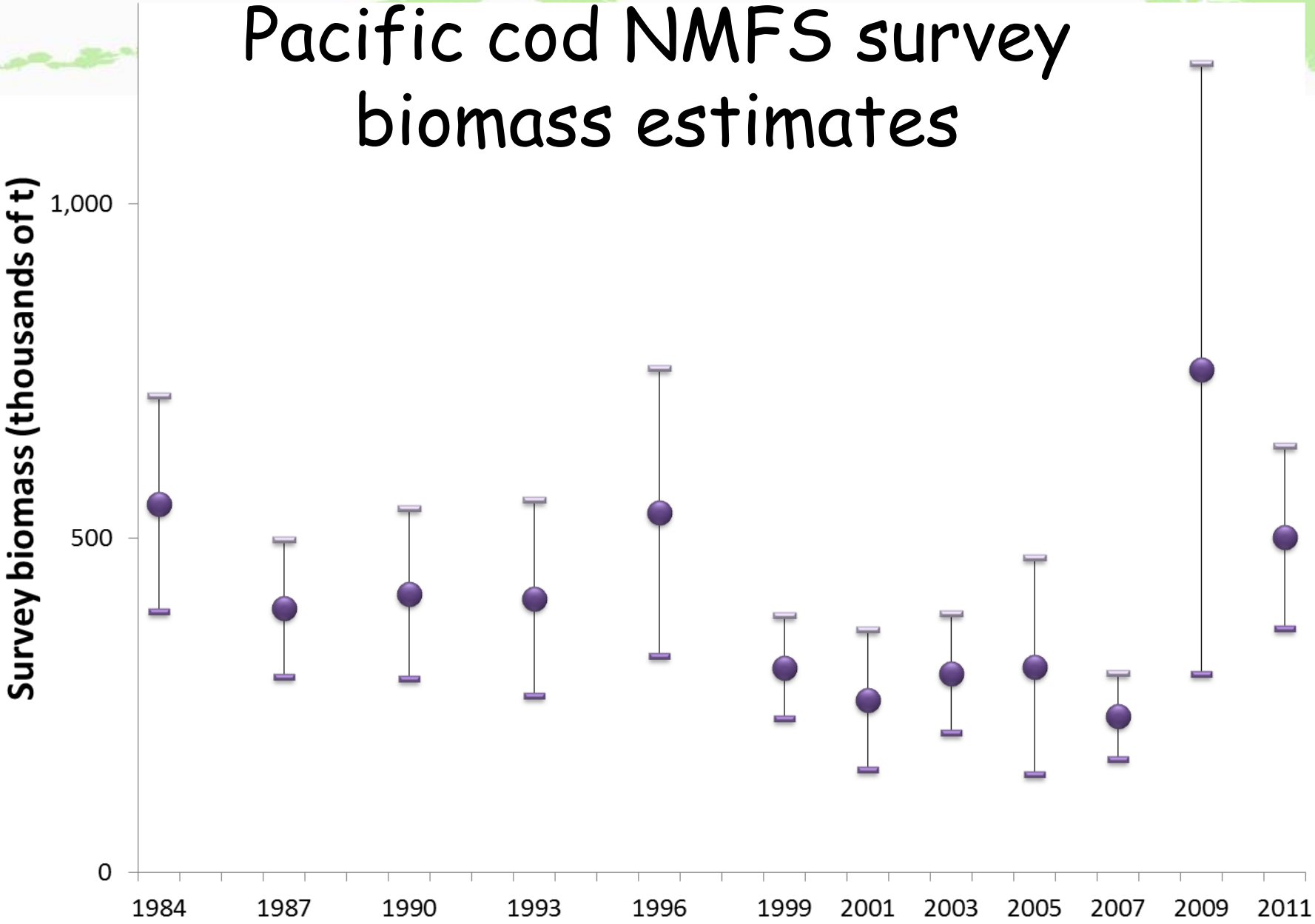
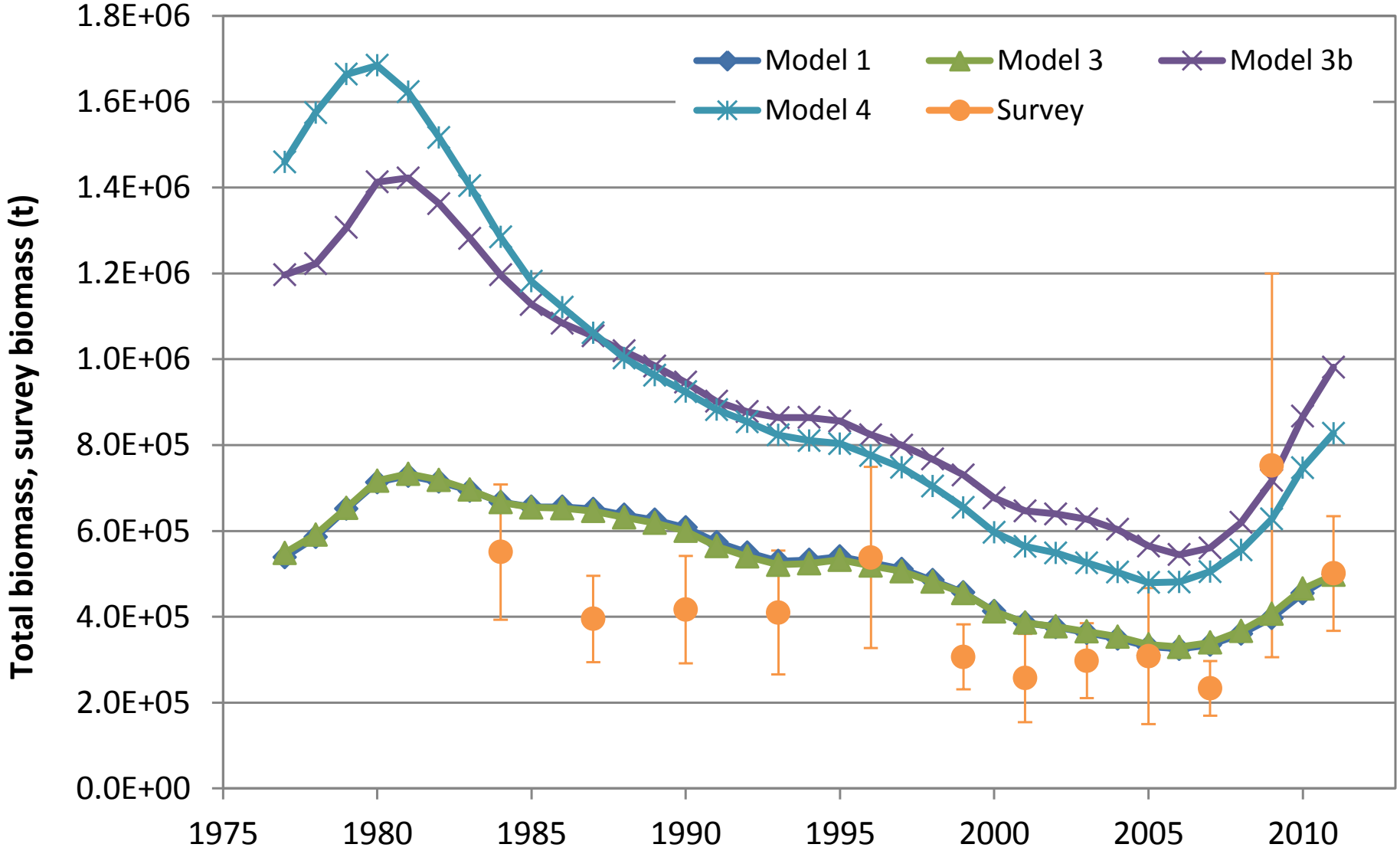
Pacific cod NMFS survey biomass estimates



Pacific cod model results



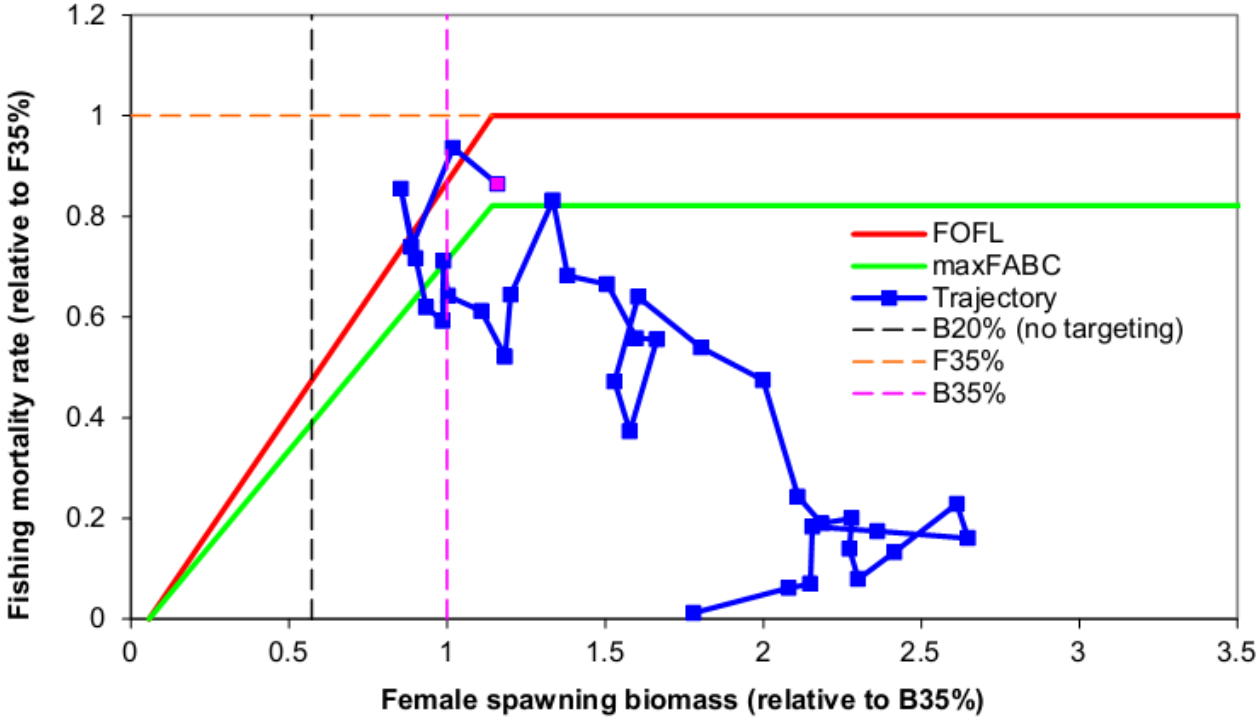
Pacific cod ABC/TAC

Tier 3a

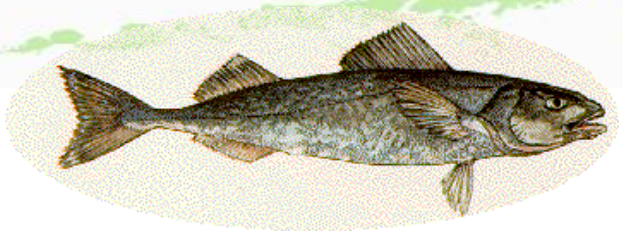
- SSB above $B_{40\%}$ for 2012 (46% of $B_{100\%}$)

Pacific cod	Biomass	OFL	ABC
2012	521,000	104,000	87,600
2013		108,000	91,000

Survey biomass



ABC Summary
Sablefish



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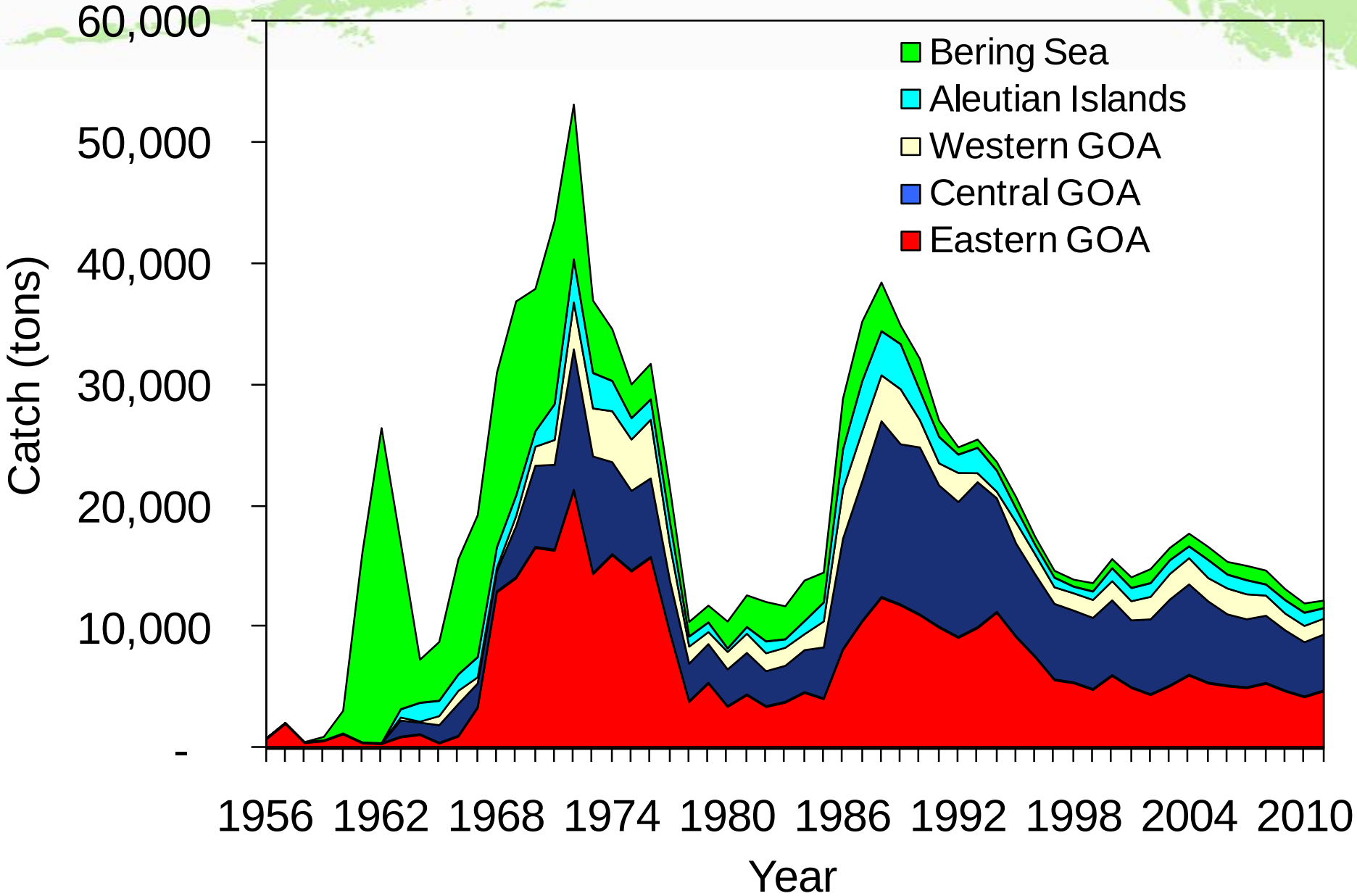
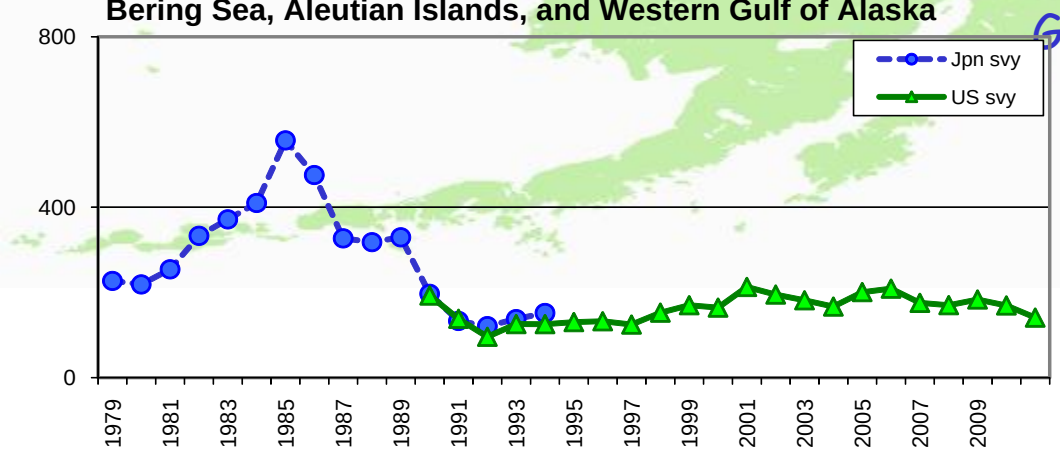
Skates	4,016	8,273	8,422	up 149 (2%)
Other Species	2,135	13,795	14,362	up 567 (4%)
Total	219,744	590,121	606,048	up 15,927 (3%)

Summary: Page 16
Chapter: Page 307

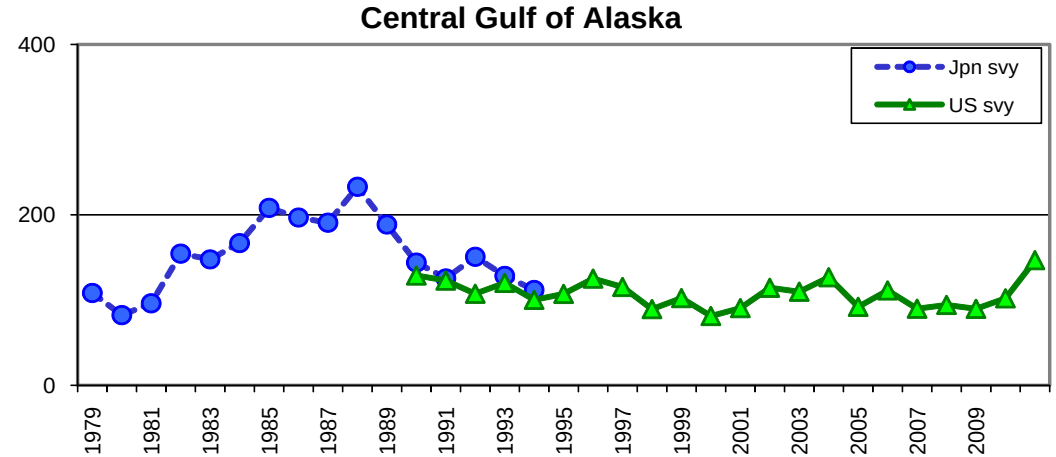
Sablefish Catch by Area



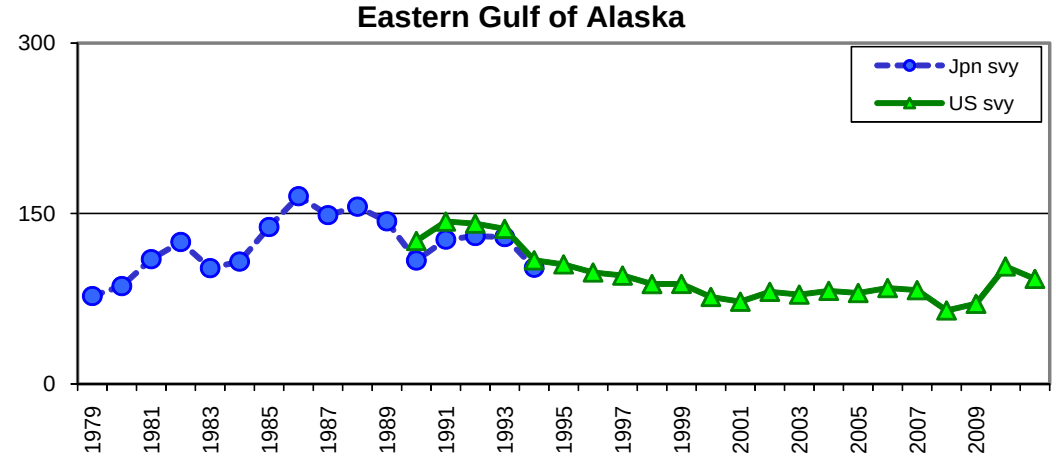
Longline survey by area…



BSAI

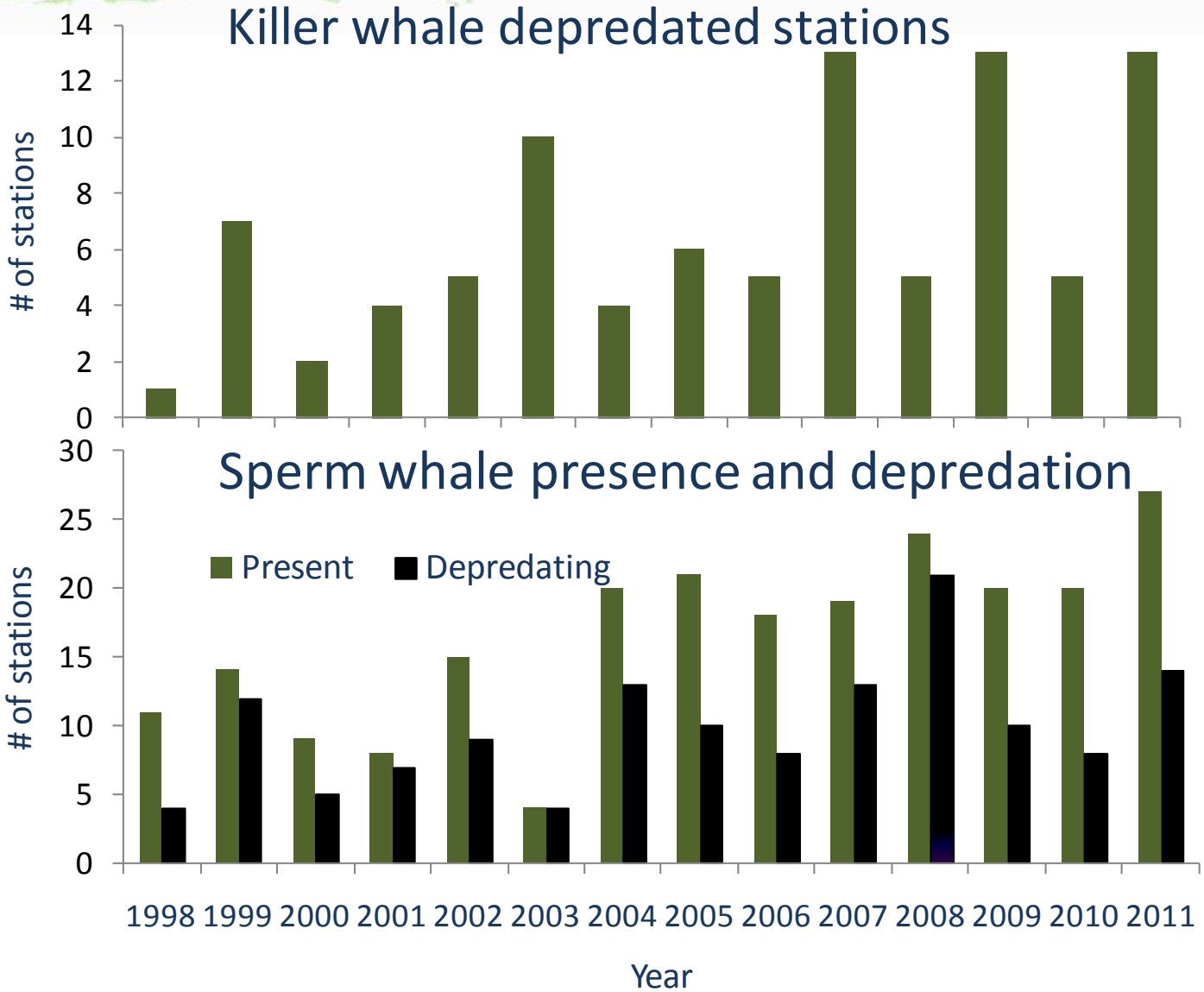


Central GOA

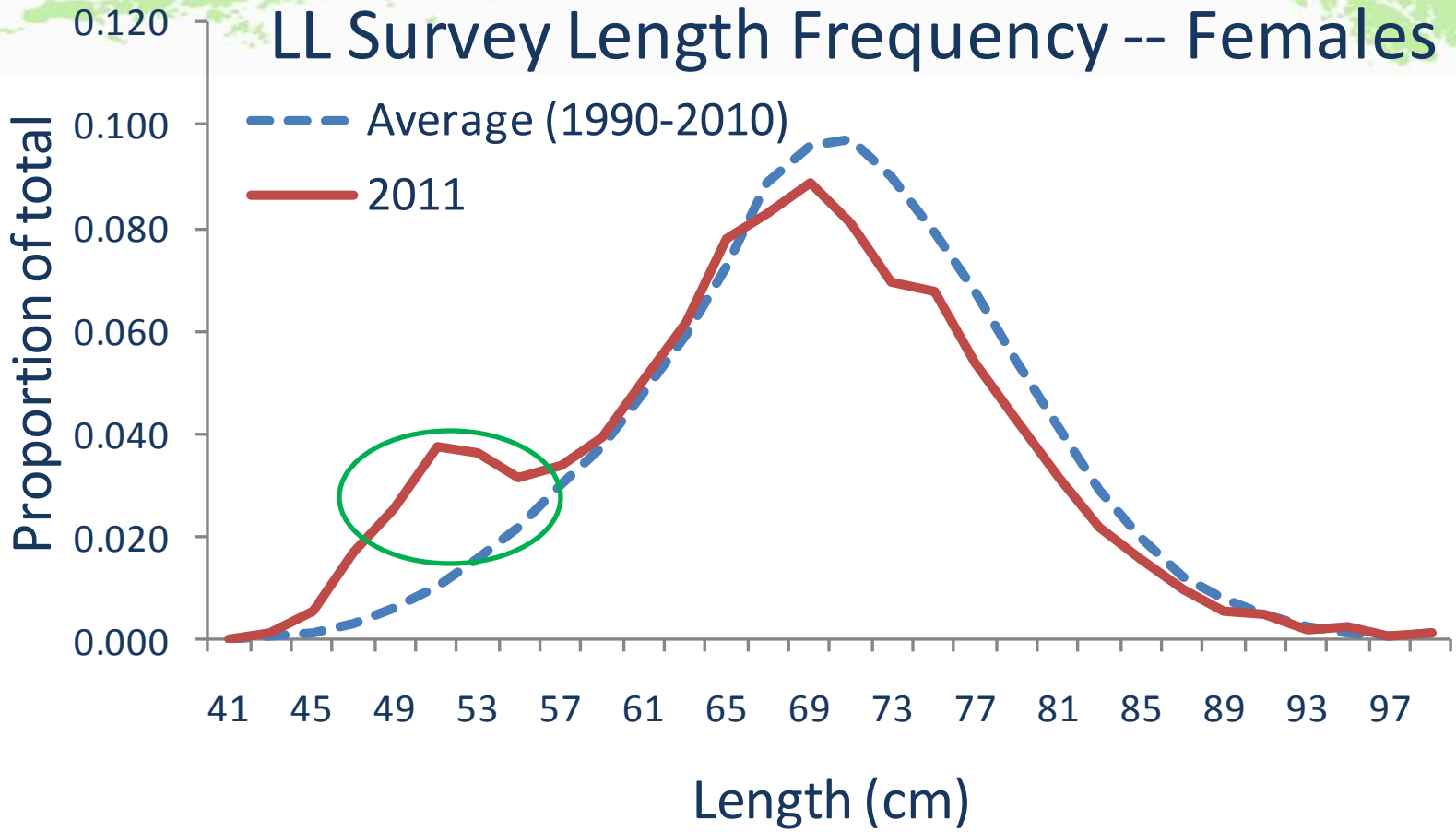


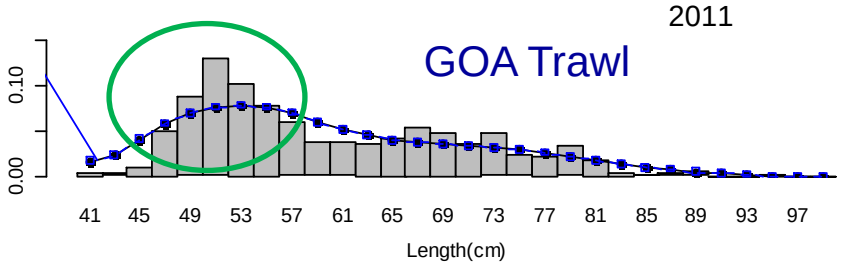
Eastern GOA

Longline survey whale depredation

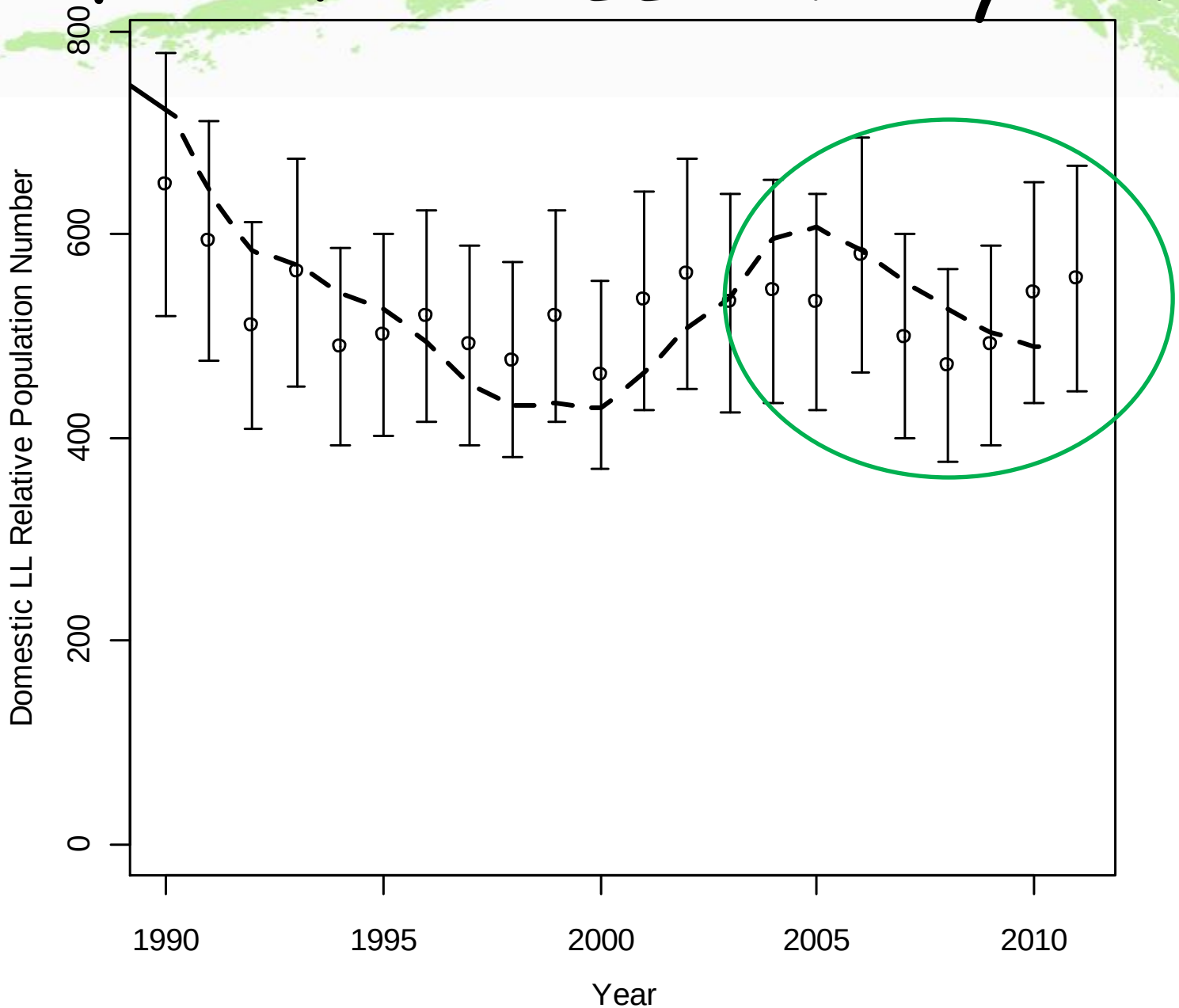


Recruitment sign?

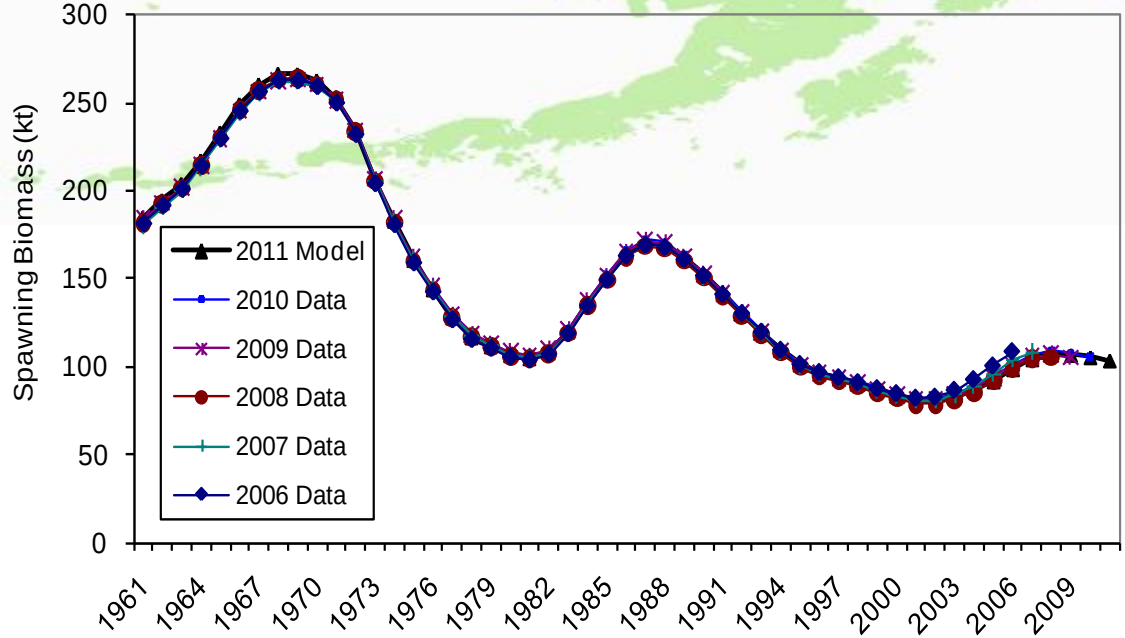




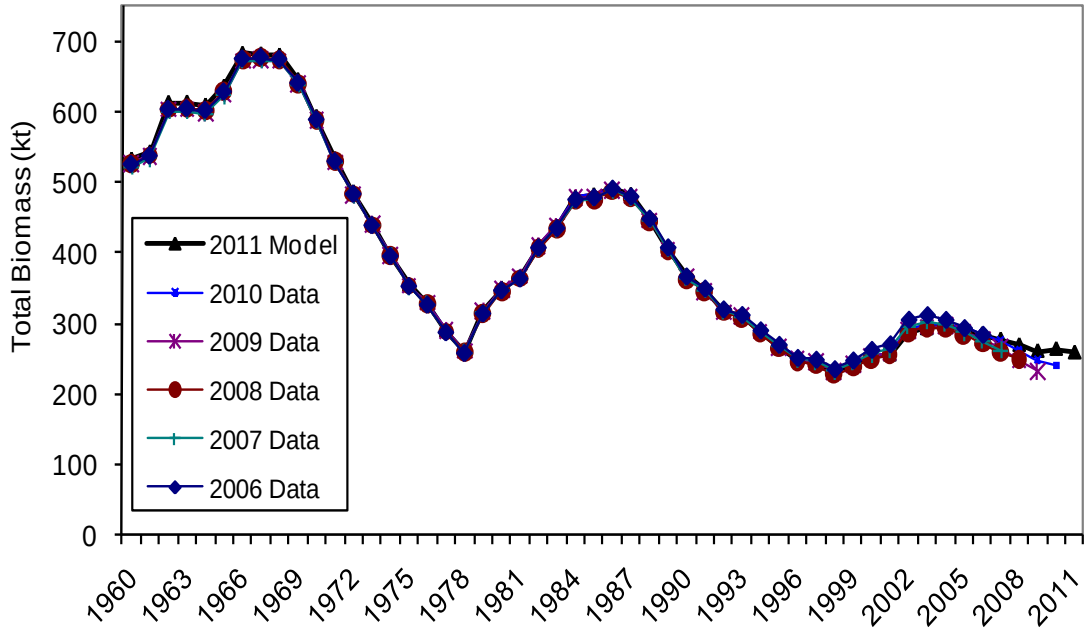
Sablefish: Fit to LL Survey RPN



Trends

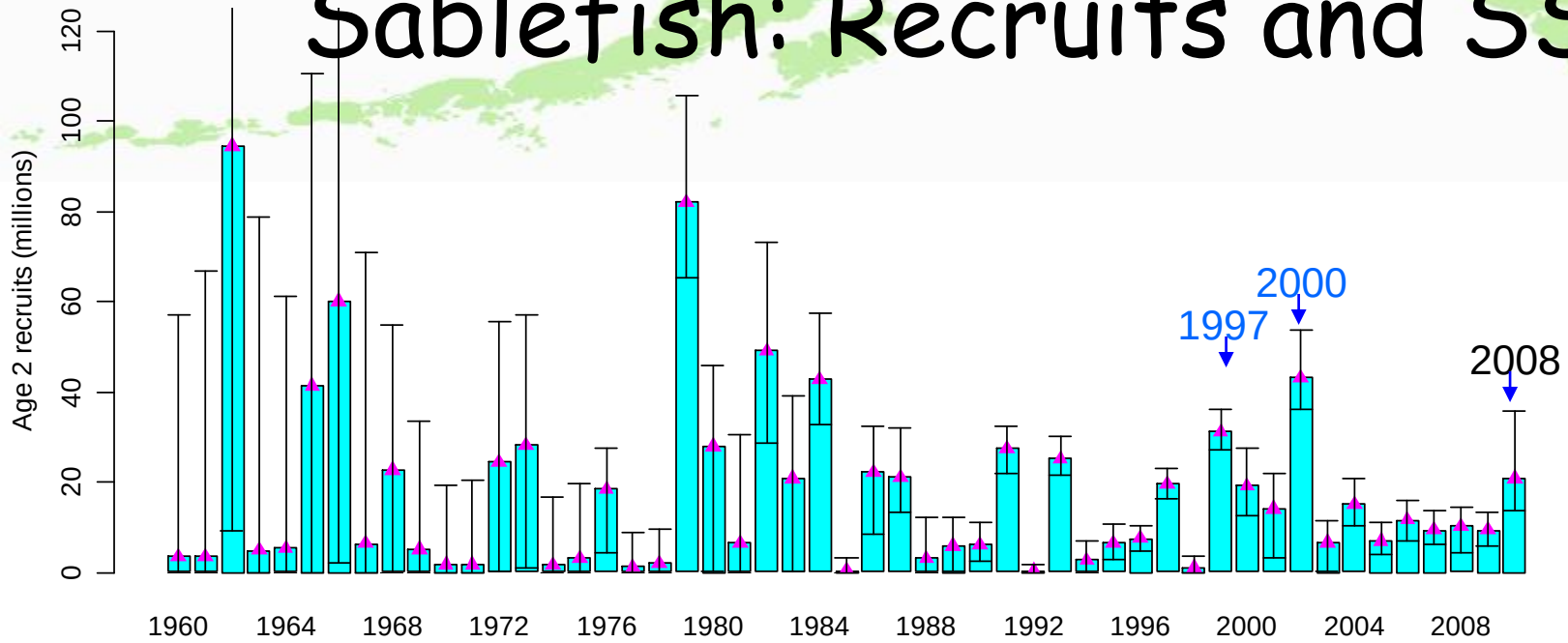


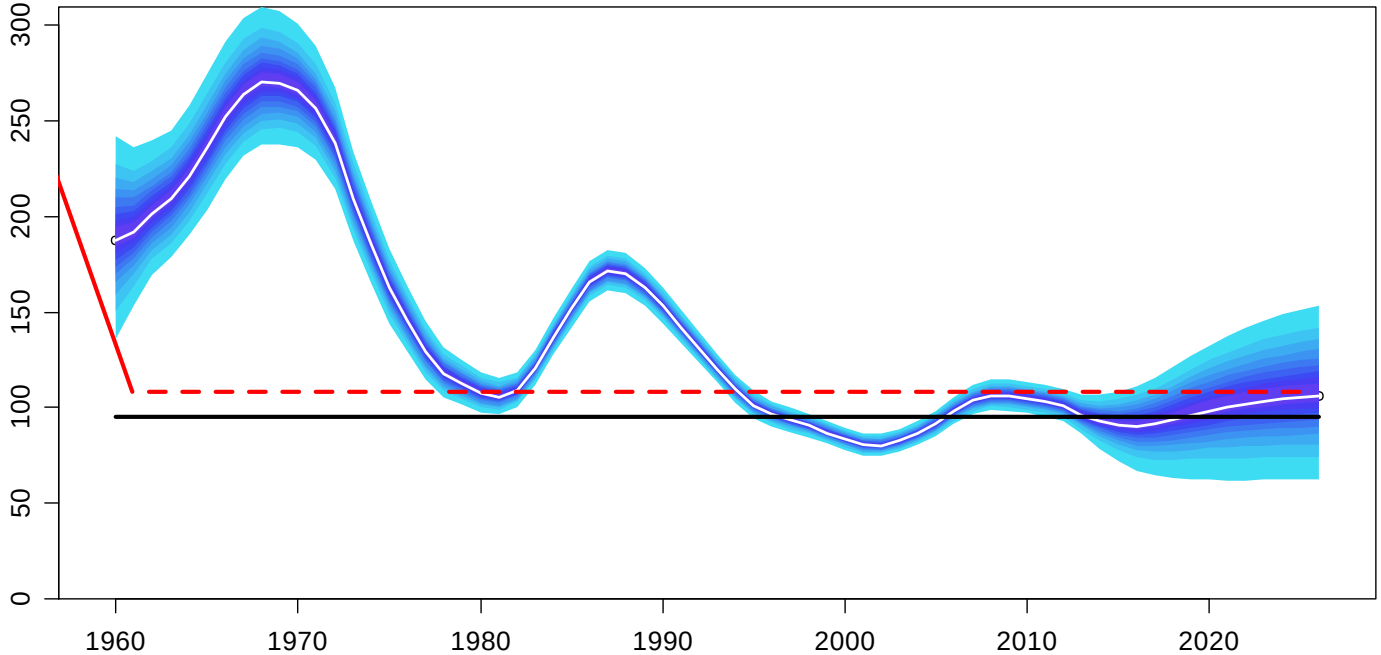
Spawning biomass leveling off



Total biomass has increased slightly from last year's estimates

Sablefish: Recruits and SSB

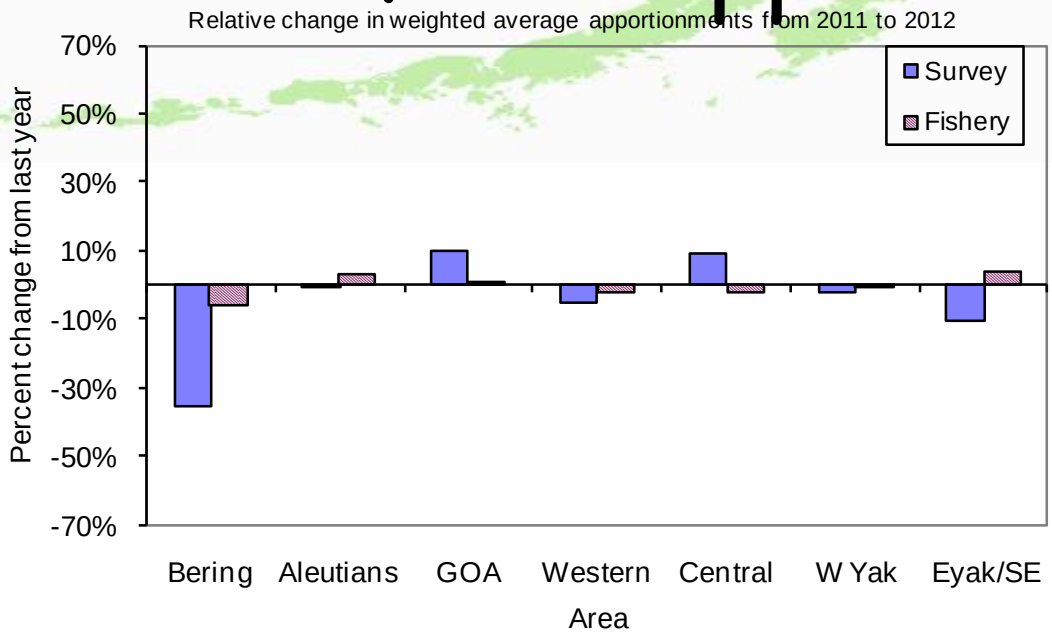




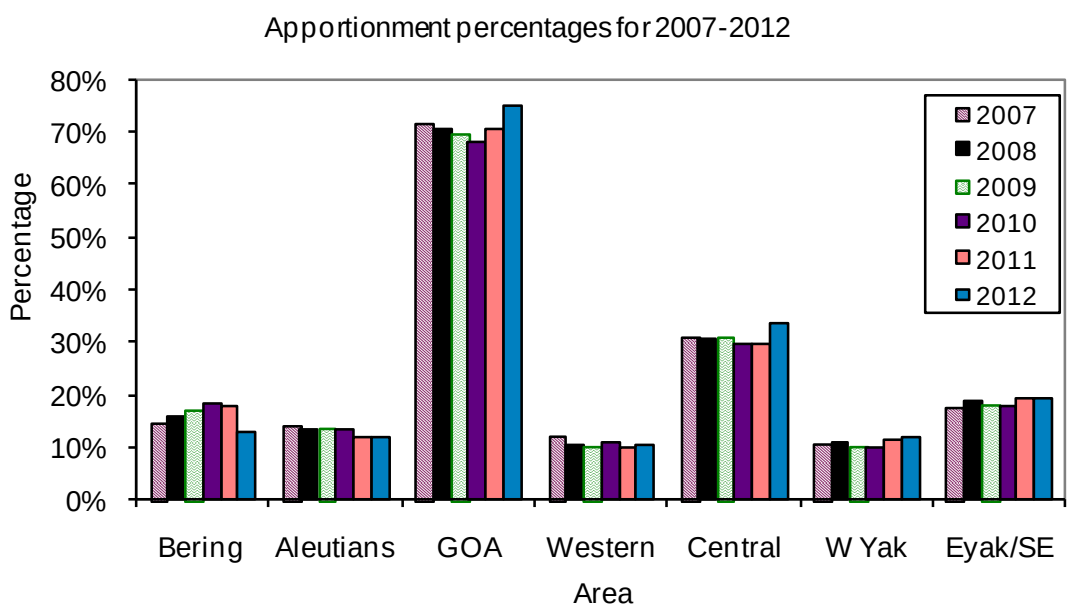
2012 spawning biomass 37%

Tier 3b

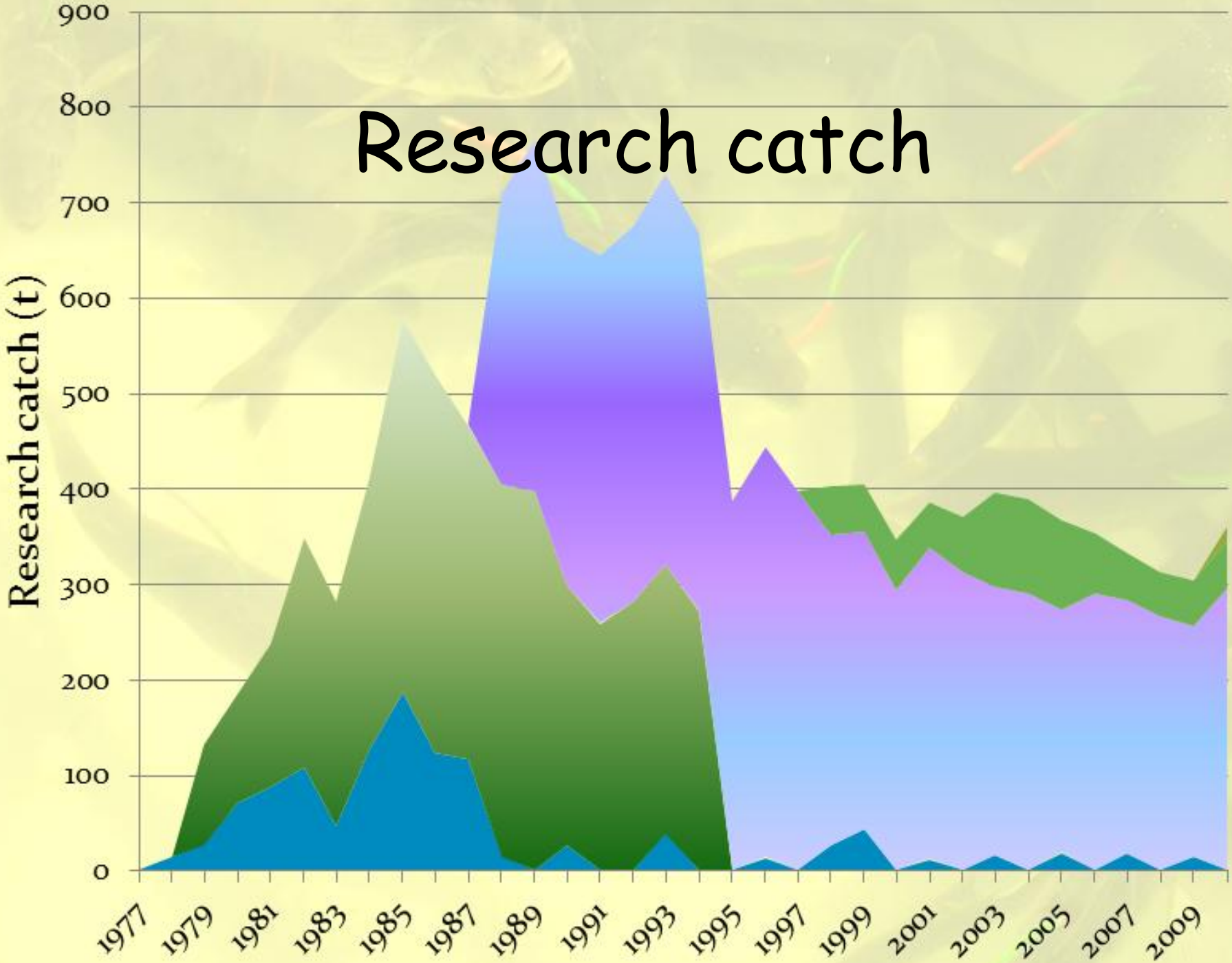
Sablefish: Apportionment



- **Central Gulf up 22%**
- **BS down 22%**
- **Other areas about same**

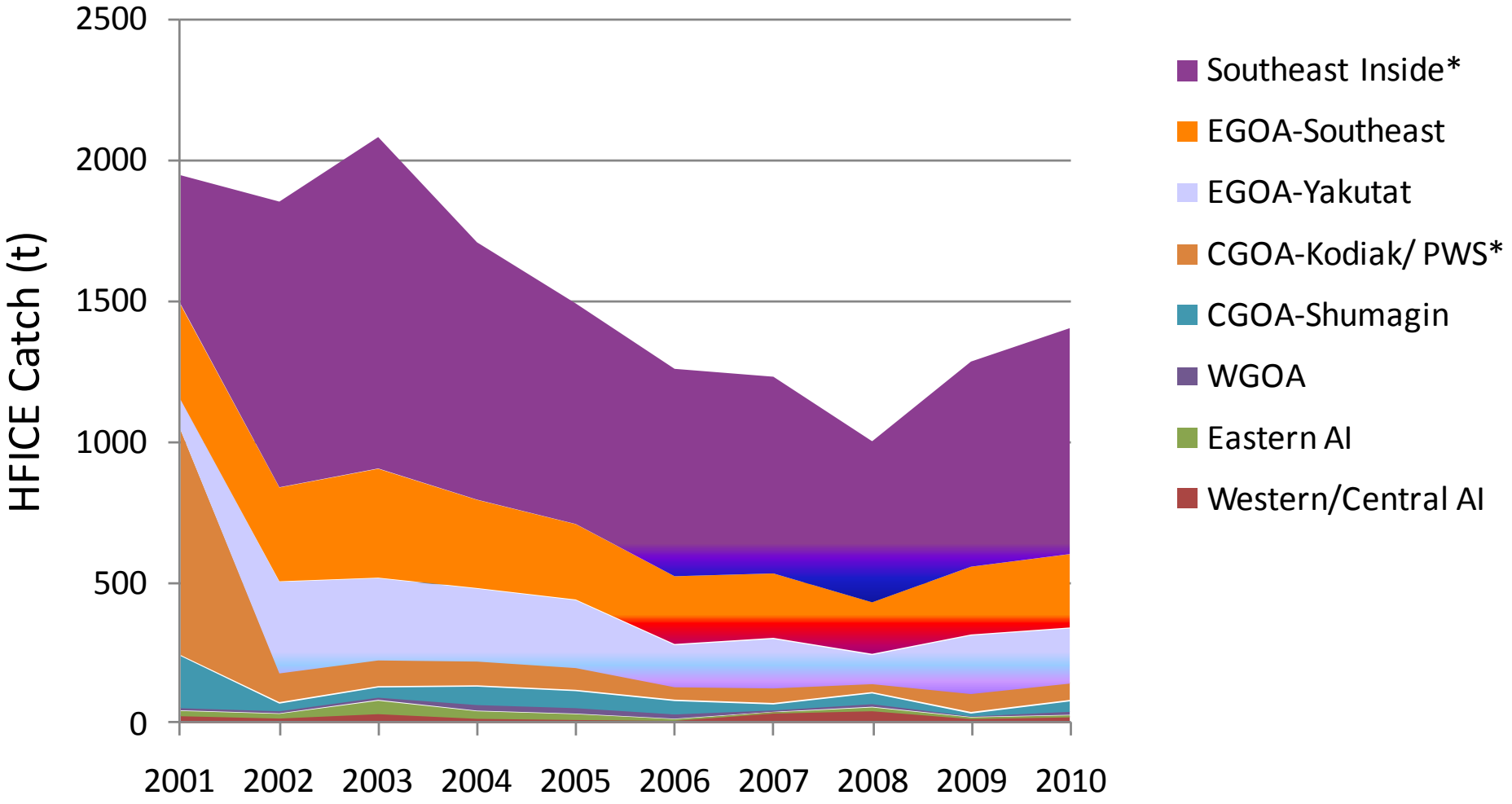


Research catch



HFICE catch

- **Sablefish in halibut fishery?**
  - Mostly in Eastern Gulf (but overlaps)



Flatfish ABC Summary

Species	2011 Catch	ABC 2011	ABC 2012	Change
Pollock	79,805	96,215	116,444	up 20,229 (21%)
Pacific Cod	58,836	86,800	87,600	up 800 (1%)
Sablefish	11,057	11,290	12,960	up 1,670 (15%)
Flatfish	9,929	121,245	112,828	down 8,417 (7%)
Arrowtooth flounder	29,703	213,150	212,882	down 268 (0%)
Rockfish	22,650	34,653	35,850	up 1,197 (3%)
Atka mackerel	1,613	4,700	4,700	same (0%)
Skates	4,016	8,273	8,422	up 149 (2%)
Other Species	2,135	13,795	14,362	up 567 (4%)
Total	219,744	590,121	606,048	up 15,927 (3%)

Summary: Page 18 Chapter: Page 413

Flatfish ABC's

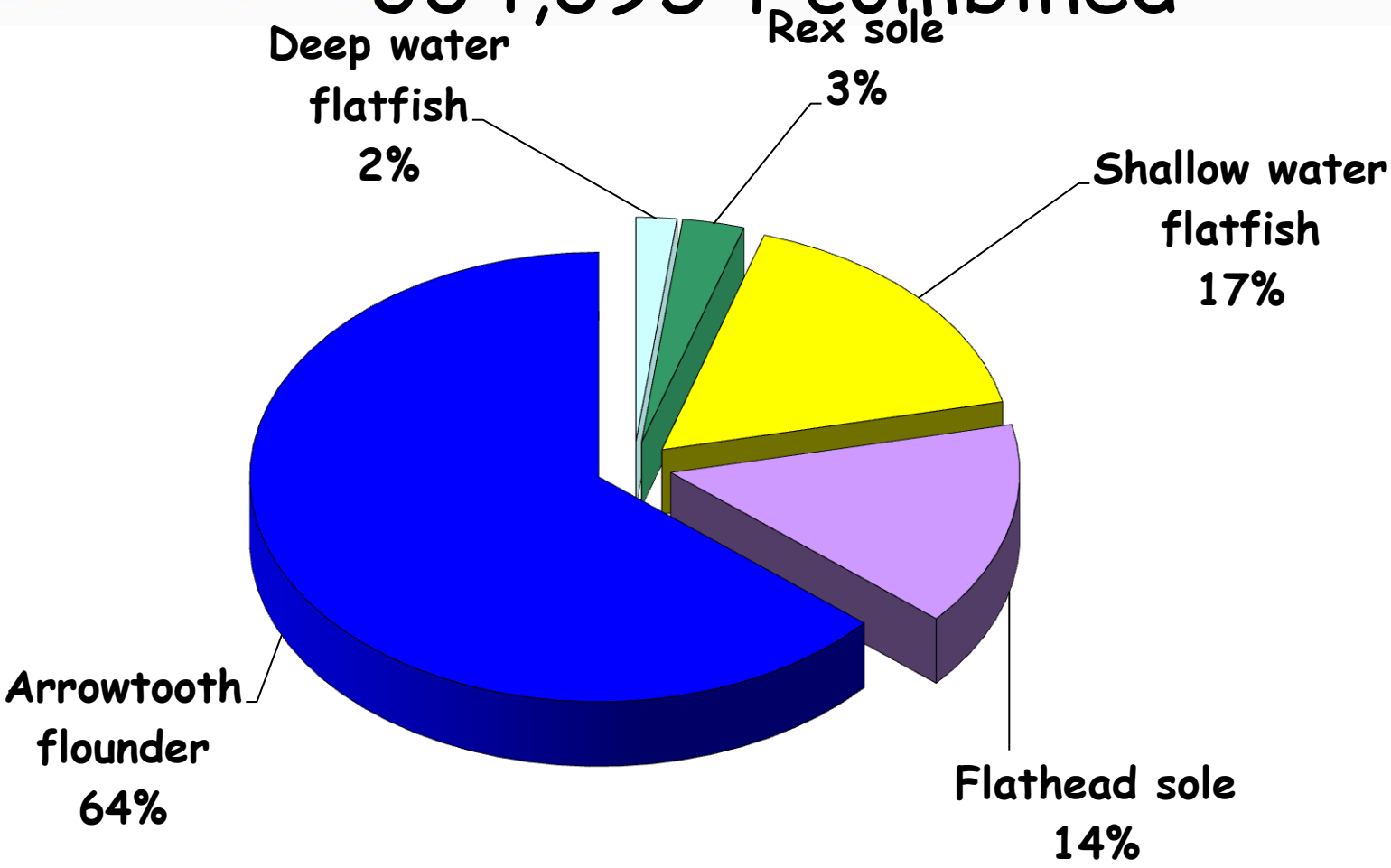
Species	2011 ABC	2012 ABC	Change
Shallow water flatfish	56,242	50,683	down 5,559 (10%)
Deep water flatfish	6,305	5,126	down 1,179 (19%)
Rex sole	9,565	9,612	up 47 (0%)
Flathead sole	49,133	47,407	down 1,726 (4%)
Arrowtooth flounder	213,150	212,882	down 268 (0%)
Subtotal	334,395	325,710	down 8,685 (3%)

Deep-water ABC from Dover assessment (Tier 5) + others (Tier 6)

Shallow water flats: N and S rock sole Tier 3, others Tier 5

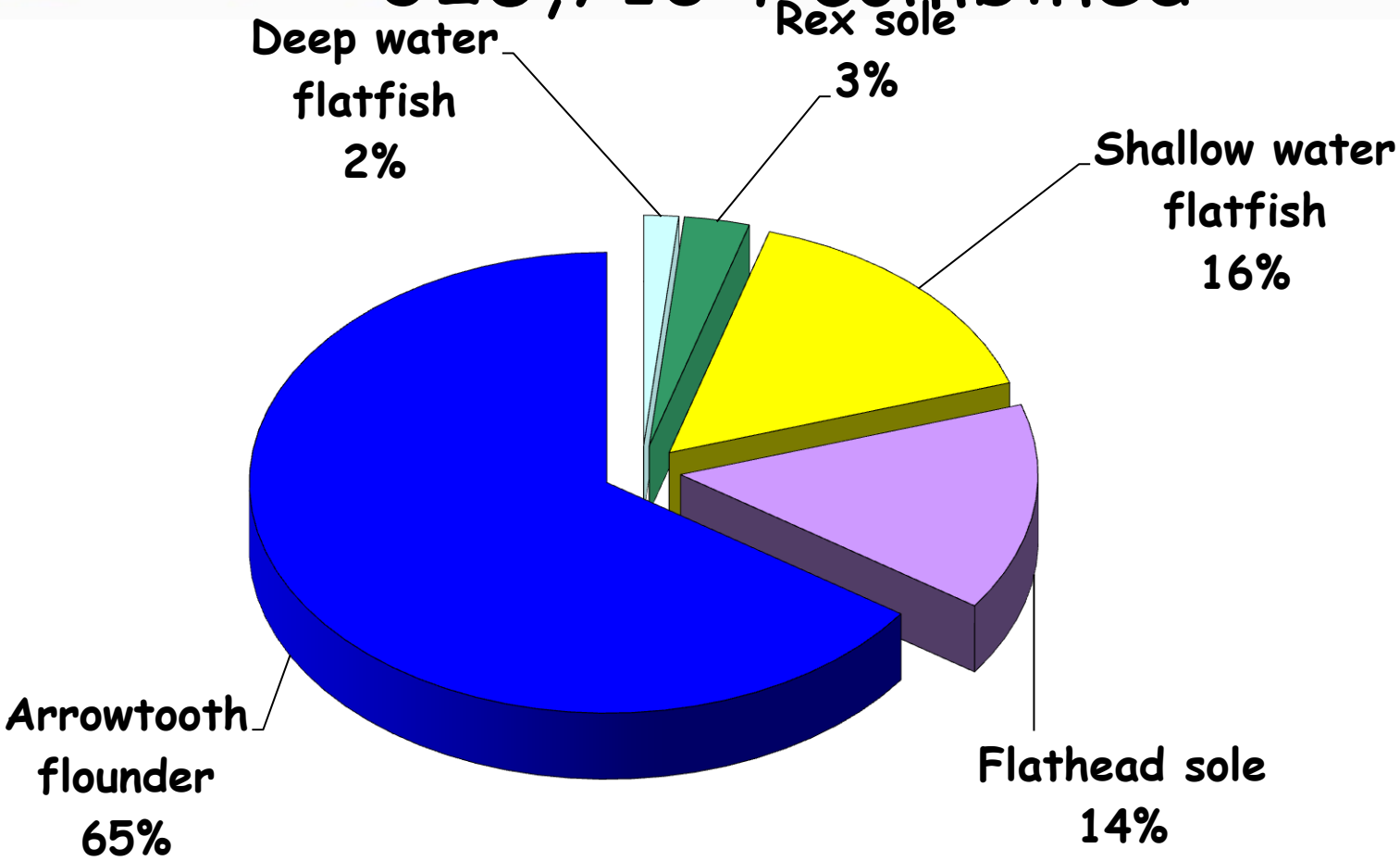
Flatfish 2011 ABC's

334,395 t combined



Flatfish 2012 ABC's

325,710 t combined



General comments on flatfish assessments

- **All indications still lightly exploited**
- **Model developments:**
  - N & S rock sole model

    Developments advanced
  - Dover sole model

    A number of issues identified—more work needed
  - Rex sole

    Issue remains due to selectivity estimates relative to maturity

    $F_{40\%}$ and $F_{35\%}$ unreliable

Flatfish ABC's

Species	2011 ABC	2012 ABC	Change
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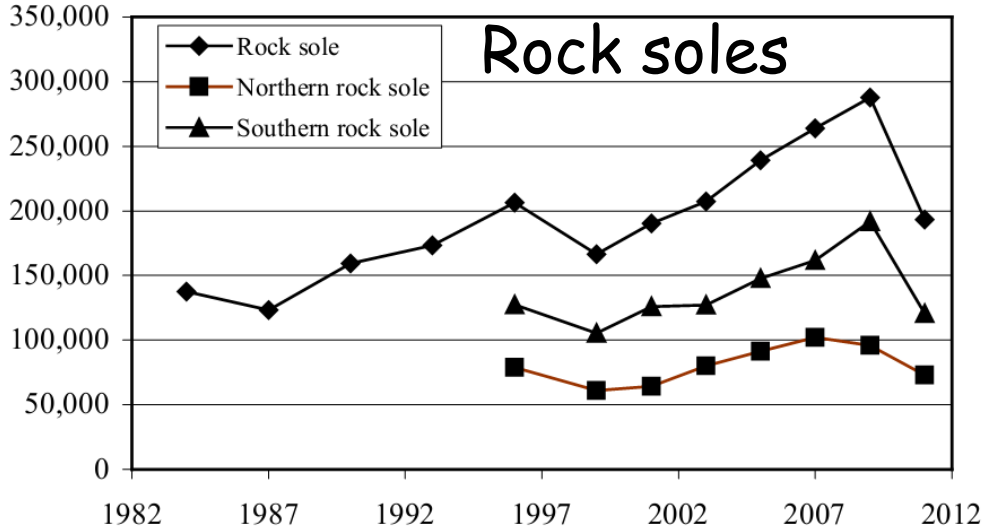
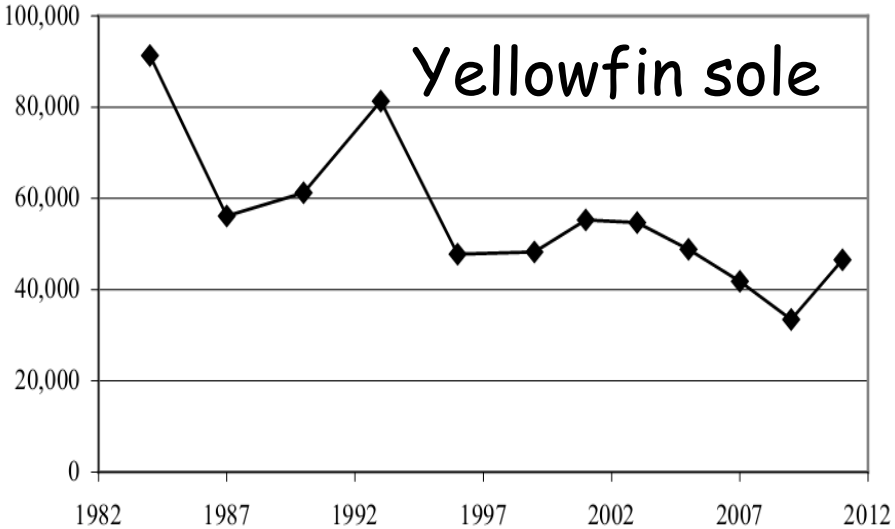
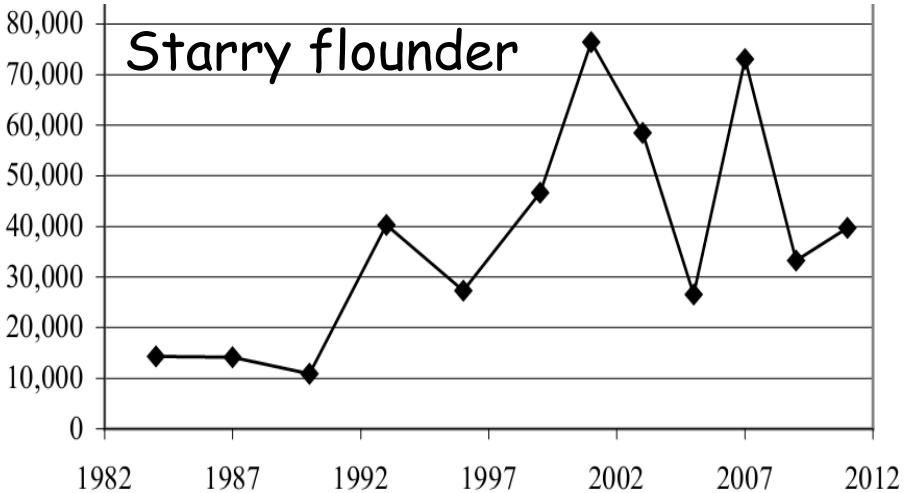
Shallow water flats: N and S rock sole Tier 3, others Tier 5

4. Shallow water flatfish



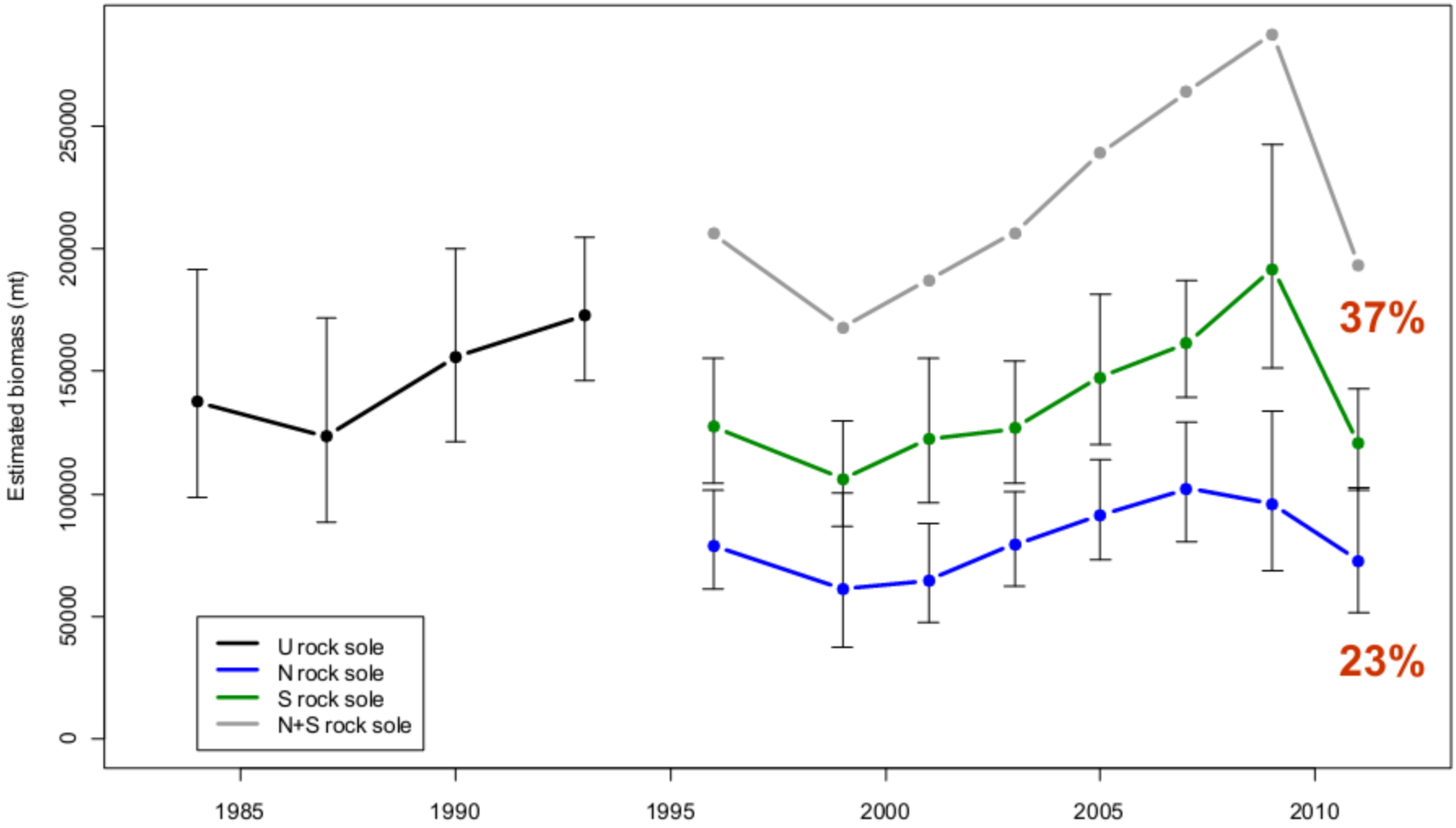




Summary: Page 18 Chapter: Page 413

4. GOA Shallow flats

U-N-S GOA rock sole survey biomass



4. Shallow water flatfish

N S Rock sole model accepted

Shallow water flatfish	Biomass	OFL	ABC
2012	329,217	61,680	50,683
2013		56,780	46,483

NOTE:

Rock sole part Tier 3a

- Previously Tier 4
- MSC condition satisfied

CIE Review expected in 2012

	ABC	OFL
Northern Rock sole	10,800	12,600
Southern Rock sole	22,700	26,700
Rock sole subtotal	33,500	39,300
Yellowfin sole	5,895	7,678
Butter sole	2,493	3,247
Starry flounder	5,032	6,554
English sole	2,116	2,756
Sand sole	96	124
Alaska plaice	1,552	2,022
Total	50,683	55,943

Flatfish ABC's

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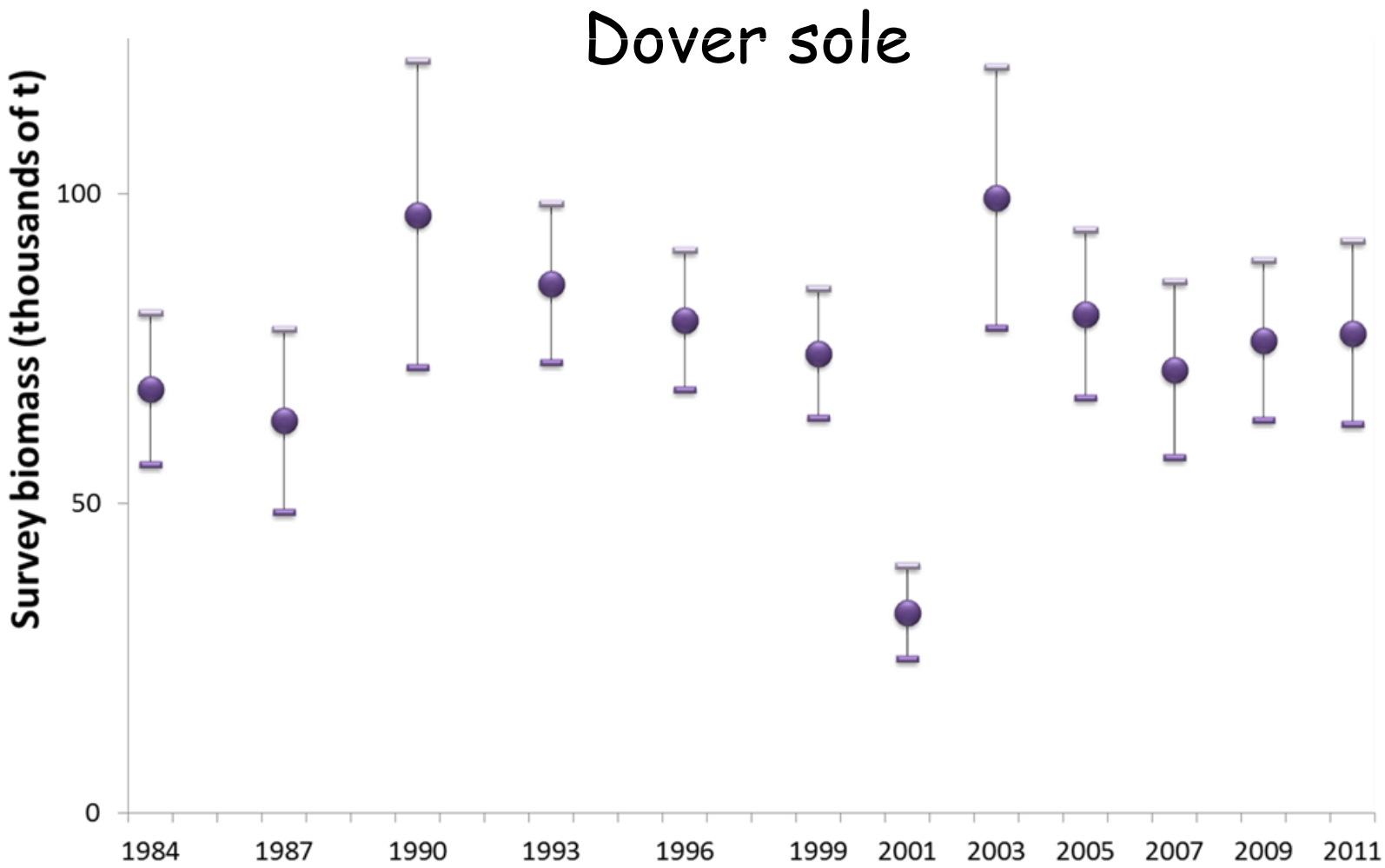
Deep-water ABC from Dover assessment (Tier 5) + others (Tier 6)

Shallow water flats: N and S rock sole Tier 3, others Tier 5

Deepwater flatfish survey estimates



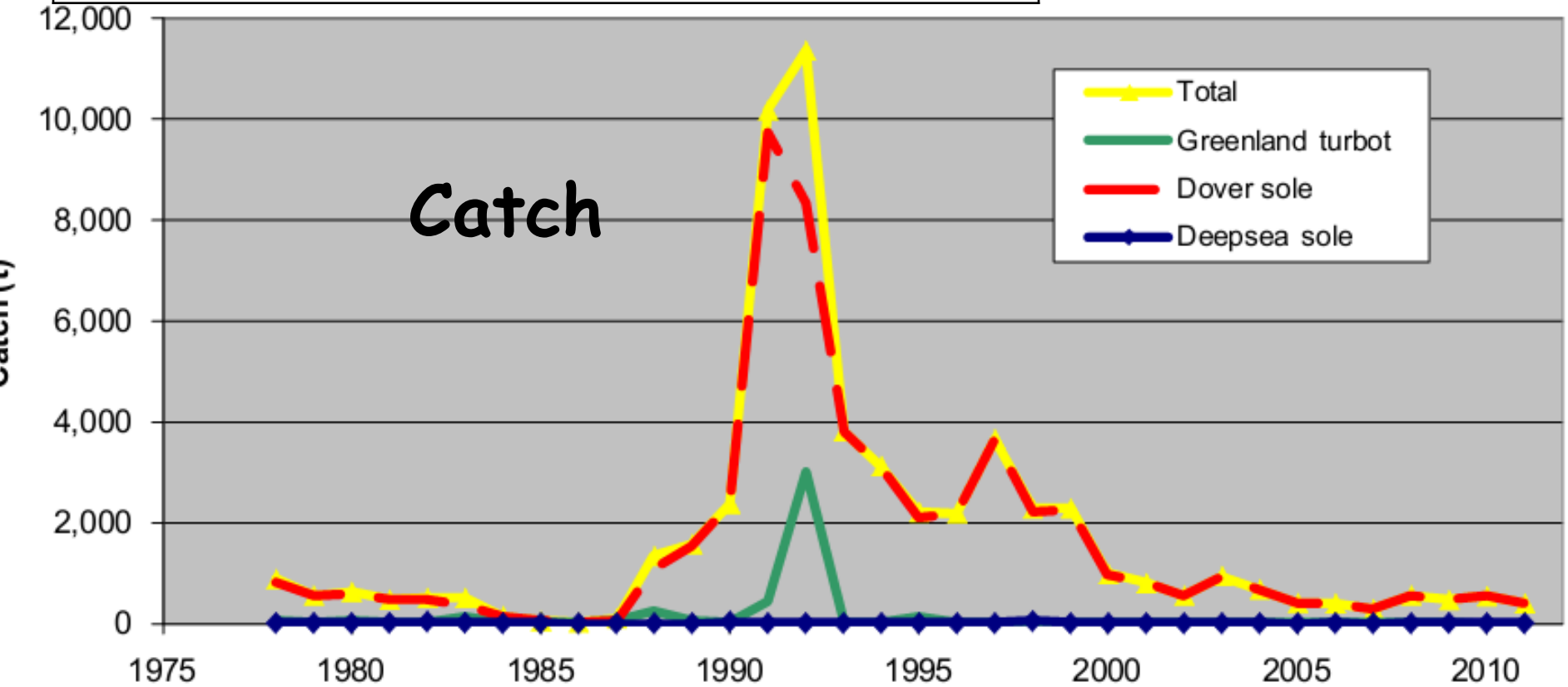
Deepsea sole + Greenland turbot average about 200 t of biomass

Deepwater flatfish

Dover sole
Deepsea sole
Greenland turbot

Deepwater flatfish	Biomass	OFL	ABC
2012	77,531	6,834	5,126
2013		6,834	5,126

Dover dropped to Tier 5



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Deep-water ABC from Dover assessment (Tier 5) + others (Tier 6)

Shallow water flats: N and S rock sole Tier 3, others Tier 5

6. GOA Rex Sole

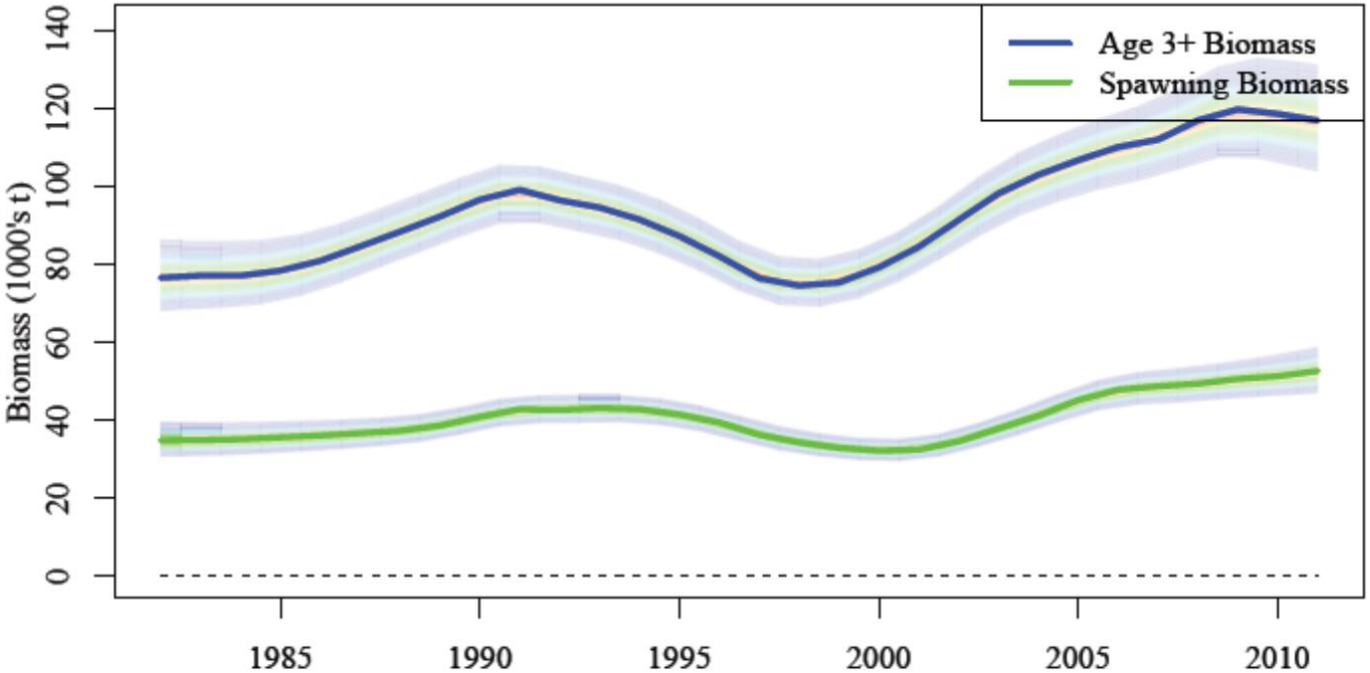
Age-structured model (since 2004), *M=0.17*

In 2005 adopted Tier 5 w/ model biomass

Maturity much younger than selectivity

2009 survey biomass highest observed

MSC Certified in 2010: rock soles, ATF, and flathead



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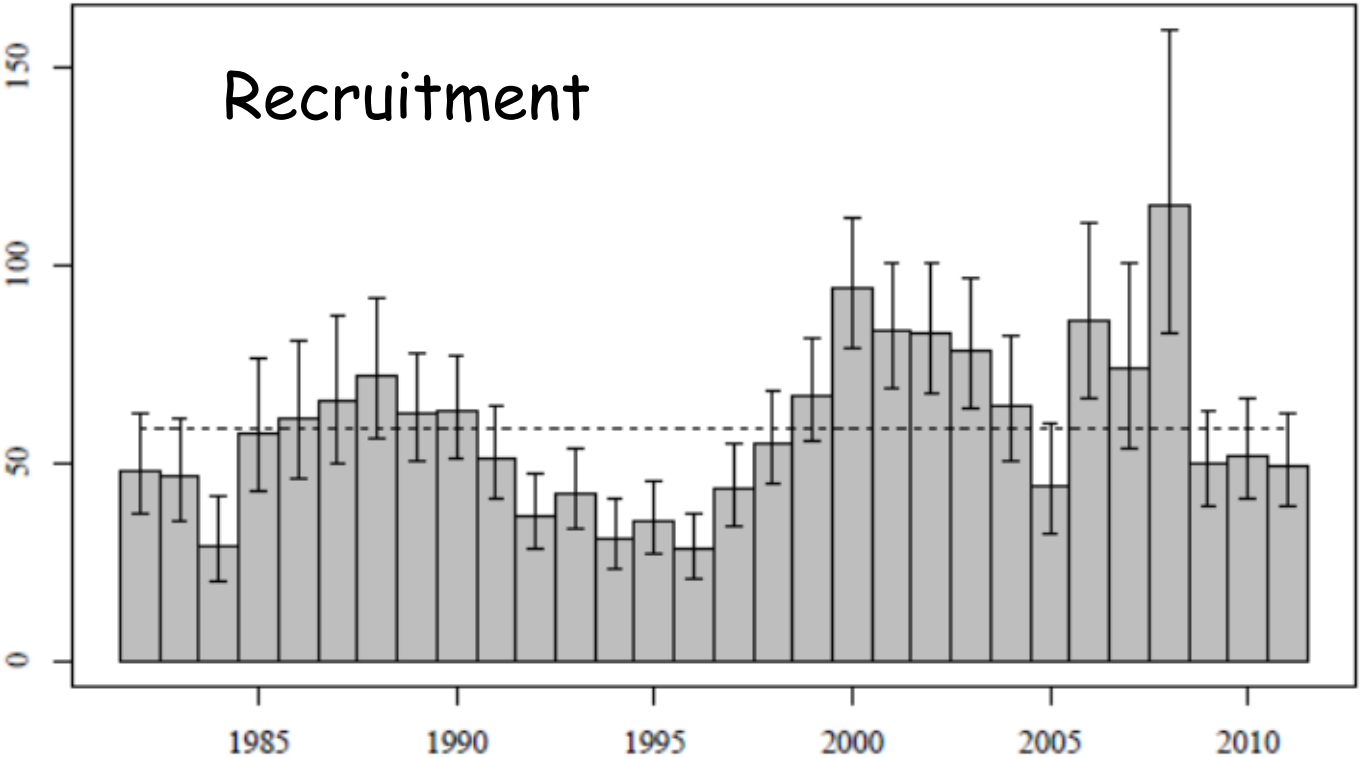
6. Rex sole ABC/OFL

Rex sole	Biomass	OFL	ABC
2012	87,162	12,561	9,612
2013		12,326	9,432



Tier 5
(model based)

Key issue:
Selectivity

Flatfish ABC's

Species	2011 ABC	2012 ABC	Change
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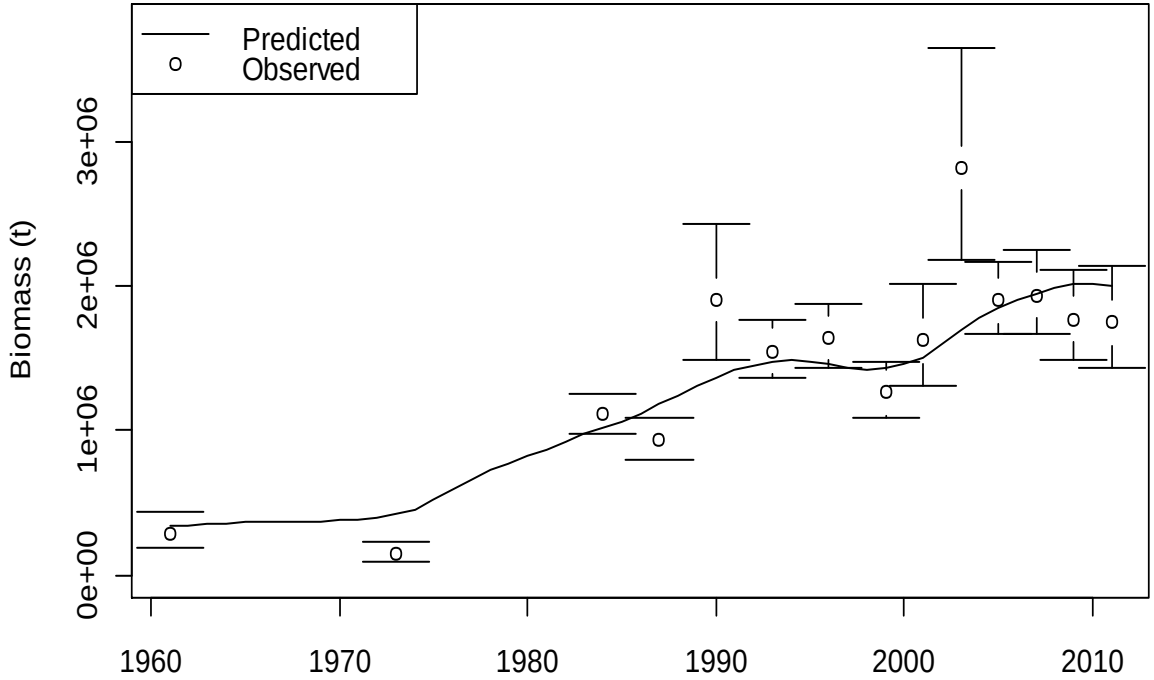
Deep-water ABC from Dover assessment (Tier 5) + others (Tier 6)

Shallow water flats: N and S rock sole Tier 3, others Tier 5

7. GOA Arrowtooth flounder

Based on age/sex structured model

- 2011 survey biomass and size composition
- Growth estimation **not** updated but
- 2007 and 2009 survey age composition data used



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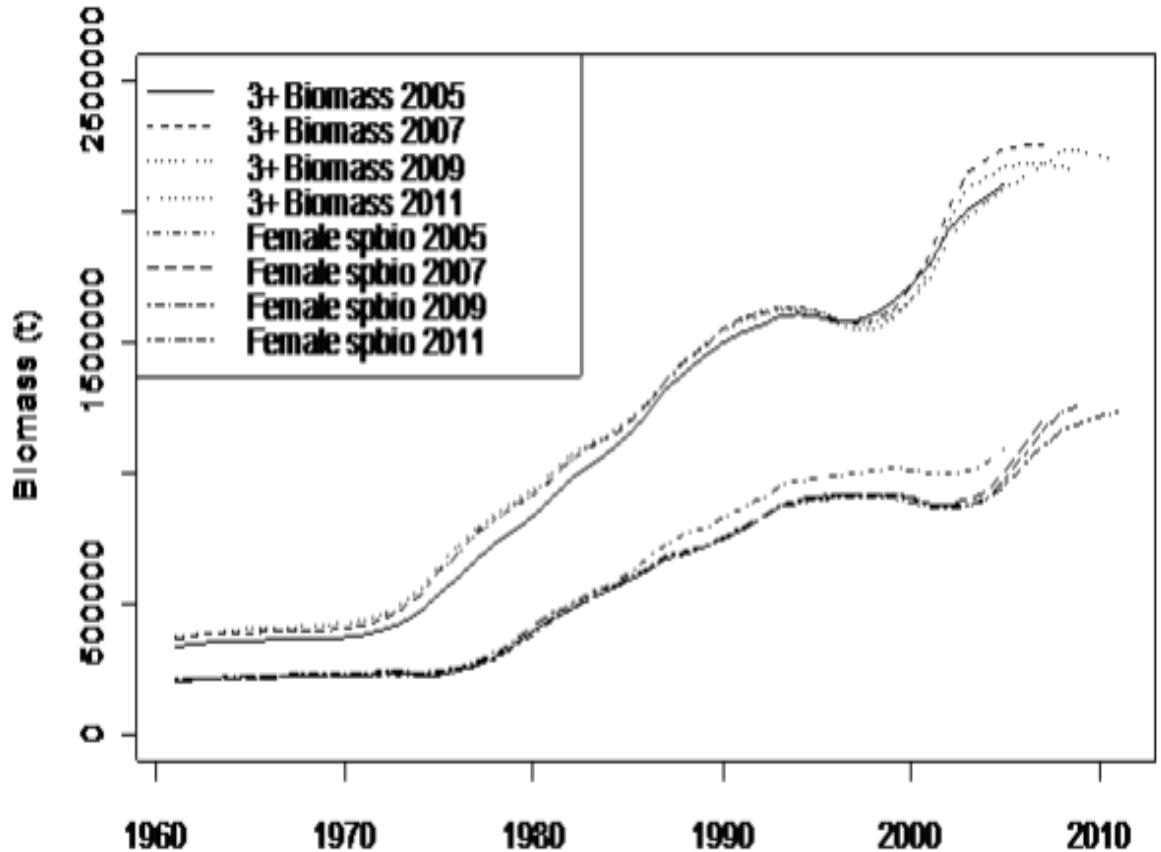
GOA Arrowtooth flounder ABC/OFL

Tier 3a

2012 ABC down slightly from past estimates

Year	Biomass	OFL	ABC
2012	2,161,690	250,100	212,882
2013		249,066	212,033



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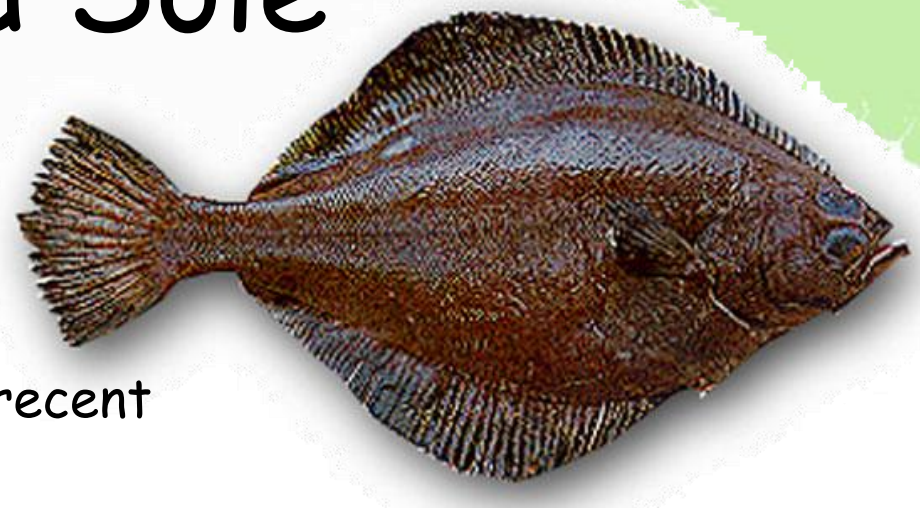
Deep-water ABC from Dover assessment (Tier 5) + others (Tier 6)

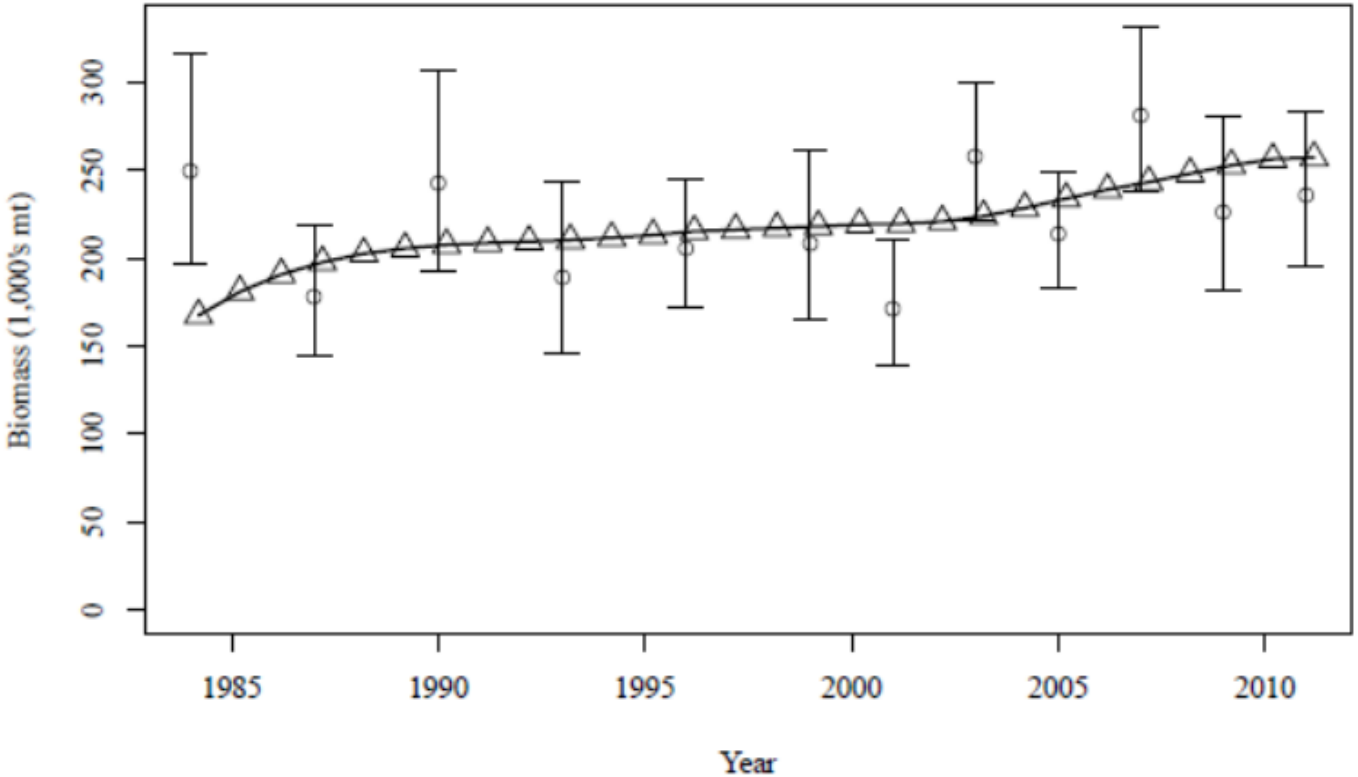
Shallow water flats: N and S rock sole Tier 3, others Tier 5

8. GOA Flathead Sole



Age-structured model

2011 survey biomass about same as recent average



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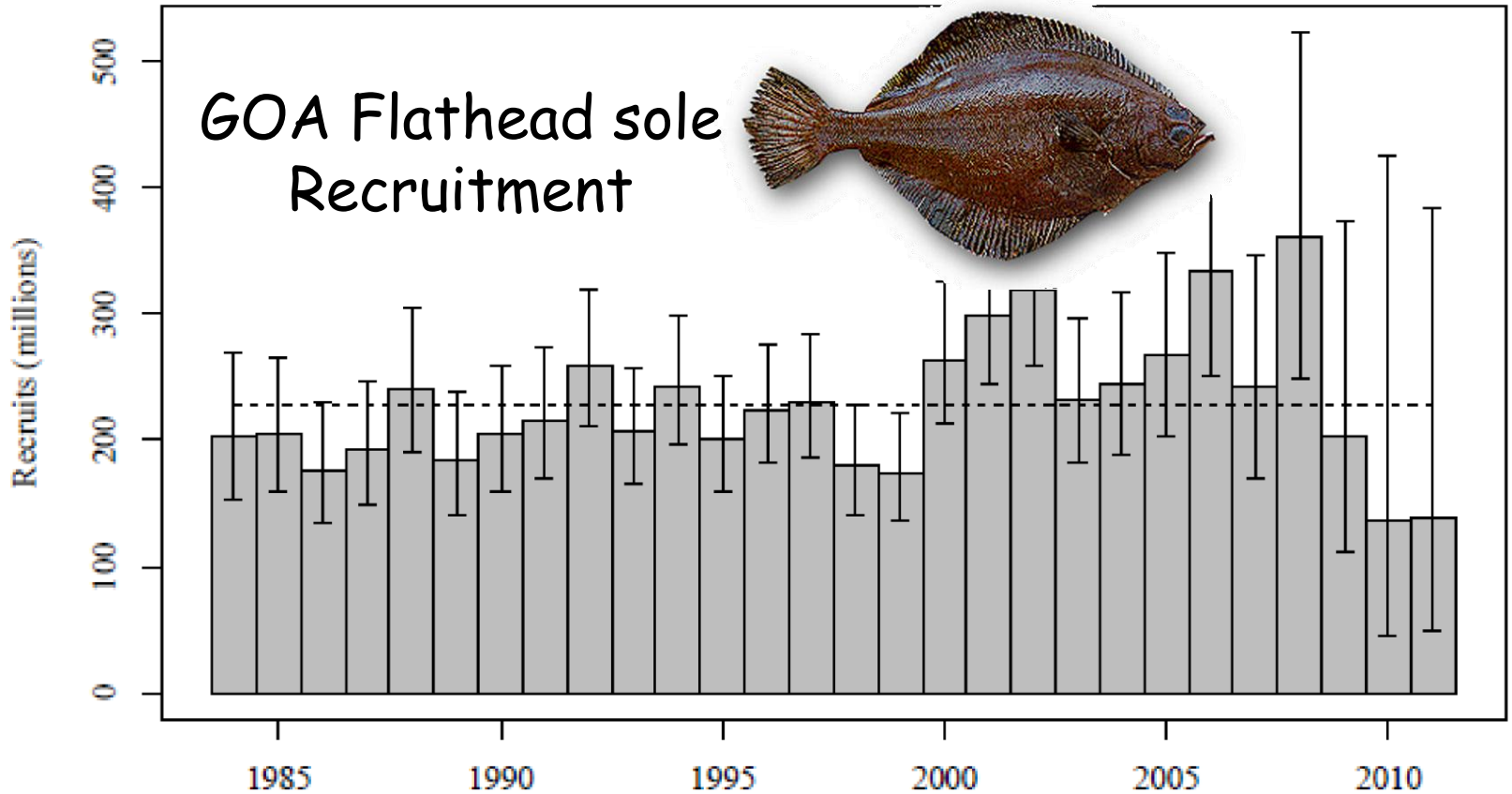
Chapter p. 753

GOA Flathead sole ABC/OFL

	Biomass	OFL	ABC
2012	292,189	59,380	47407
2013		60,219	48,081



GOA Rockfish

Species	2011 ABC	2012 ABC	Change
Pacific ocean perch	16,997	16,918	down 79 (0%)
Northern rockfish	4,854	5,507	up 653 (13%)
Shortraker	914	1,081	up 167 (18%)
Dusky (Pelagic shelf)	4,754	5,118	up 364 (8%)
Rougheye/blackspotted	1,312	1,223	down 89 (7%)
Demersal Shelf Rockfish	300	293	down 7 (2%)
Thornyhead rockfish	1,770	1,665	down 105 (6%)
Other rockfish	3,752	4,045	up 293 (8%)
Total	34,653	35,850	up 1,197 (3%)

Summary: Page 24
Chapter: Page 820

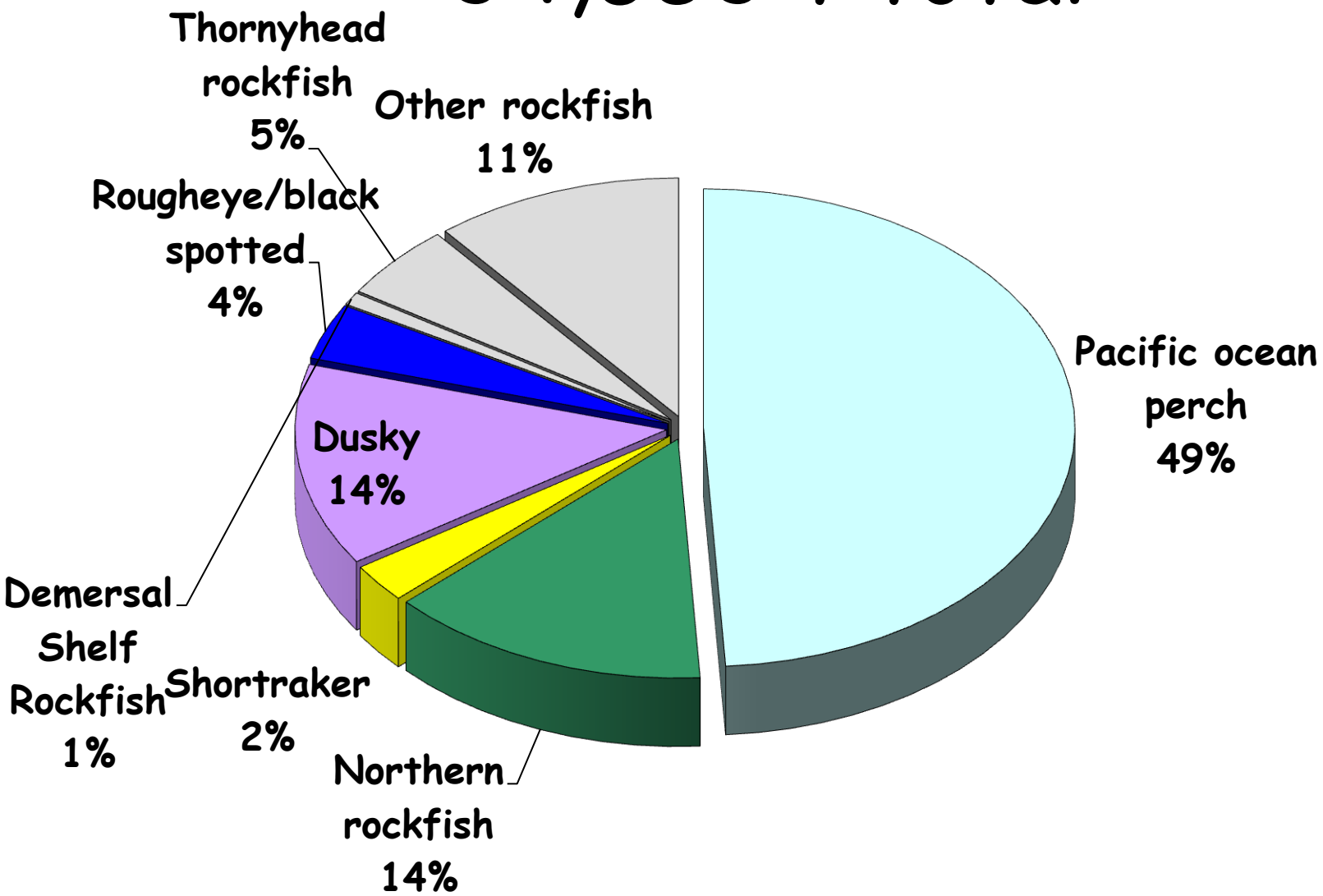
Rockfish Reorganization

- **"Other rockfish" created**
  - From "other slope"
- **Dusky rockfish new chapter**
  - Previously Pelagic Shelf Rockfish (PSR)
  - Widow and yellowtail moved to Other Rockfish

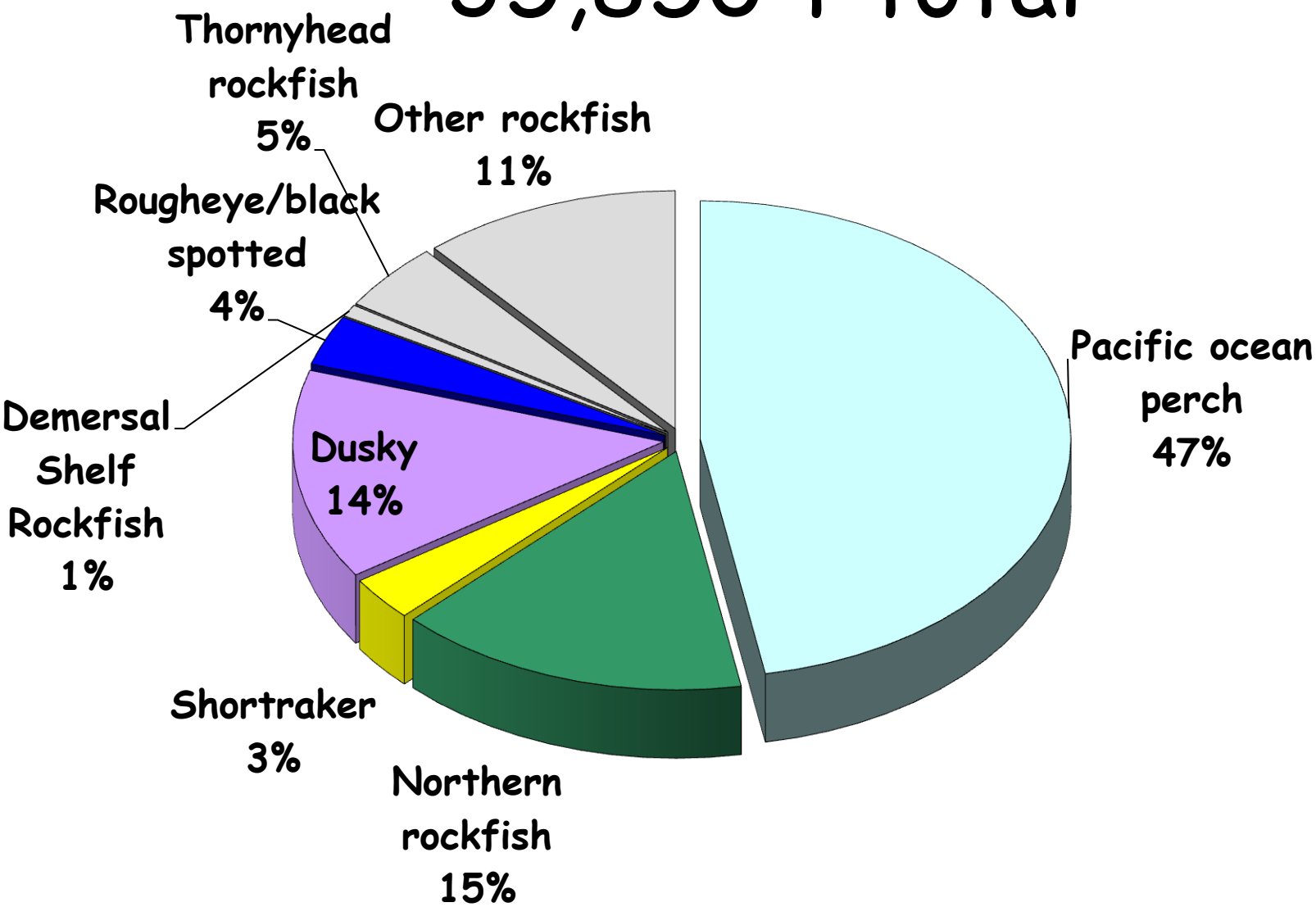
—Housekeeping amendments will follow to rename specifications—

Summary: Page 24
Chapter: Page 821

Rockfish 2011 ABC's 34,653 t total



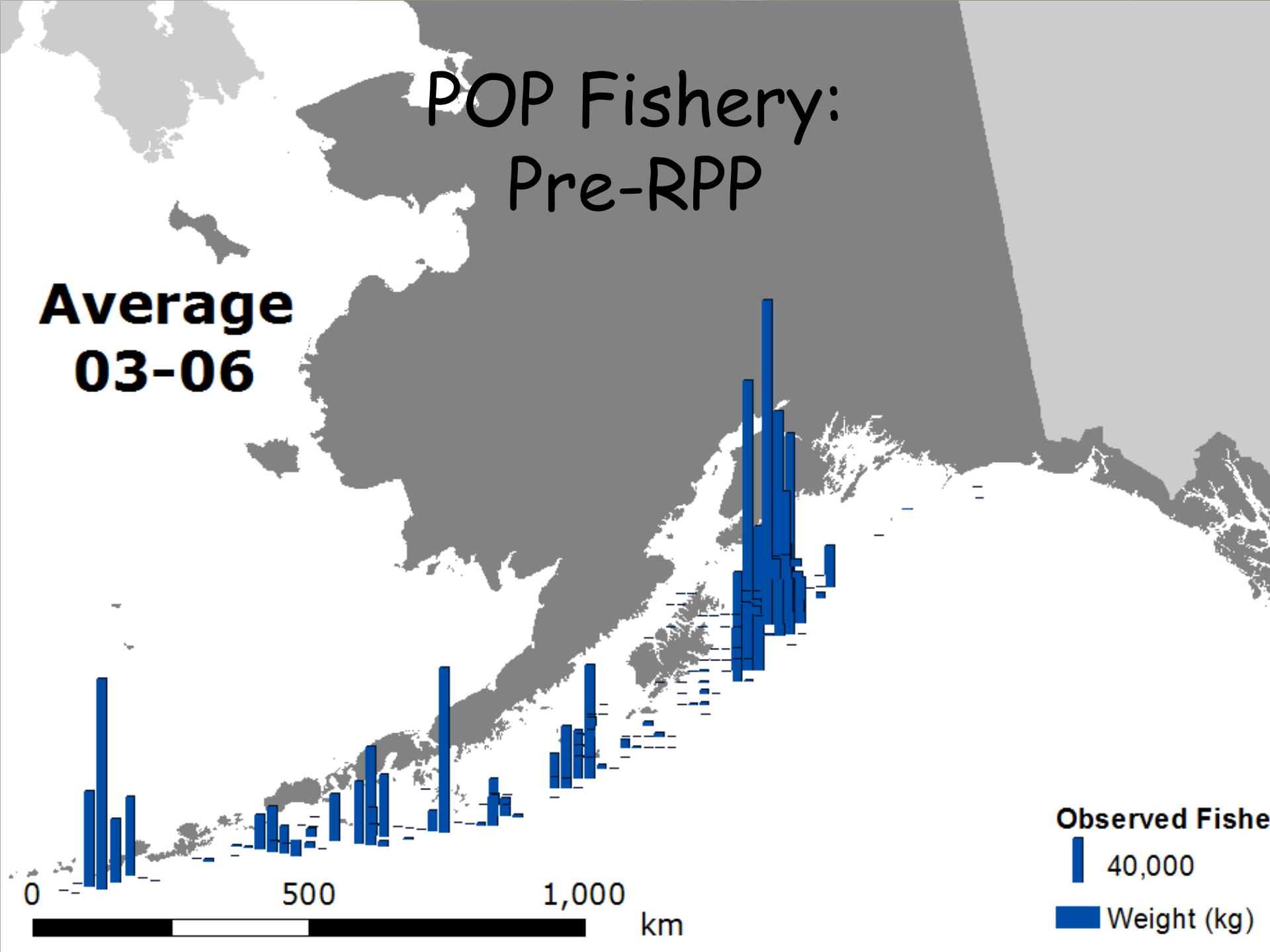
Rockfish 2012 ABC's 35,850 t total



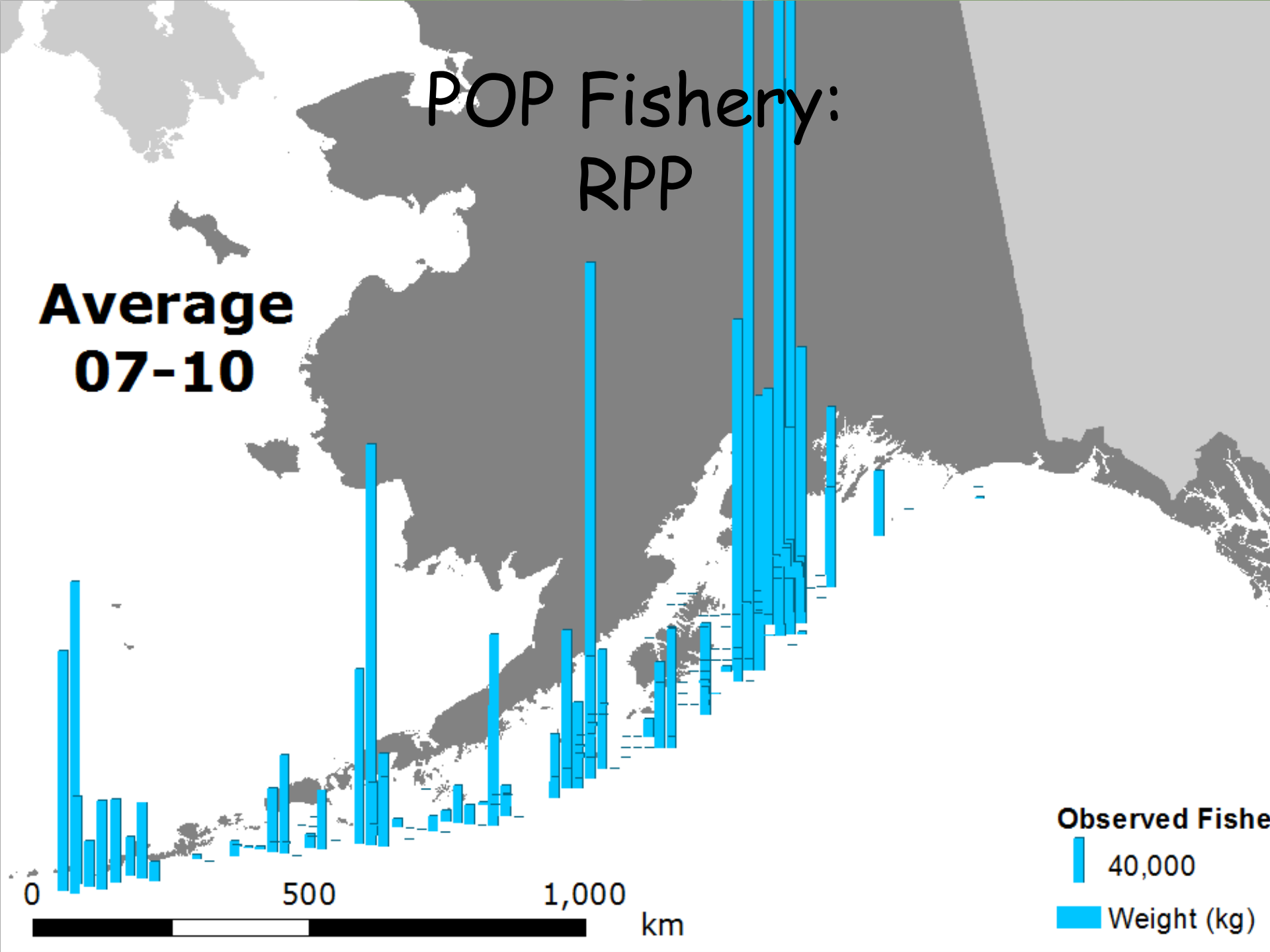
Rockfish Pilot Program (RPP) bycatch patterns

Compared bycatch for combined rockfish fisheries in central GOA

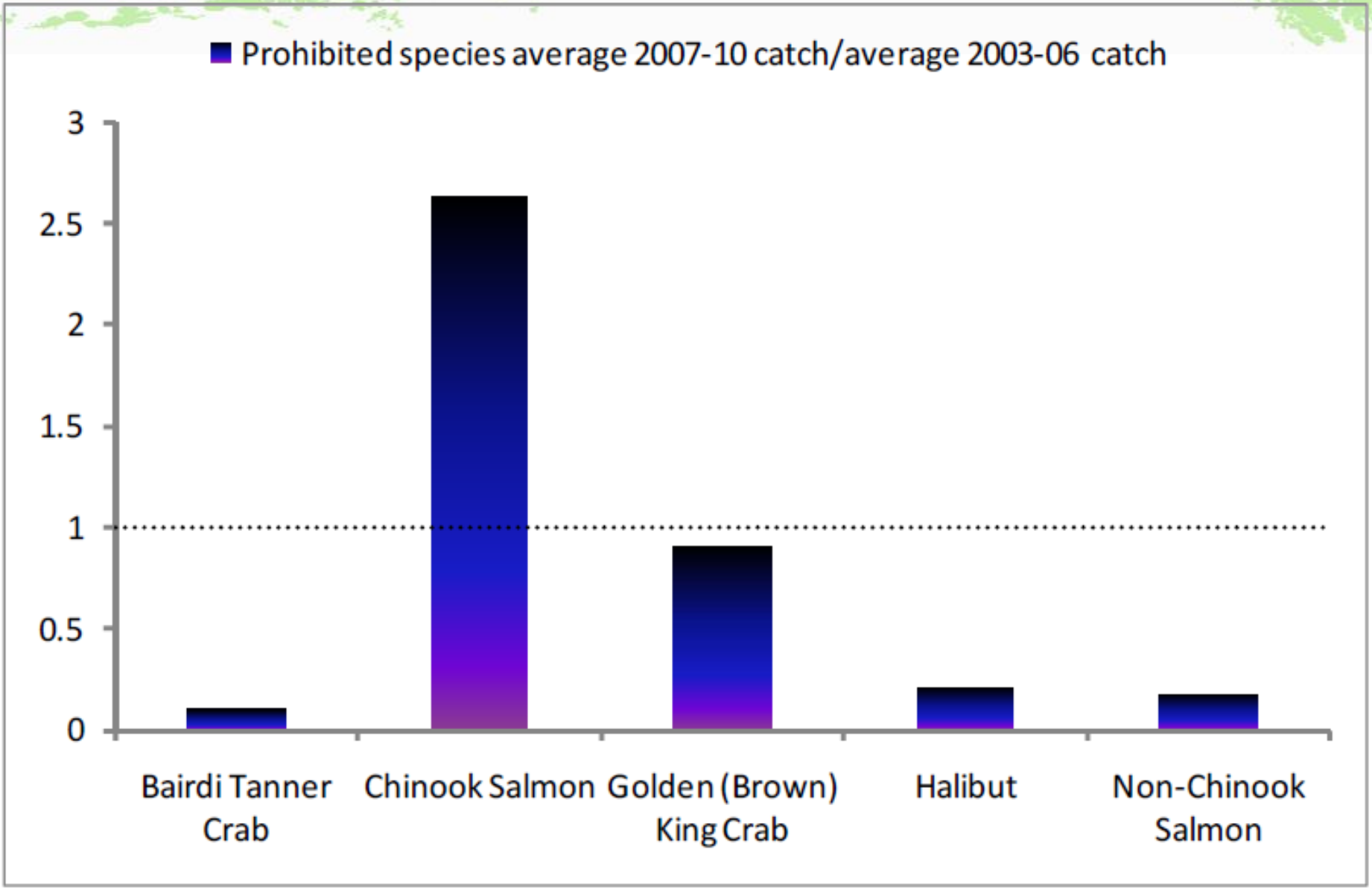
POP Fishery: Pre-RPP



POP Fishery: RPP



RPP Bycatch


Prohibited species average 2007-10 catch/average 2003-06 catch
3
2.5
2
1.5
1
0.5
0
Bairdi Tanner Crab
Chinook Salmon
Golden (Brown) King Crab
Halibut
Non-Chinook Salmon

POP ABC Summary

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Pacific ocean perch	16,997	16,918	down 79 (0%)
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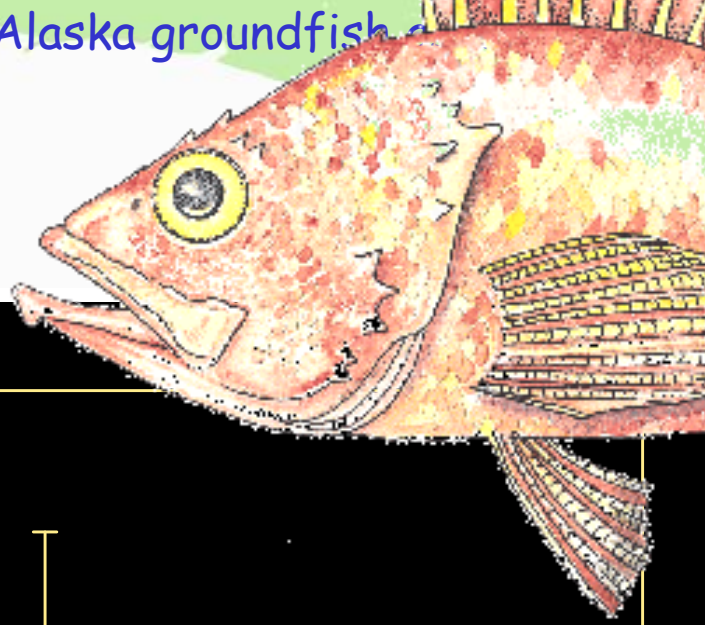
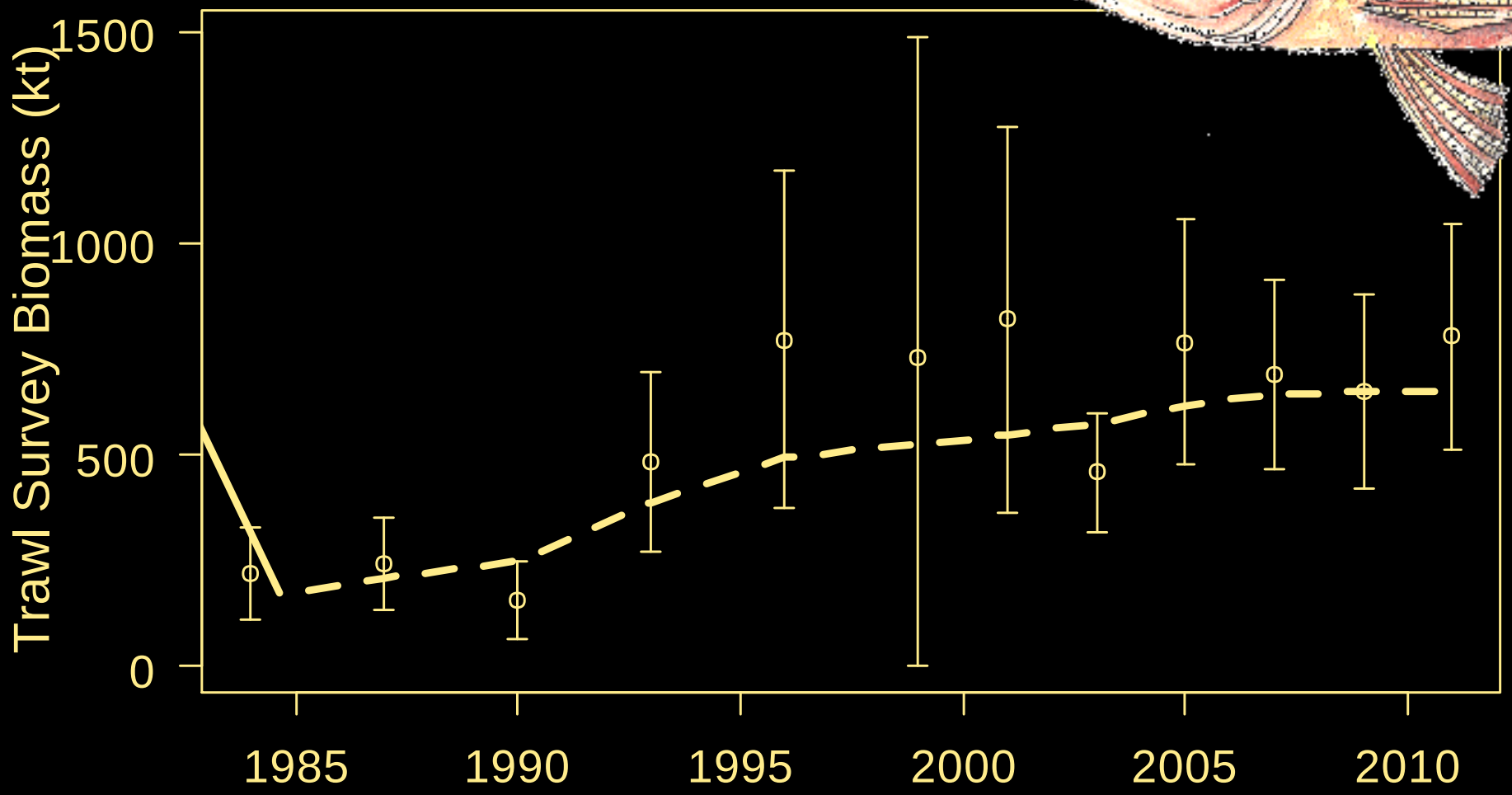
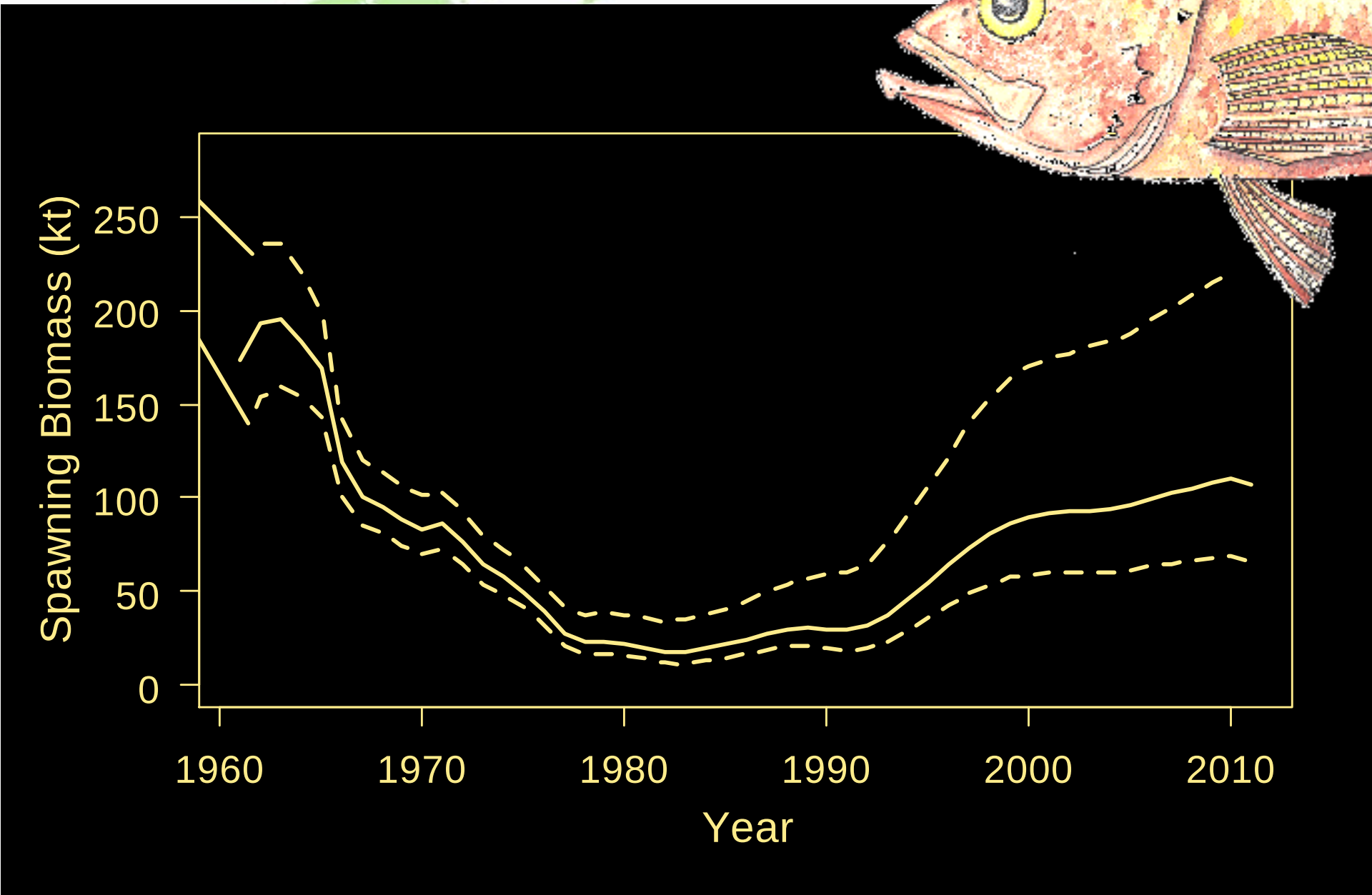
9. Pacific ocean perch

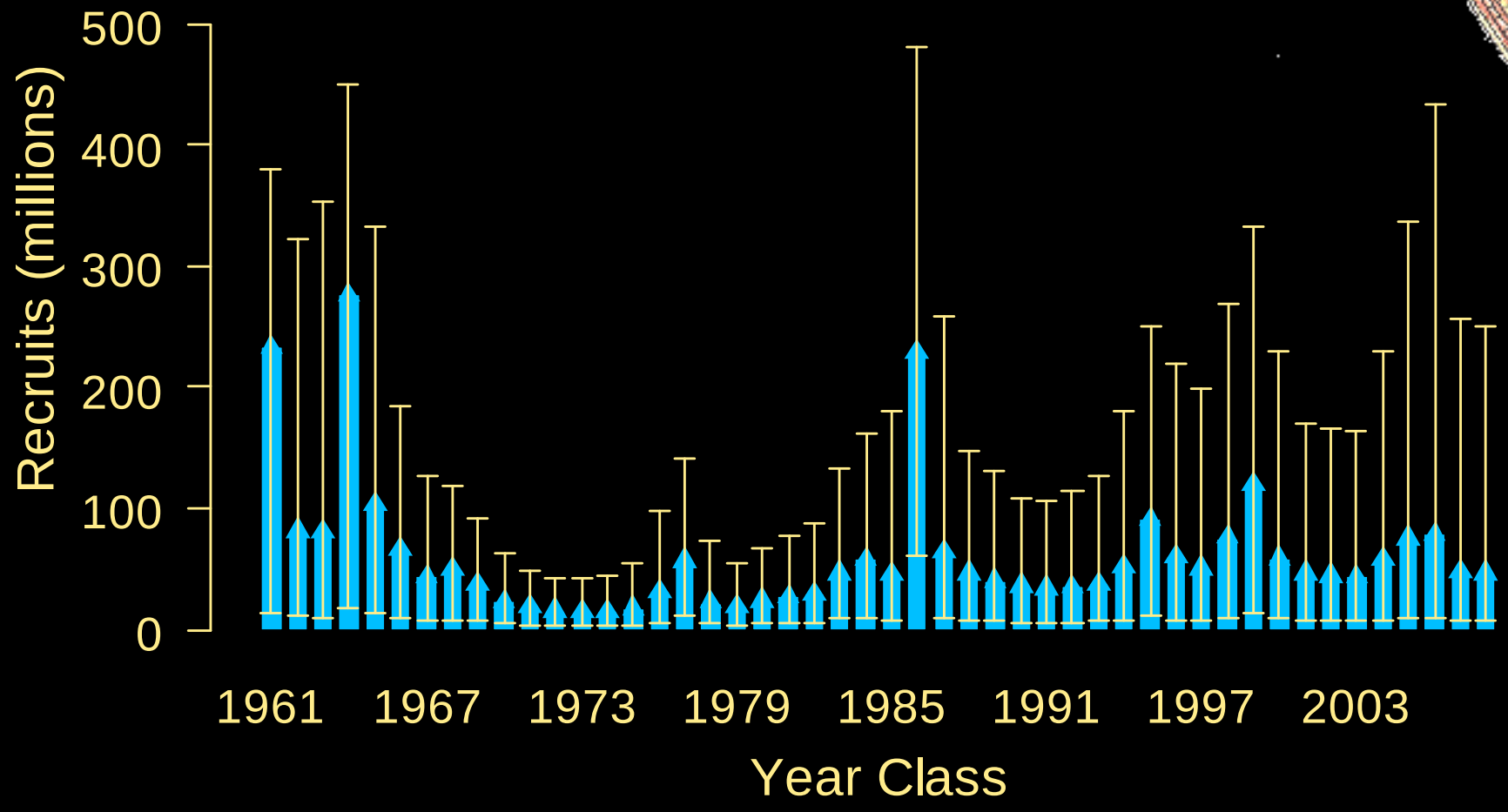




POP – Spawning Biomass



POP – Recruitment



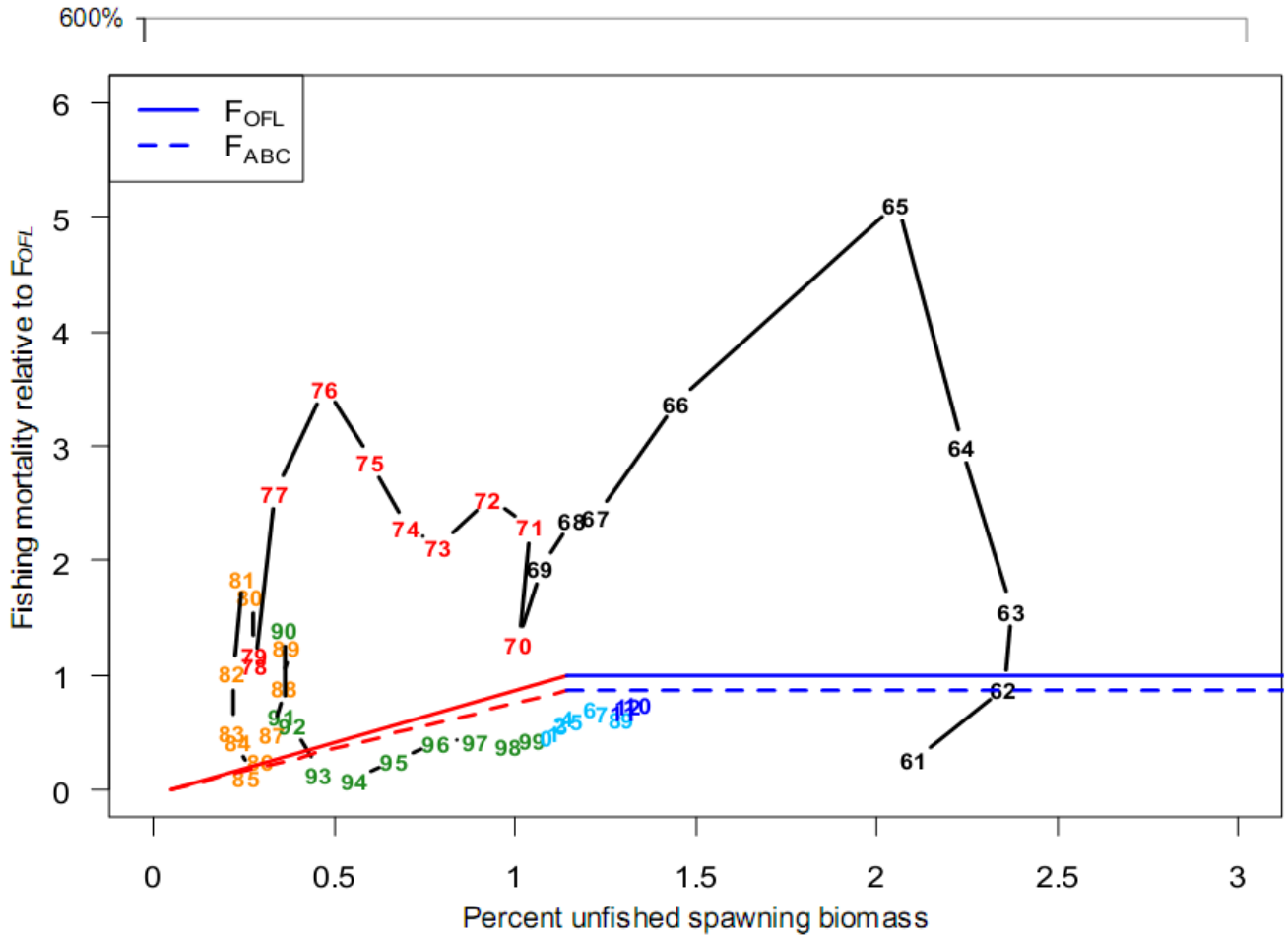
Pacific ocean perch ABC/OFL

	Biomass	OFL	ABC
2012	348,168	19,498	16,918
2013		19,021	16,500

Tier 3a

Survey q=2.03

West: 2,102
Central: 11,263
East: 3,553



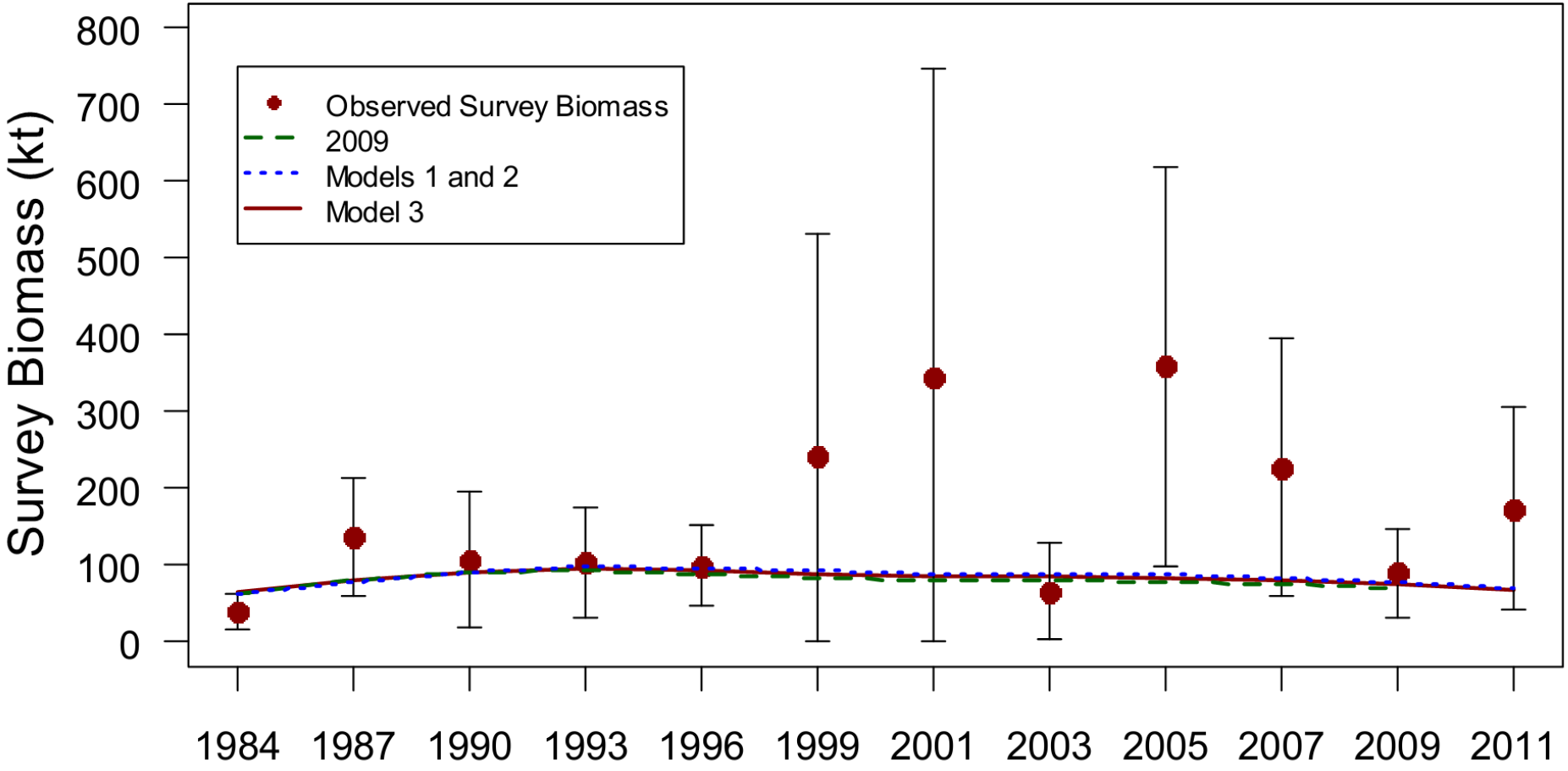
GOA POP Apportionment

	Western	Central	Eastern	Total
2011 ABC	2,798	10,379	3,820	16,997
2012 ABC	**2,102**	**11,263**	**3,553**	**16,918**
2012 OFL	2,423	12,980	4,095	19,498

Northern RF ABC Summary

Species	2011 ABC	2012 ABC	Change
Pacific ocean perch	16,997	16,918	down 79 (0%)
Northern rockfish	4,854	5,507	up 653 (13%)
Shortraker	914	1,081	up 167 (18%)
Dusky (Pelagic shelf)	4,754	5,118	up 364 (8%)
Rougheye/blackspotted	1,312	1,223	down 89 (7%)
Demersal Shelf Rockfish	300	293	down 7 (2%)
Thornyhead rockfish	1,770	1,665	down 105 (6%)
Other rockfish	3,752	4,045	up 293 (8%)
Total	34,653	35,850	up 1,197 (3%)

10. Northern rockfish



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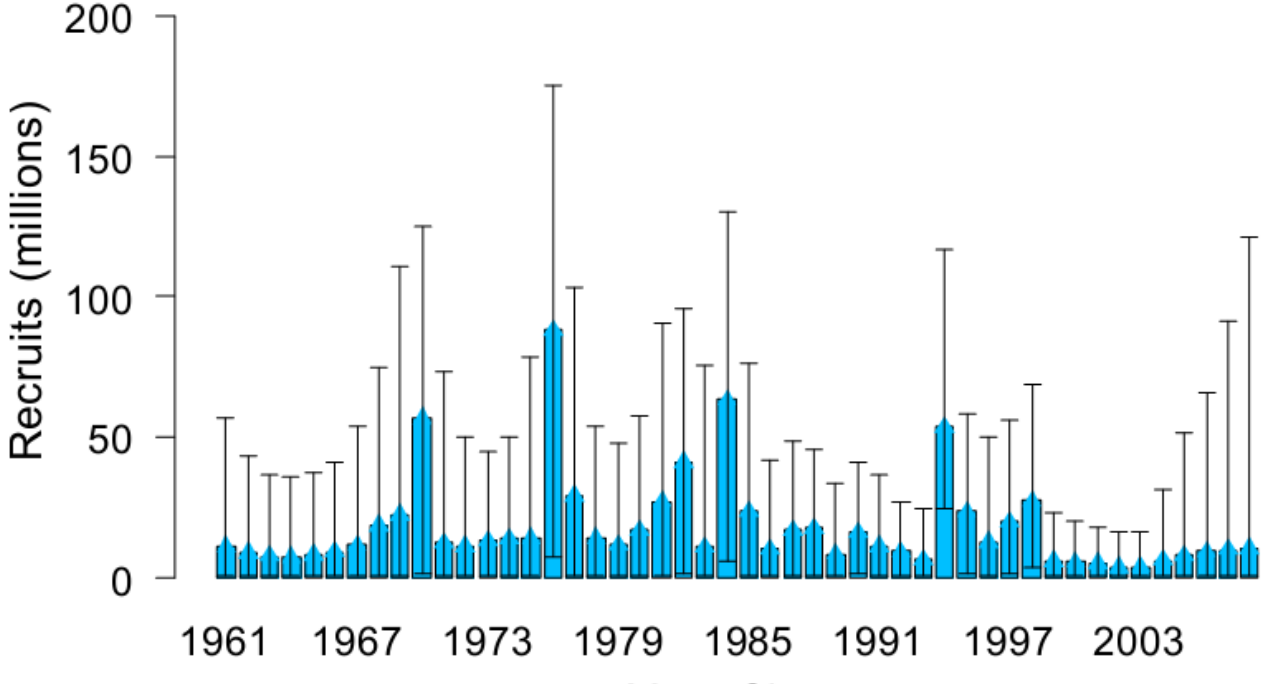
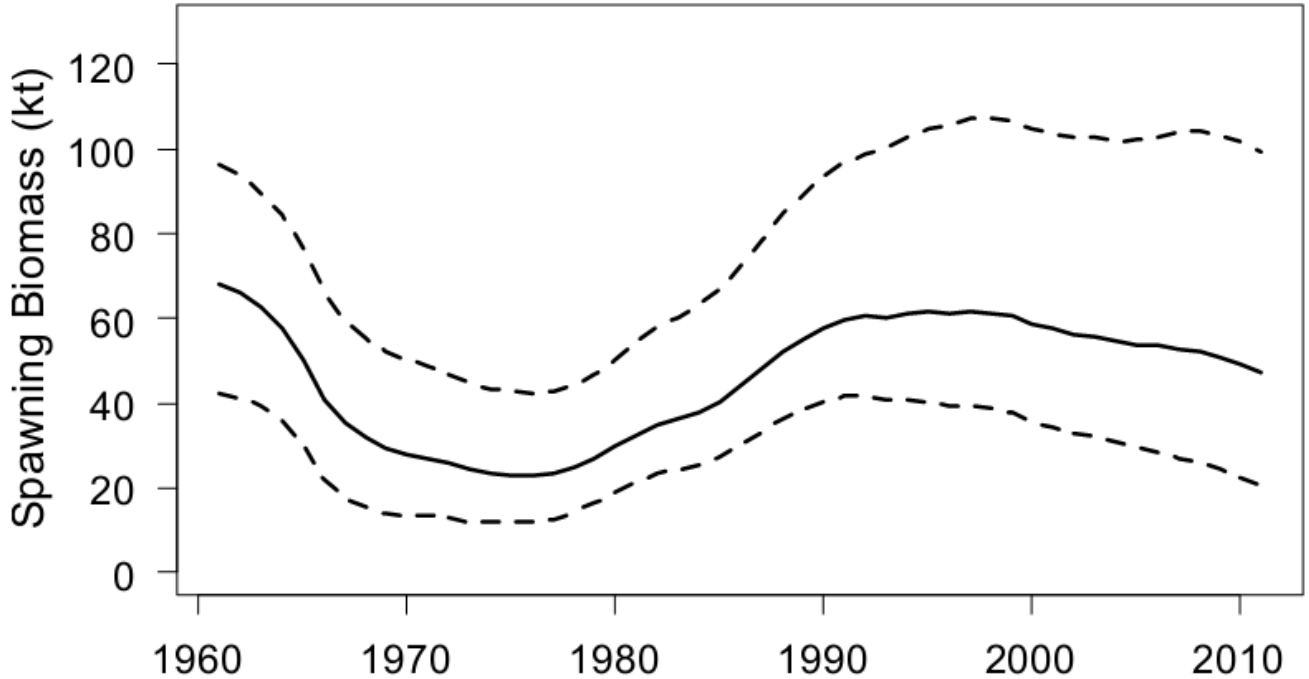
Northern rockfish





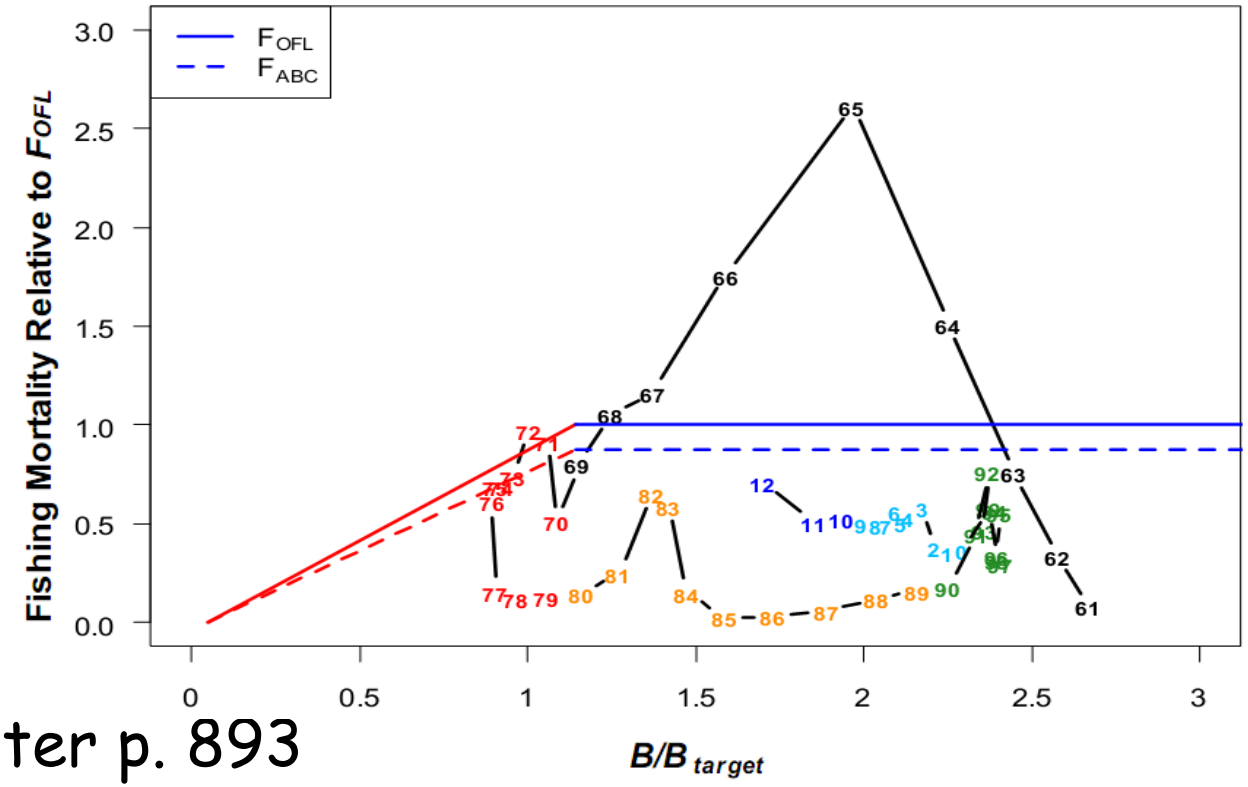
10. Northern rockfish

	Biomass	OFL	ABC
2012	104,155	6,574	5,507
2013		6,152	5,153

New maturity study

Model refinements

Tier 3a



Summary p. 26, Chapter p. 893

Shortraker –ABC Summary

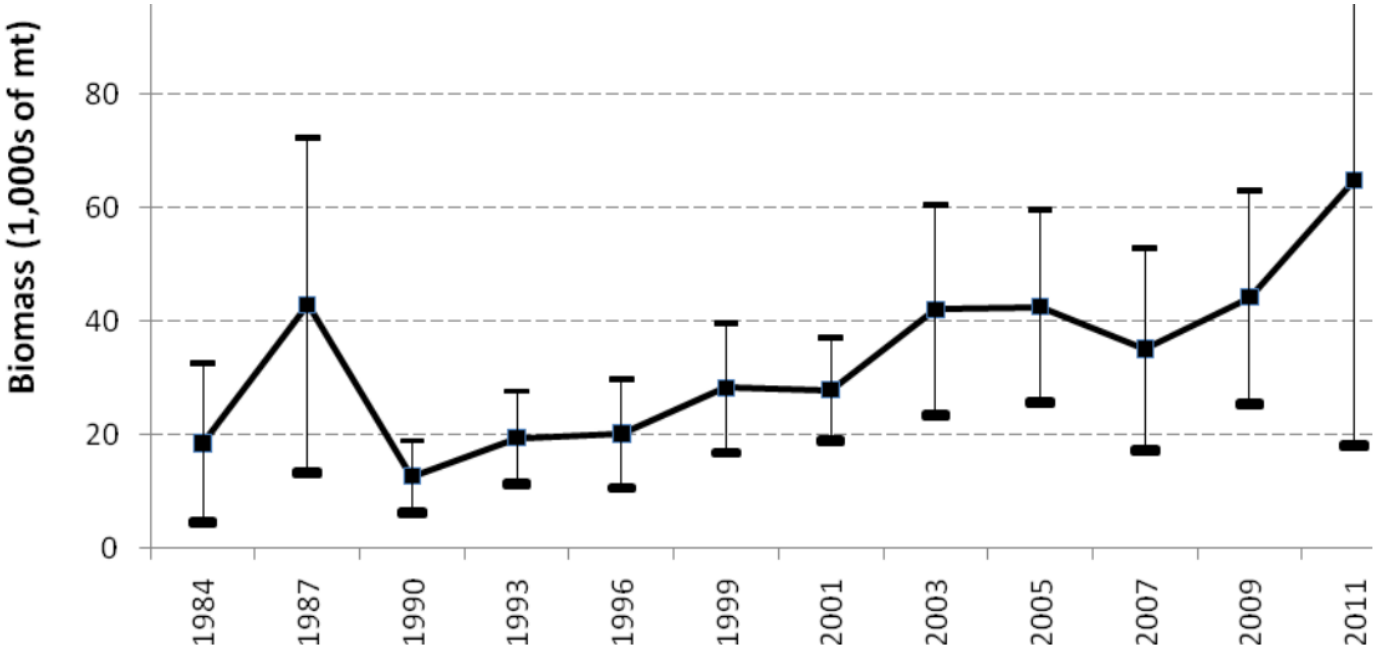
Species	2011 ABC	2012 ABC	Change
Pacific ocean perch	16,997	16,918	down 79 (0%)
Northern rockfish	4,854	5,507	up 653 (13%)
Shortraker	914	1,081	up 167 (18%)
Dusky (Pelagic shelf)	4,754	5,118	up 364 (8%)
Rougheye/blackspotted	1,312	1,223	down 89 (7%)
Demersal Shelf Rockfish	300	293	down 7 (2%)
Thornyhead rockfish	1,770	1,665	down 105 (6%)
Other rockfish	3,752	4,045	up 293 (8%)
Total	34,653	35,850	up 1,197 (3%)

11. Shortraker rockfish

Summary p. 27, Chapter p. 971

Tier 5

Shortraker	Biomass	OFL	ABC
2012	48,048	1,441	1,081
2013		1,441	1,081



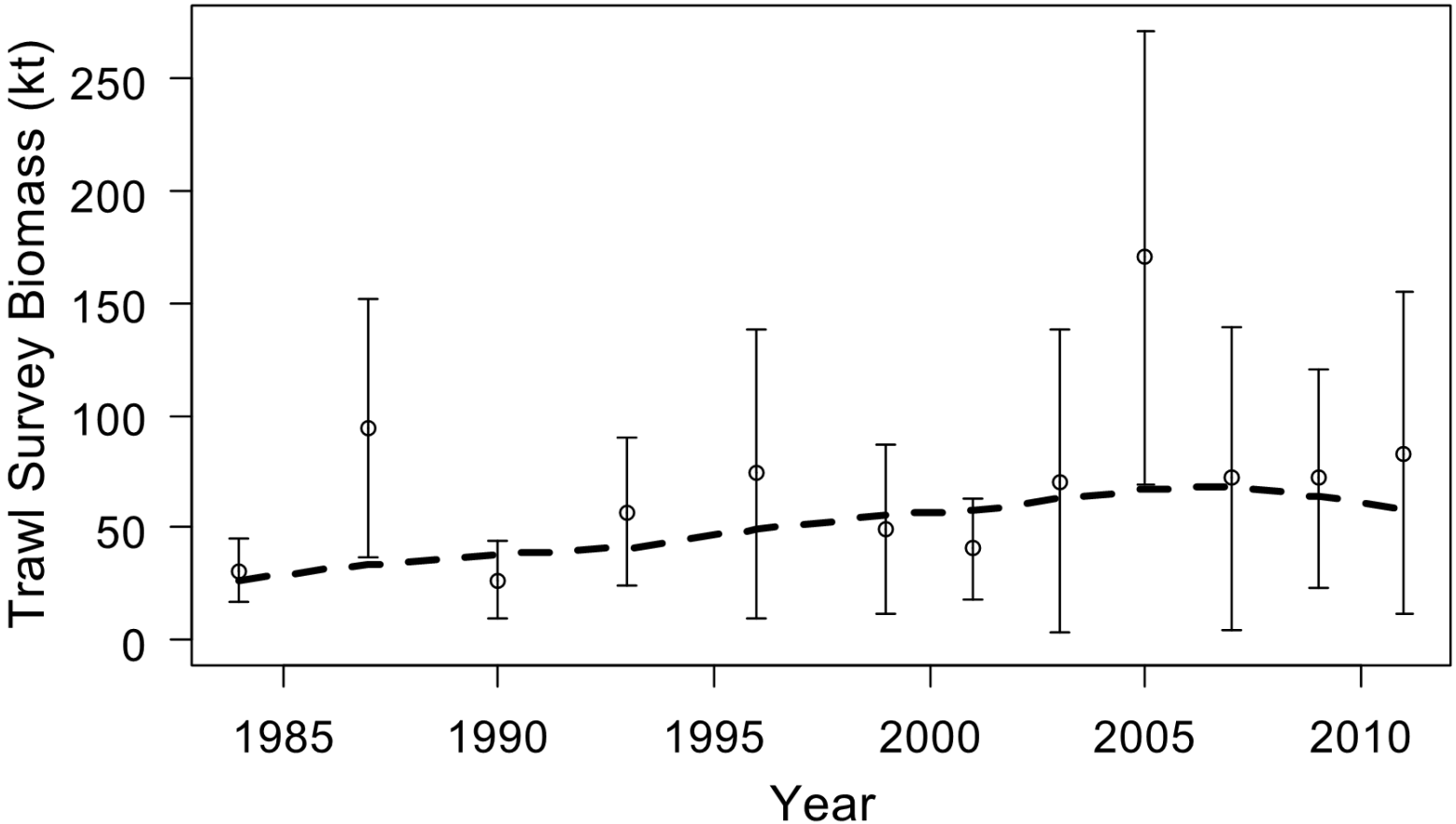
Dusky RF ABC Summary

Species	2011 ABC	2012 ABC	Change
Pacific ocean perch	16,997	16,918	down 79 (0%)
Northern rockfish	4,854	5,507	up 653 (13%)
Shortraker	914	1,081	up 167 (18%)
Dusky (Pelagic shelf)	4,754	5,118	up 364 (8%)
Rougheye/blackspotted	1,312	1,223	down 89 (7%)
Demersal Shelf Rockfish	300	293	down 7 (2%)
Thornyhead rockfish	1,770	1,665	down 105 (6%)
Other rockfish	3,752	4,045	up 293 (8%)
Total	34,653	35,850	up 1,197 (3%)

12. Dusky rockfish (PSR)

ABC now split as single stock

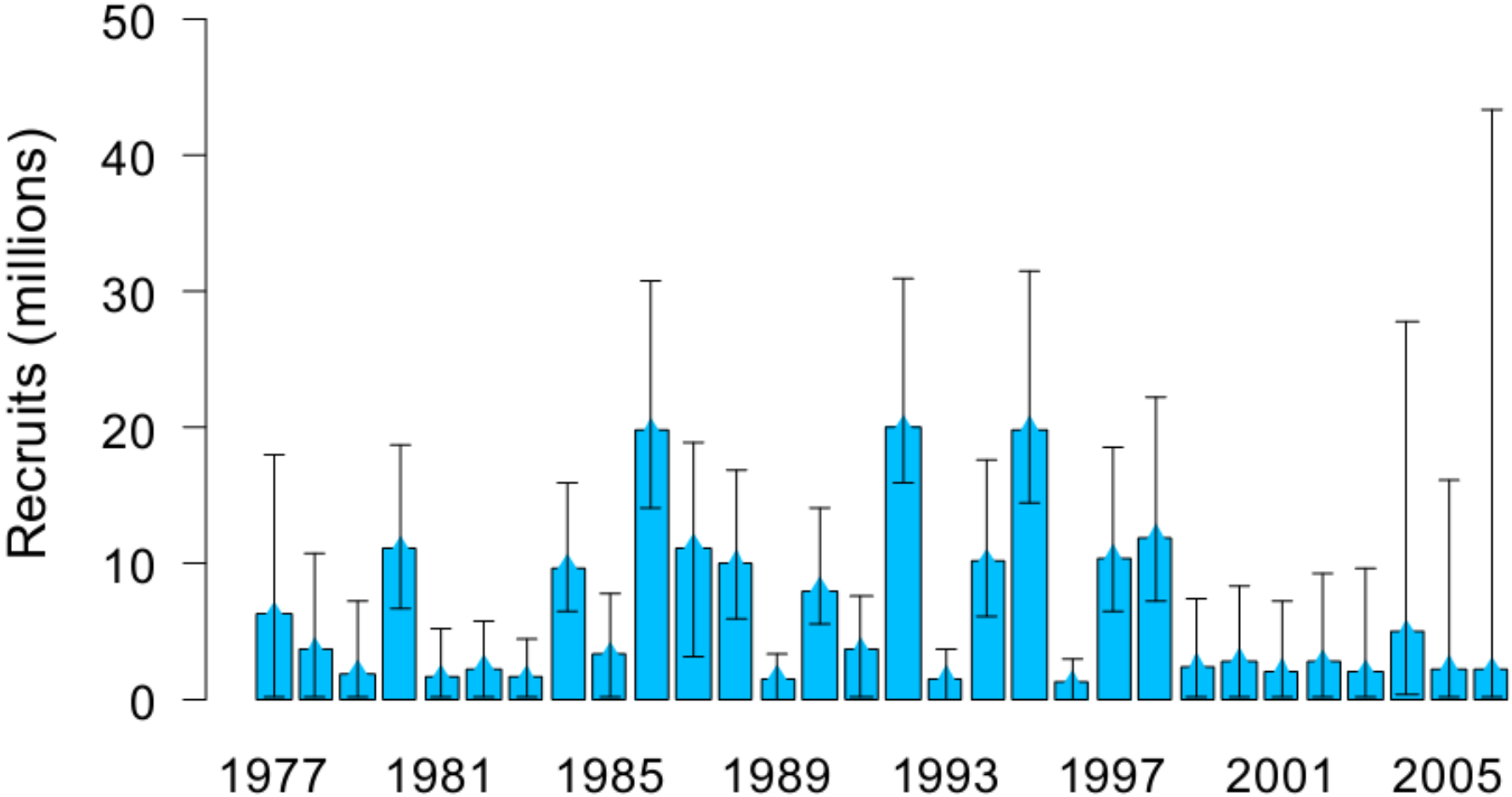
- Dusky: Tier 3a, based on age-structured model
- Widow, yellowtail: moved to "Other rockfish"



Summary p. 28, Chapter p. 1009

12. Dusky rockfish

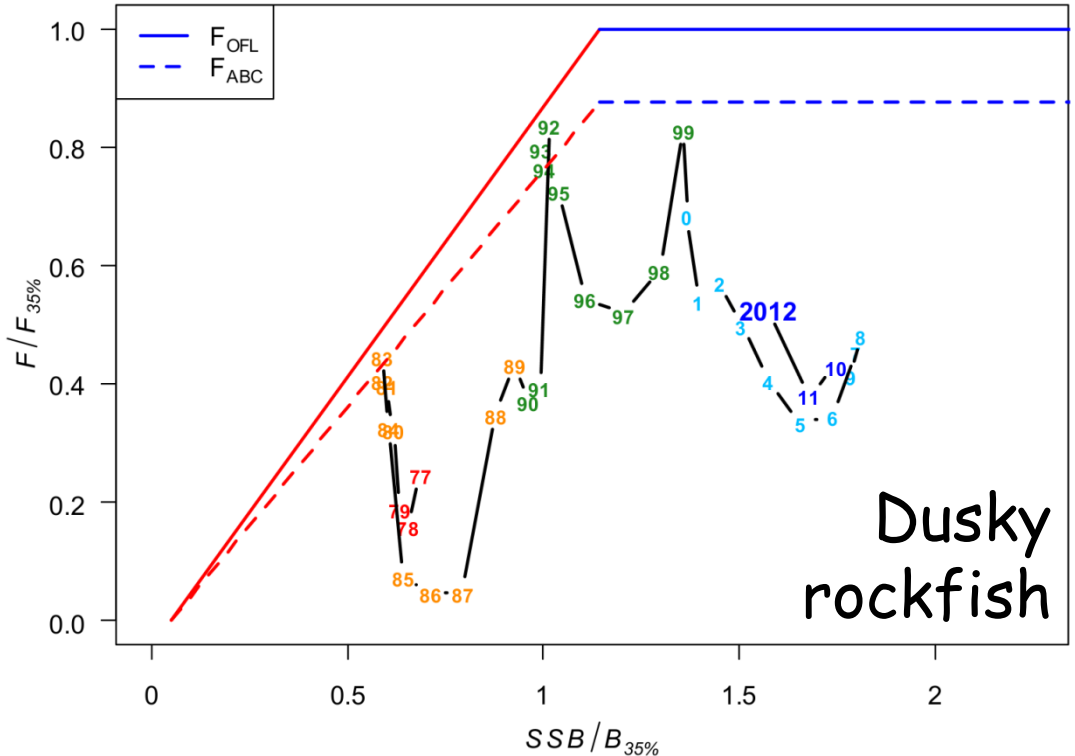
Recruitment



Dusky rockfish summary

Dusky rockfish	Biomass	OFL	ABC
2012	66,771	6,257	5,118
2013		5,822	4,762

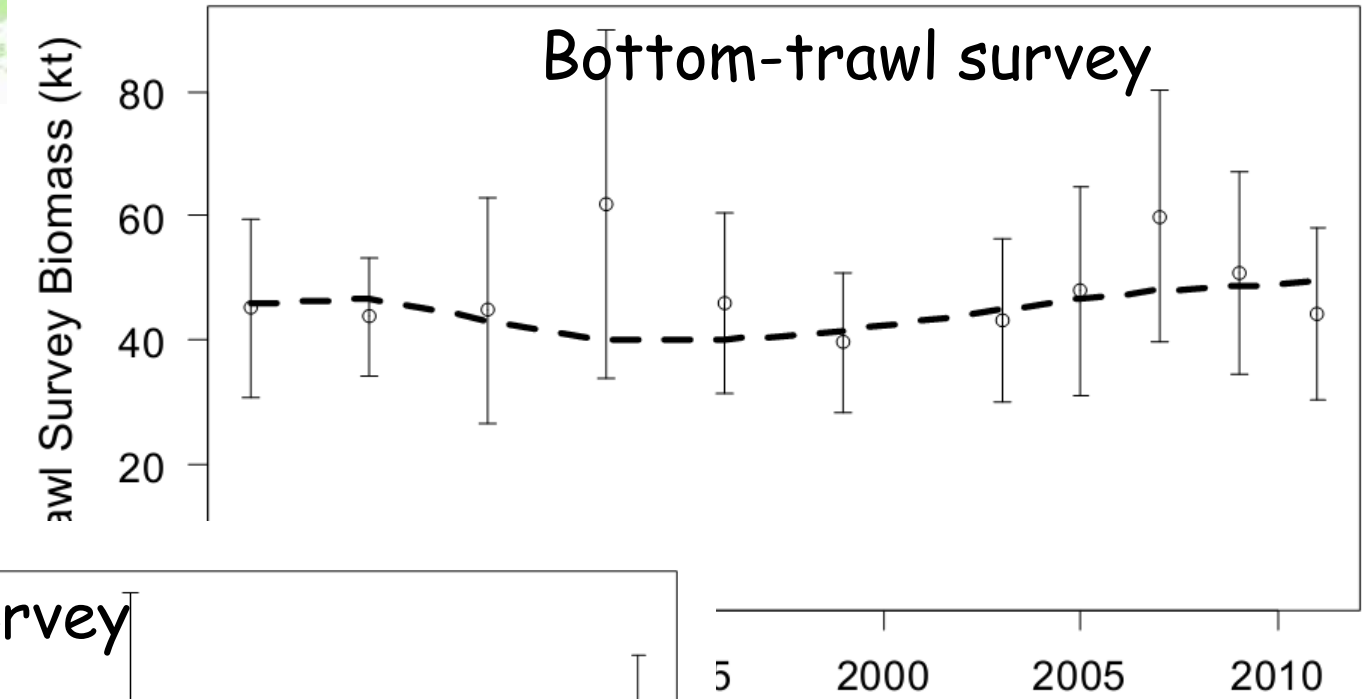
Also maturity updated

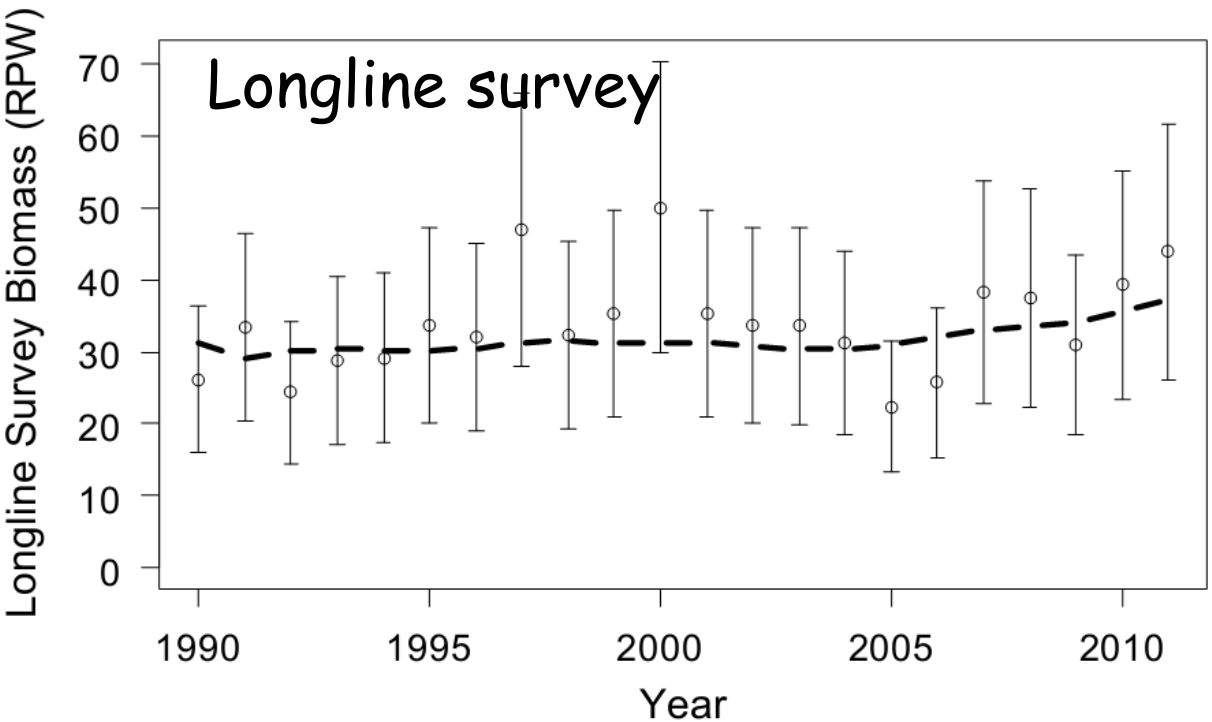


Rougheye-blackspotted ABC Summary

Species	2011 ABC	2012 ABC	Change
Pacific ocean perch	16,997	16,918	down 79 (0%)
Northern rockfish	4,854	5,507	up 653 (13%)
Shortraker	914	1,081	up 167 (18%)
Dusky (Pelagic shelf)	4,754	5,118	up 364 (8%)
Rougheye/blackspotted	1,312	1,223	down 89 (7%)
Demersal Shelf Rockfish	300	293	down 7 (2%)
Thornyhead rockfish	1,770	1,665	down 105 (6%)
Other rockfish	3,752	4,045	up 293 (8%)
Total	34,653	35,850	up 1,197 (3%)

13. Rougheye/BS results



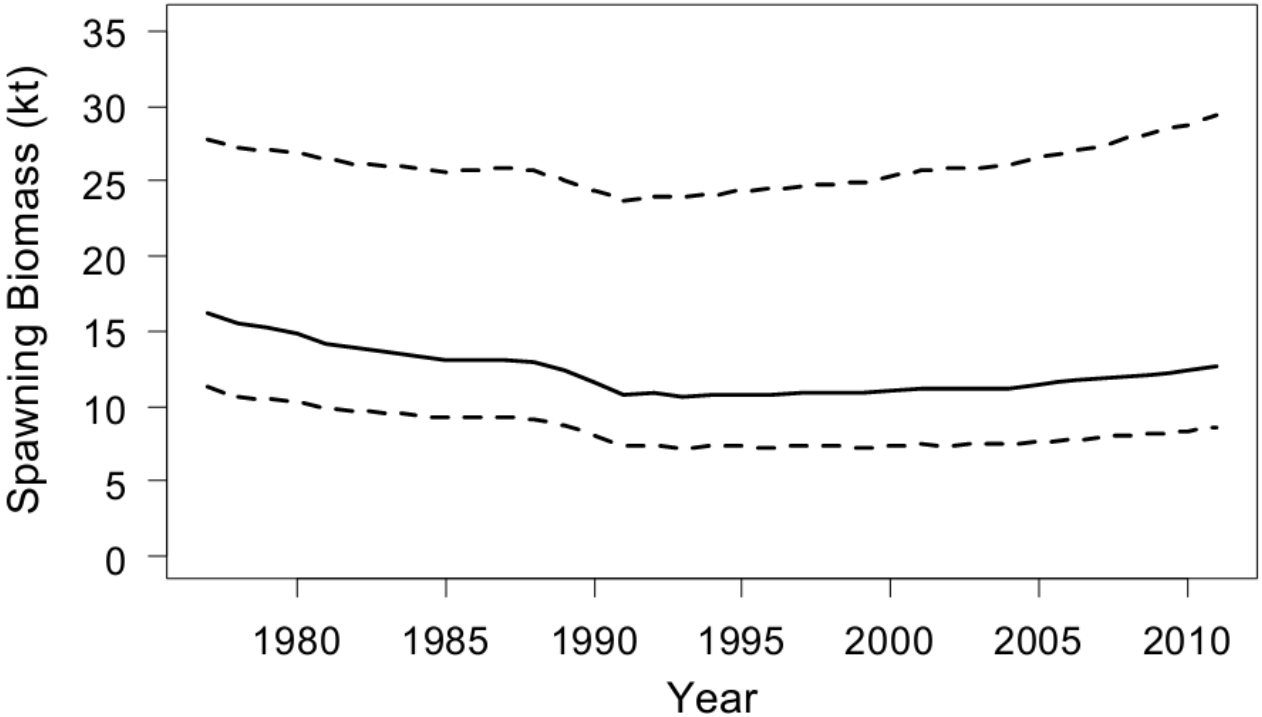


13. RE/BS rockfish summary

Tier 3a

Stable trend

Rougheye/BS	Biomass	OFL	ABC
2012	42,856	1,472	1,223
2013		1,492	1,240



Demersal shelf rockfish ABC Summary

Species	2011 ABC	2012 ABC	Change
Pacific ocean perch	16,997	16,918	down 79 (0%)
Northern rockfish	4,854	5,507	up 653 (13%)
Shortraker	914	1,081	up 167 (18%)
Dusky (Pelagic shelf)	4,754	5,118	up 364 (8%)
Rougheye/blackspotted	1,312	1,223	down 89 (7%)
Demersal Shelf Rockfish	300	293	down 7 (2%)
Thornyhead rockfish	1,770	1,665	down 105 (6%)
Other rockfish	3,752	4,045	up 293 (8%)
Total	34,653	35,850	up 1,197 (3%)

14. Demersal shelf rockfish

Mainly yelloweye rockfish

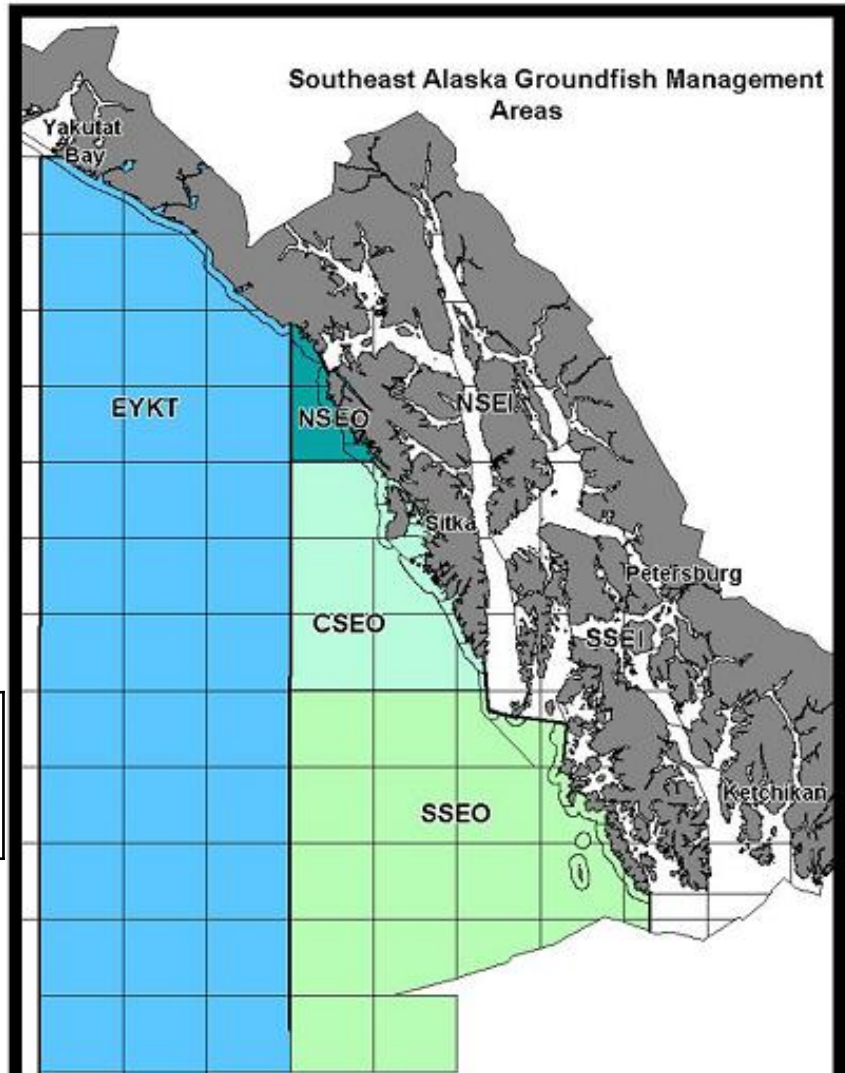
Bycatch

Unaccounted mortality adds uncertainty

2009 survey conducted E. Yakutat-area

- 46% lower than 2003 estimate from that area

Demersal shelf rockfish	Biomass	OFL	ABC
2012	14,307	467	293
2013		467	293



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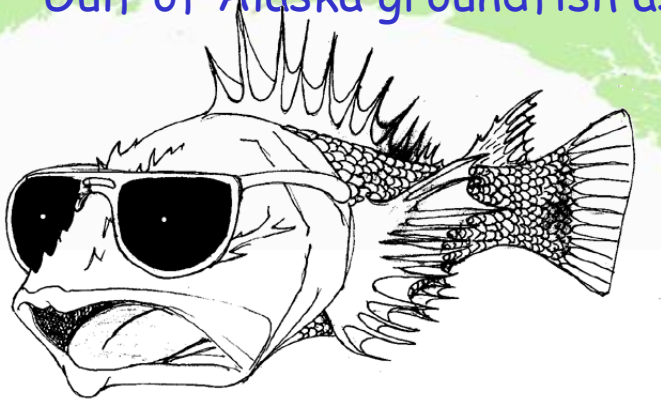
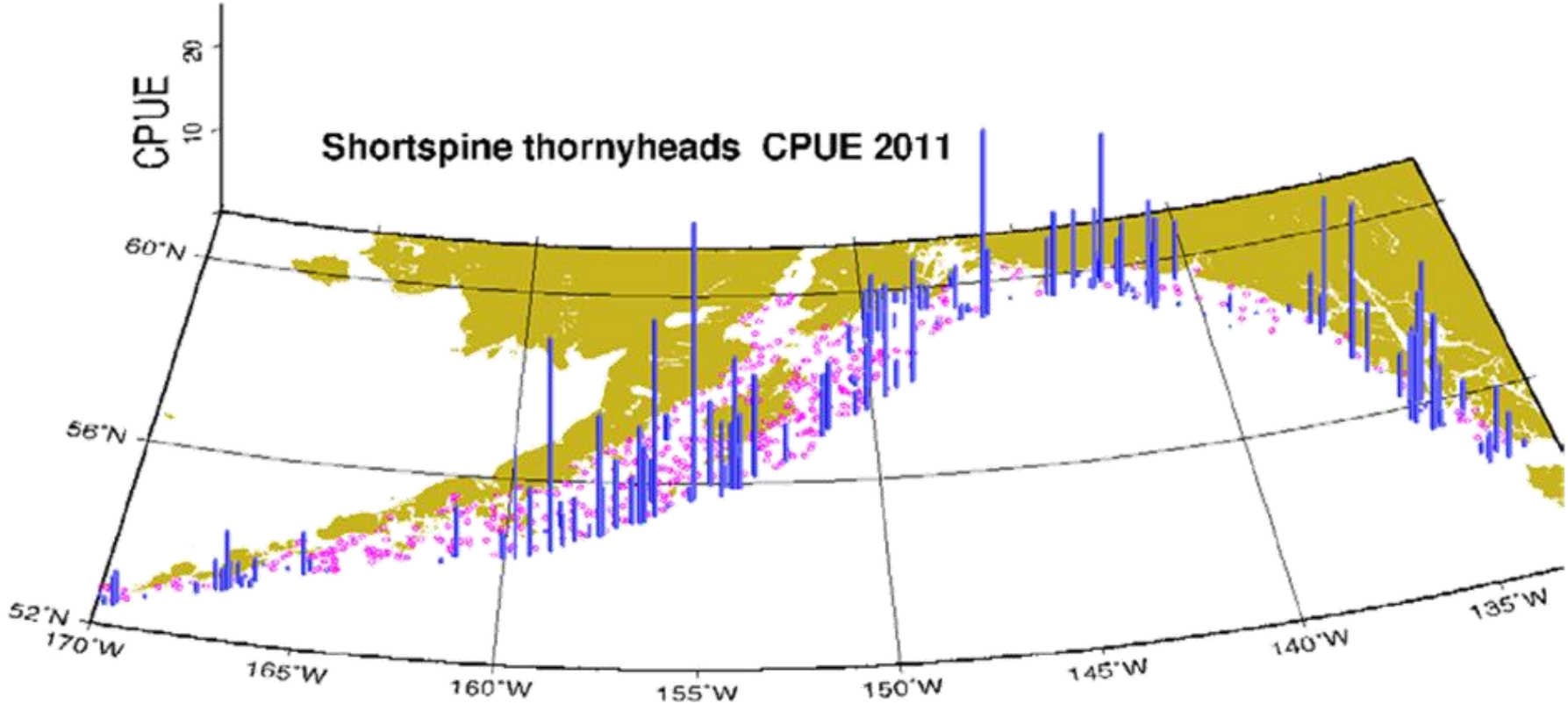
Thornyhead rockfish ABC Summary

Species	2011 ABC	2012 ABC	Change
Pacific ocean perch	16,997	16,918	down 79 (0%)
Northern rockfish	4,854	5,507	up 653 (13%)
Shortraker	914	1,081	up 167 (18%)
Dusky (Pelagic shelf)	4,754	5,118	up 364 (8%)
Rougheye/blackspotted	1,312	1,223	down 89 (7%)
Demersal Shelf Rockfish	300	293	down 7 (2%)
Thornyhead rockfish	1,770	1,665	down 105 (6%)
Other rockfish	3,752	4,045	up 293 (8%)
Total	34,653	35,850	up 1,197 (3%)

Shortspine thornyheads





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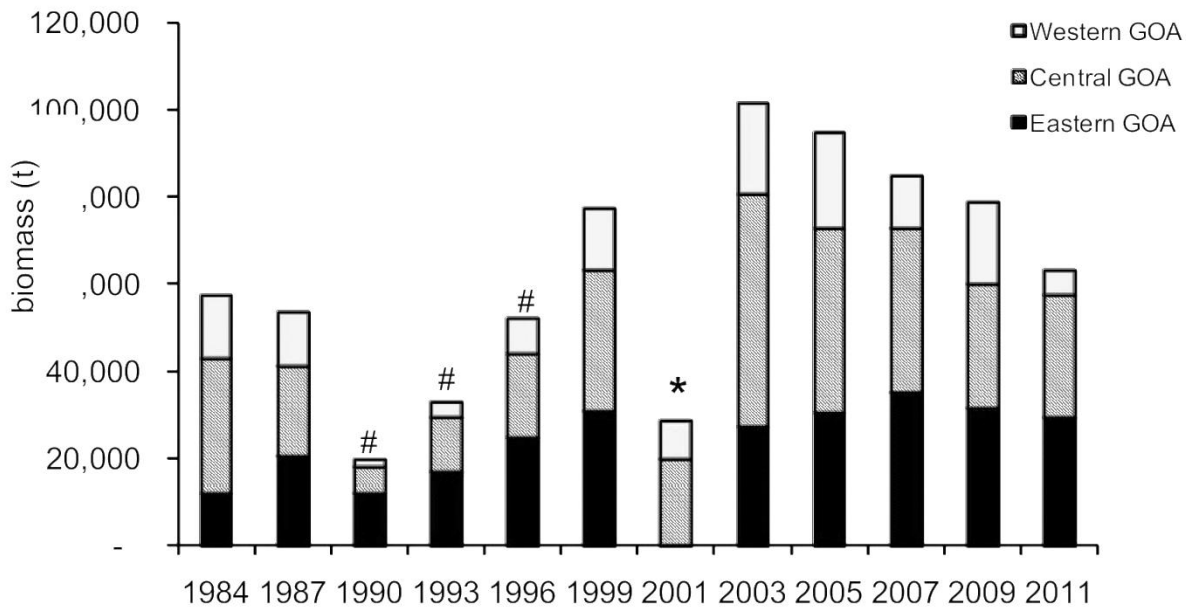
Shortspine thornyheads

	Biomass	OFL	ABC
2012	73,990	2,220	1,665
2013		2,220	1,665

Tier 5

Natural mortality

Average M from age studies is 0.03



* No Eastern GOA and no >500m

No >500m

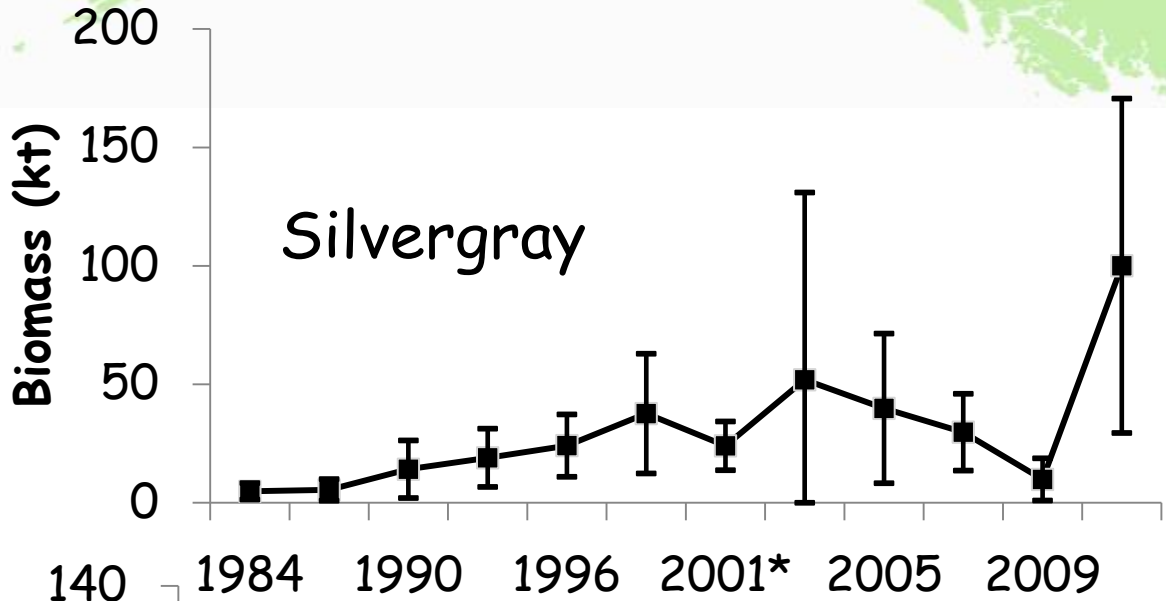
16. Other rockfish

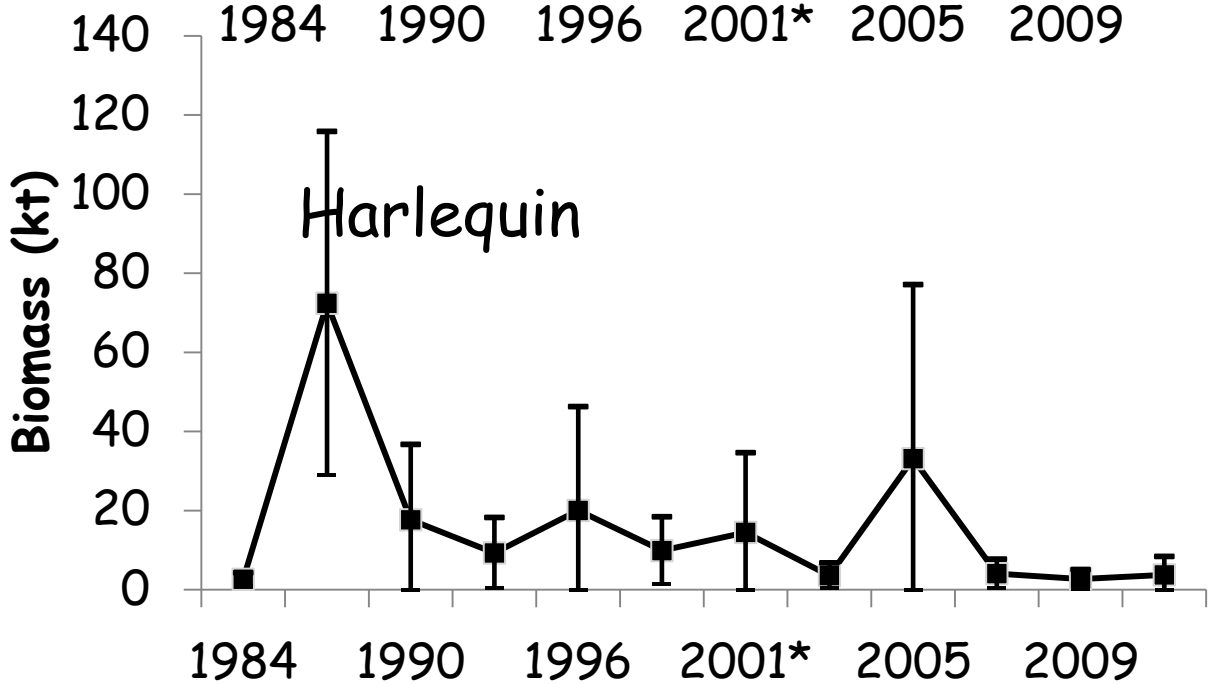
Other rockfish:

- Sharpchin rockfish
- Redstripe rockfish
- Harlequin rockfish
- Silvergray rockfish
- Redbanded rockfish
- Darkblotched rockfish
- Splitnose rockfish
- Greenstriped rockfish
- Vermilion rockfish
- Bocaccio
- Pygmy rockfish
- Yellowmouth rockfish

moved from PSR-

- Widow rockfish
- Yellowtail rockfish





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"Other Rockfish" OFL & ABC for 2012

Species	Tier	*M*	Exploit. biomass	OFL	ABC
Sharpchin	4	0.05	13,190	844	699
Redstripe	5	0.10	10,612	1,061	796
Harlequin	5	**0.09**	3,493	314	236
Silvergray	5	0.05	46,566	2,328	1,746
Redbanded	5	0.06	6,227	374	280
Yellowtail	5	0.07	4,230	296	222
Minor species	5	0.06	1,456	87	66
Total			85,774	5,305	4,045

Other rockfish	Biomass	OFL	ABC
2012	85,774	5,305	4,045
2013		5,305	4,045

16. Other rockfish

Plan Team Recommendations:

PSA Analysis of this complex

Combined C and W (due to Harlequin change)

	Western	Central	West Yakutat	SE Outside	Total
2012 ABC (PT)	650		230	3,165	1,665
2012 ABC	44	606	230	3,165	1,665
2011 catch	299	344	186	20	849

16. Atka mackerel

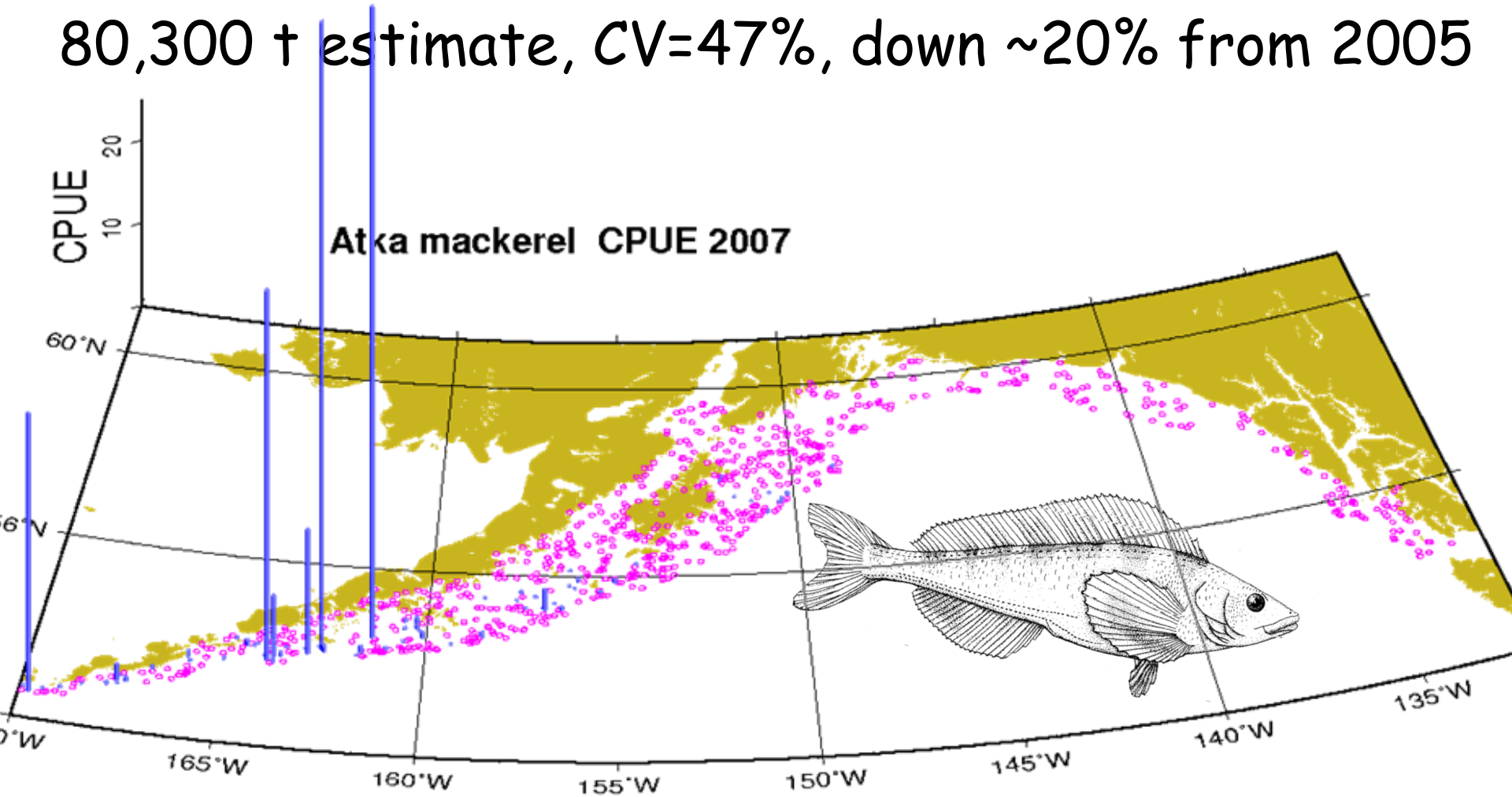
Year	Catch (t)	ABC (t)	TAC (t)
2005	799	600	600
2006	876	4,700	1,500
2007	1,459	4,700	1,500
2008	2,109	4,700	1,500
2009	2,222	4,700	2,000
2010	2,409	4,700	2,000
2011	1,613	4,700	2,000

* Catch through 06-Nov-2011

Summary p. 33, Chapter p. 1281

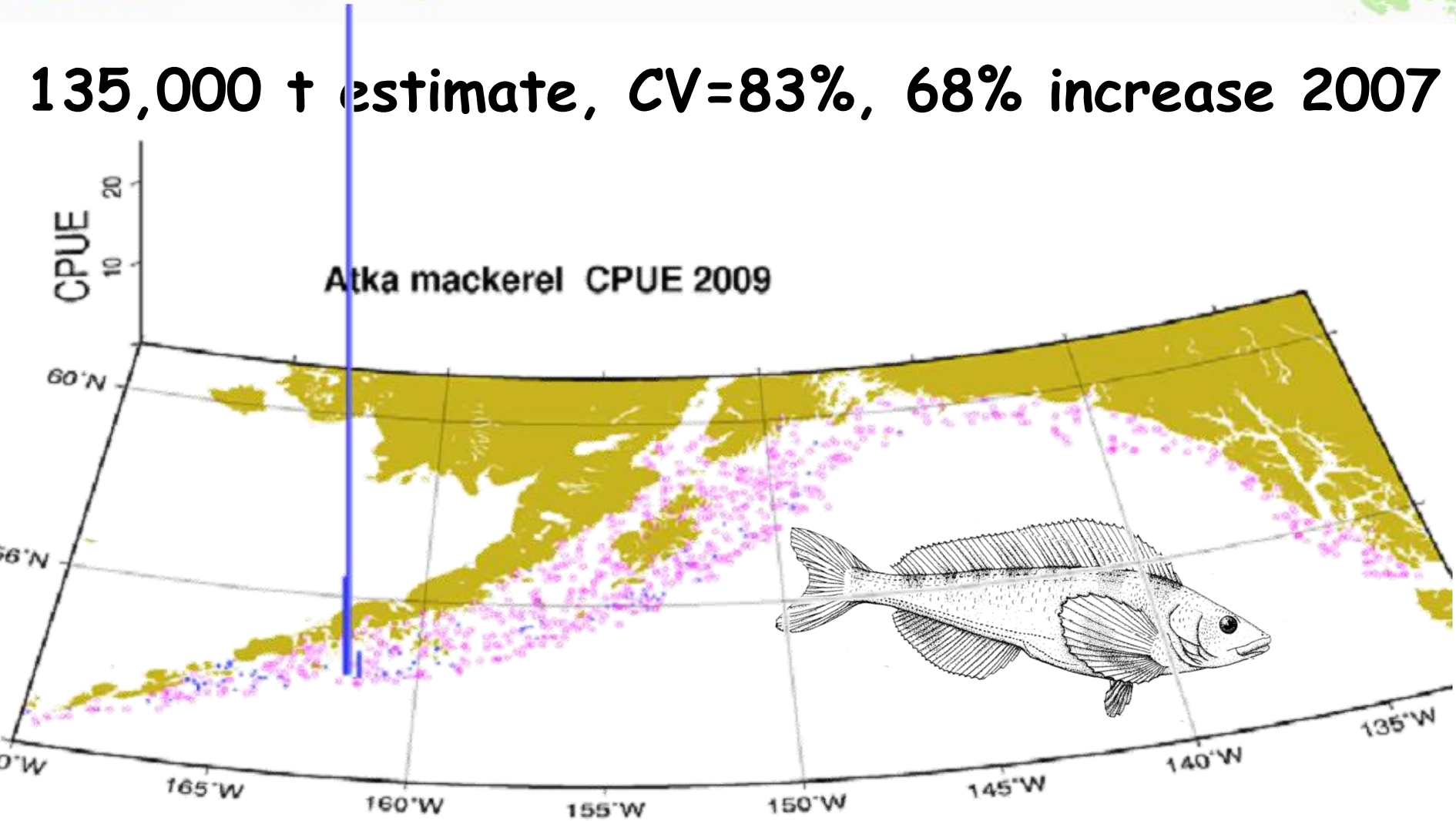
Atka mackerel 2007 survey

80,300 t estimate, CV=47%, down ~20% from 2005



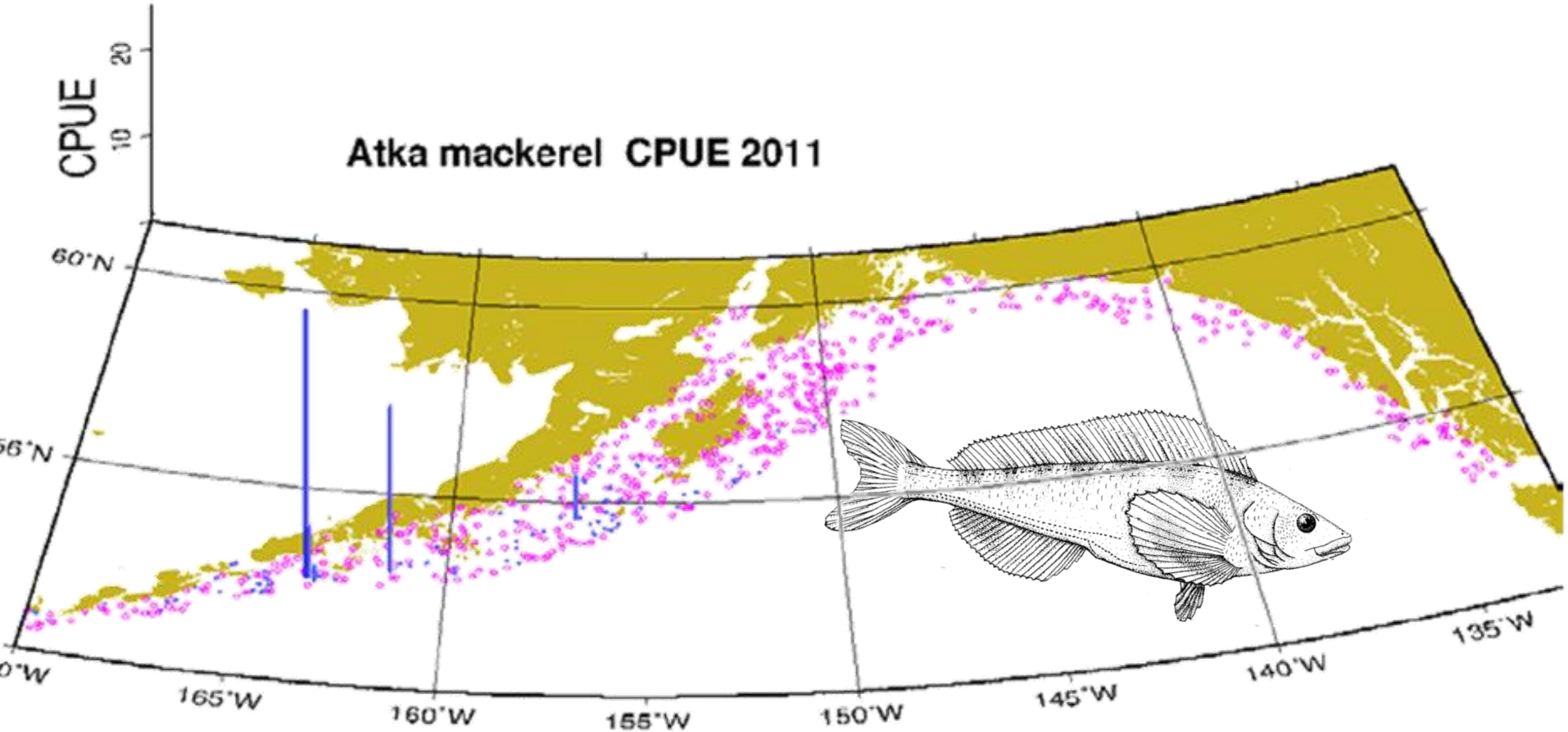
GOA Atka mackerel 2009 survey

135,000 t estimate, CV=83%, 68% increase 2007



GOA Atka mackerel 2011 survey

97,000 t estimate, CV=56%

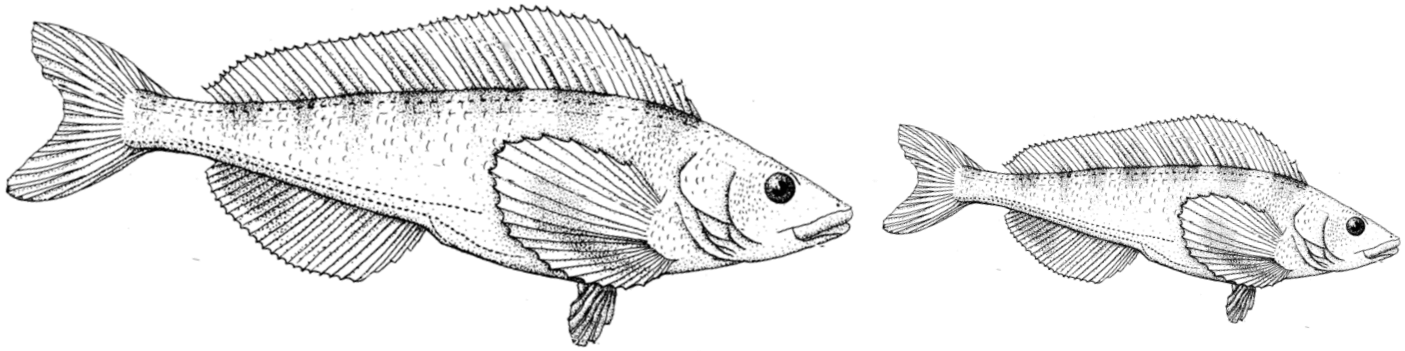


Atka mackerel

- **Tier 6 species**

No change

- **No directed fishing since 1996**
  - Bycatch mainly in rockfish fishery increasing slightly
- **TAC set to meet incidental catch levels**
- **ABC = 4,700**



ABC Skates

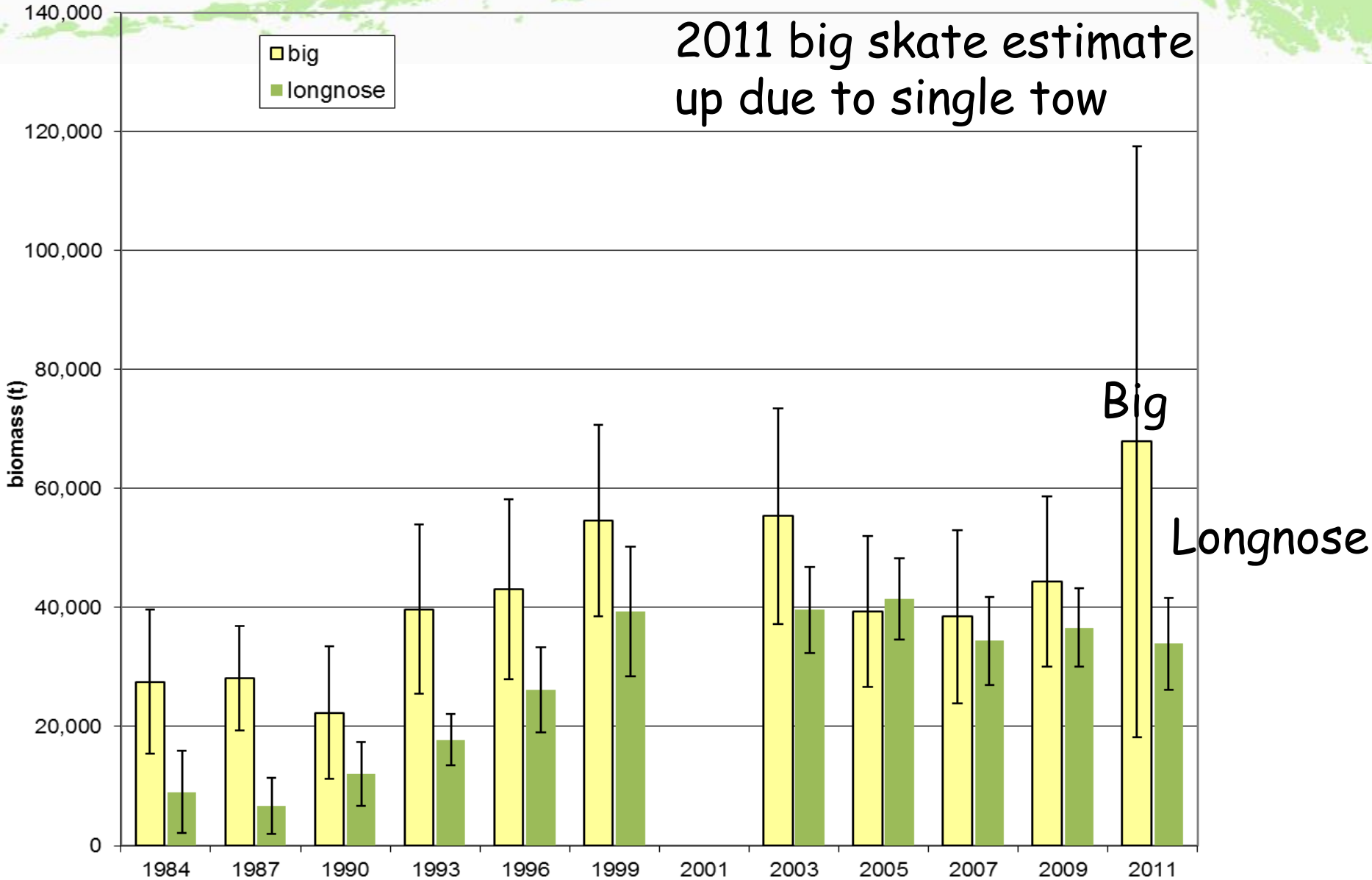
Species	2011 Catch	ABC 2011	ABC 2012	Change
Pollock	79,805	96,215	116,444	up 20,229 (21%)
Pacific Cod	58,836	86,800	87,600	up 800 (1%)
Sablefish	11,057	11,290	12,960	up 1,670 (15%)
Flatfish	9,929	121,245	112,828	down 8,417 (7%)
Arrowtooth flounder	29,703	213,150	212,882	down 268 (0%)
Rockfish	22,650	34,653	35,850	up 1,197 (3%)
Atka mackerel	1,613	4,700	4,700	same (0%)
Skates	4,016	8,273	8,422	up 149 (2%)
Other Species	2,135	13,795	14,362	up 567 (4%)
Total	219,744	590,121	606,048	up 15,927 (3%)

Summary: Page 35
Chapter: Page 1315

18. Skates

- **In GOA, 2 main target species**
  - Big skate (*Raja binoculata*)
  - Longnose skate (*Raja rhina*)
- **3rd group composed of many species**
  - *Bathyraja spp.*
  - not targeted to date

Biomass estimates-Big and Longnose



Supplemental catch data

	HFICE IFQ halibut fishery catch estimate				CAS catch all skates
	other skates	big skate	longnose skate	total skates	
2001	261	571	2,595	3,427	4,547
2002	424	397	540	1,361	3,002
2003	558	715	1,138	2,411	2,806
2004	418	445	1,173	2,036	4,001
2005	428	488	1,302	2,218	4,186
2006	300	383	1,664	2,347	3,913
2007	436	335	1,408	2,179	4,608
2008	493	192	1,312	1,997	5,056
2009	633	400	1,592	2,625	4,547
2010	729	256	1,010	1,995	3,002

Skates ABC/OFL

Tier 5

Age-structured model may be available for Big and/or longnose skates next year

Big skates	Biomass	OFL	ABC
2012	50,229	5,023	3,767
2013		5,023	3,767

Longnose skates	Biomass	OFL	ABC
2012	34,995	3,500	2,625
2013		3,500	2,625

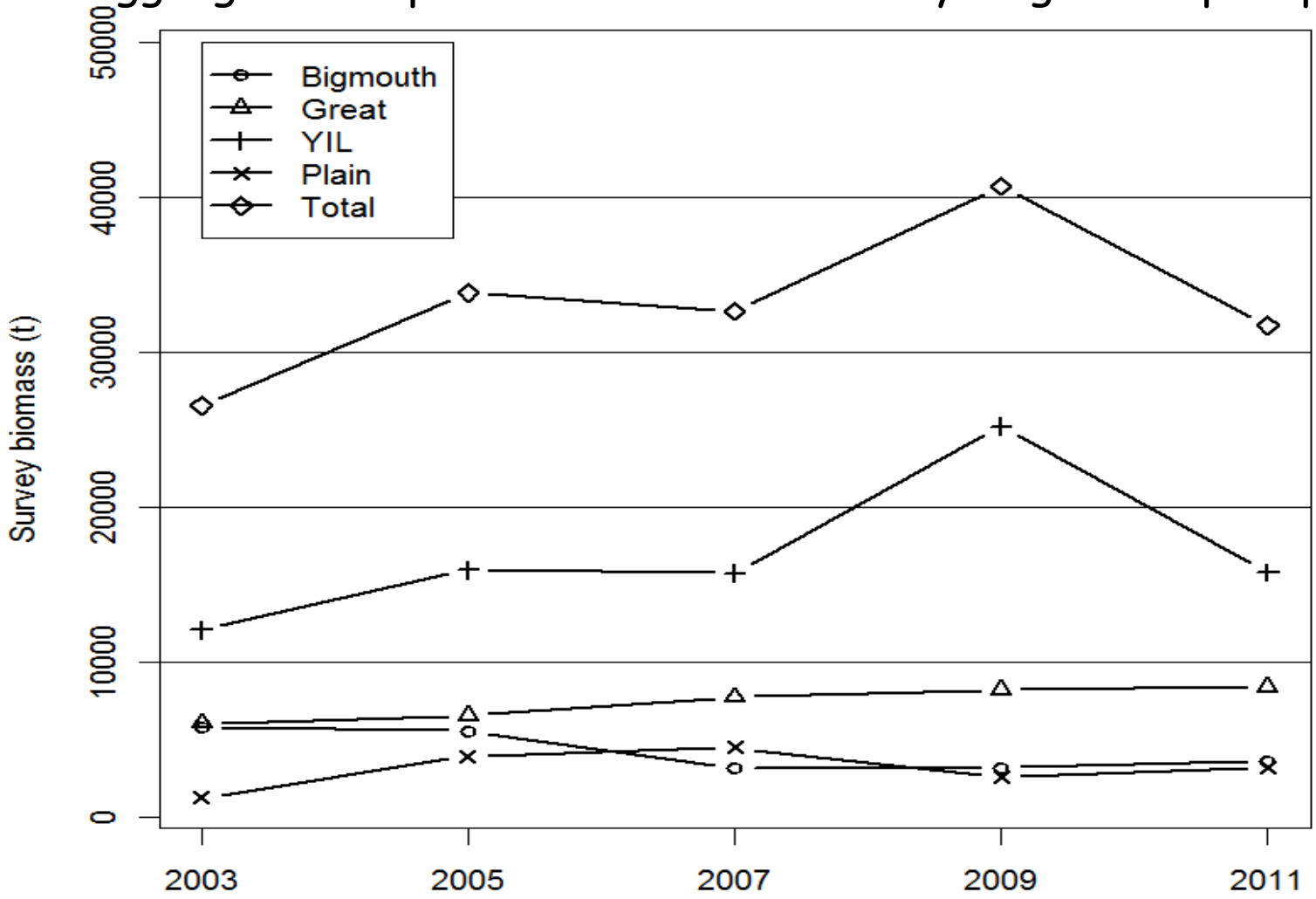
Other Skates	Biomass	OFL	ABC
2012	27,061	2,706	2,030
2013		2,706	2,030

Sculpins, Sharks, Squid, Octopus

- **Historically aggregated as “other species”**
- **Species-specific OFL and ABC in 2011**
- **Issues with Tier 6**

19. GOA Sculpins

95% of aggregate sculpin biomass dominated by larger sculpin species



Summary p. 36, Chapter p. 1377

Sculpins

- **Reliable biomass estimates available**
- **Complex-level M**
  - Estimated by weighting species-specific M rates by survey biomass—Tier 5 management recommended
- **Team recommended research on GOA-specific life-history parameters**
- **Tier 5 based on average biomass from last 4 surveys**

Sculpins	Biomass	OFL	ABC
2012	34,732	7,641	5,731
2013		7,641	5,731

20. GOA Sharks

"Reliable" biomass estimates for dogfish (Tier 5)

Unavailable for other shark species

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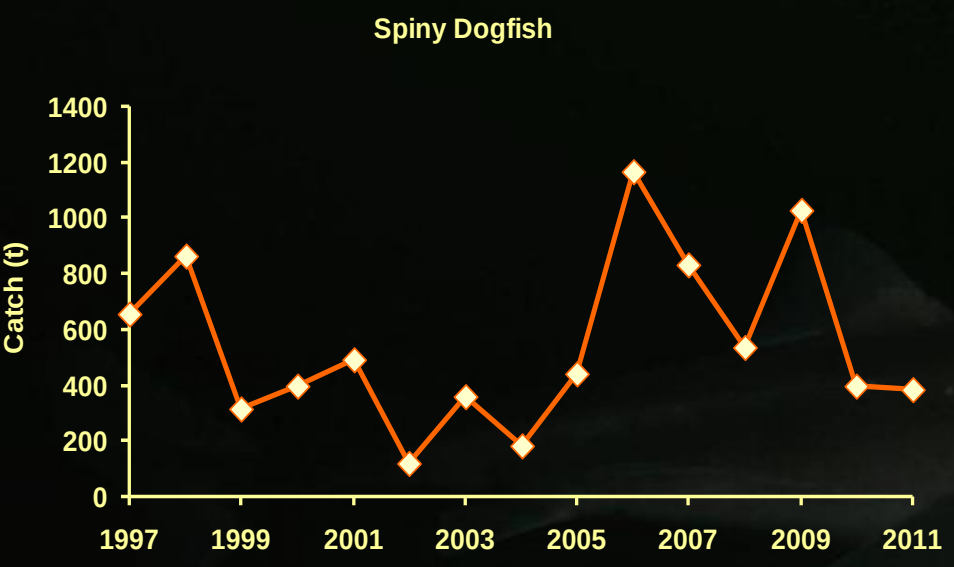
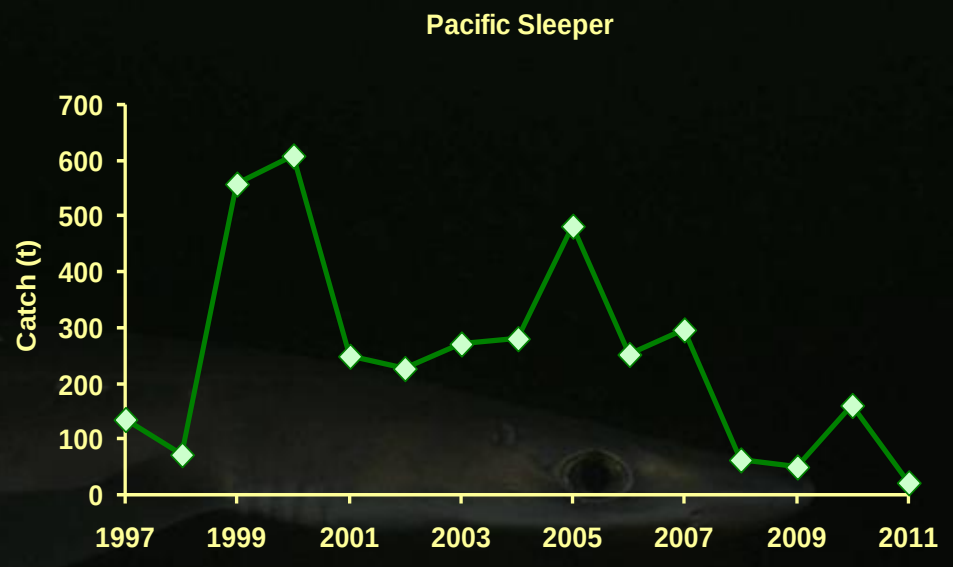
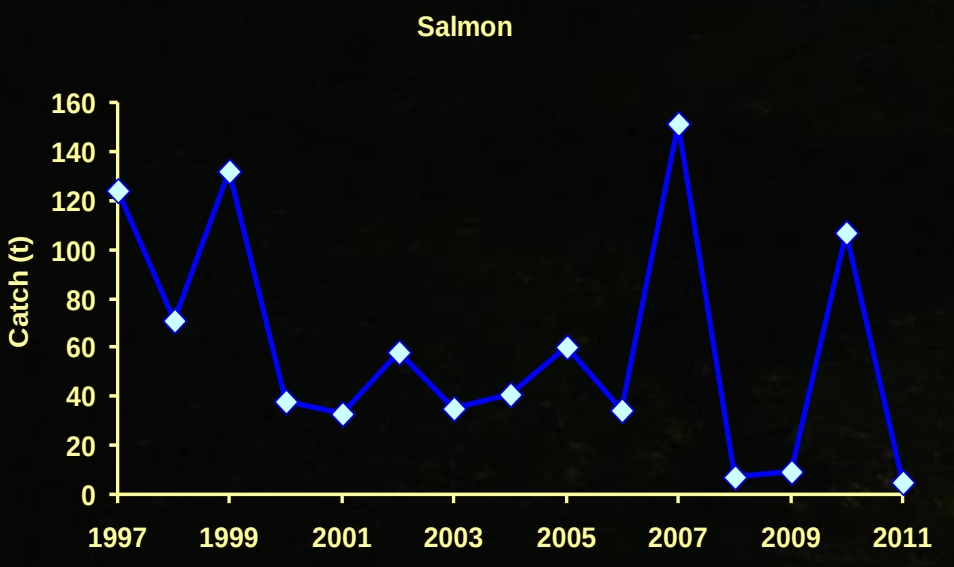
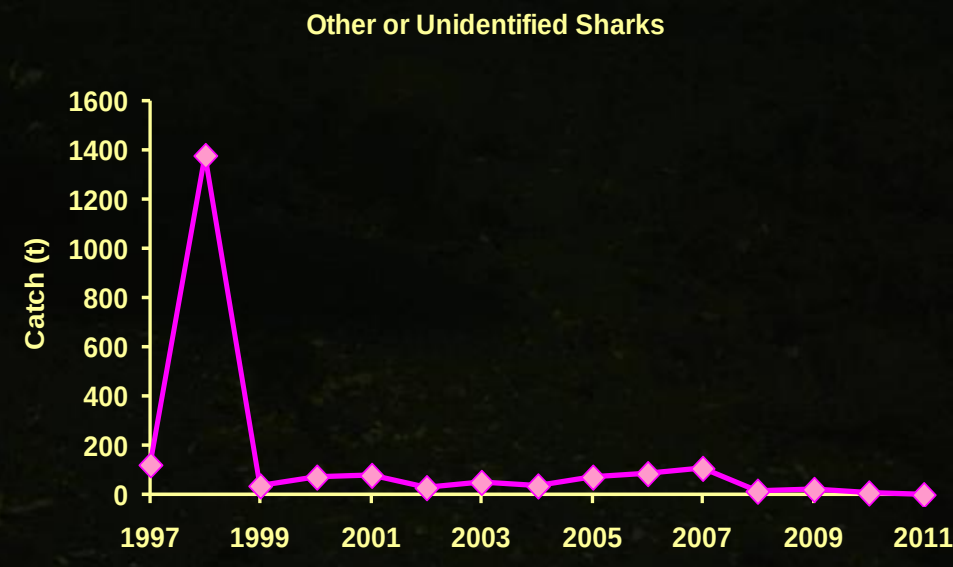
Chapter p. 1393

GOA Shark Catch

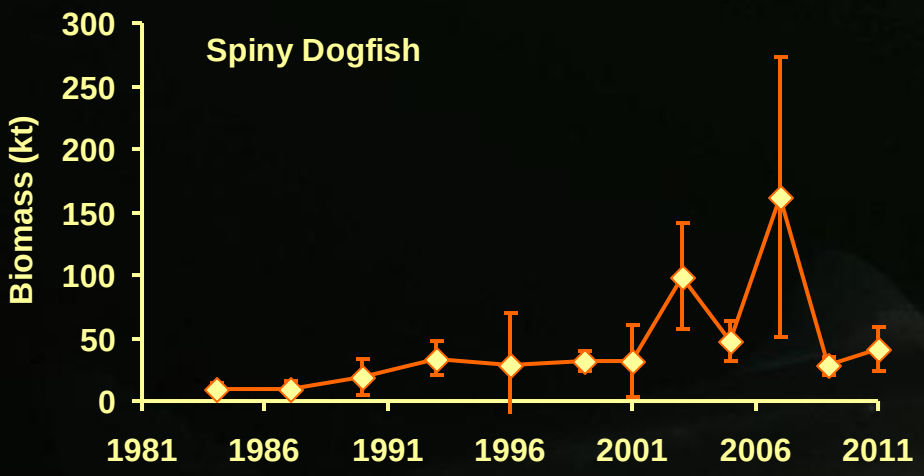


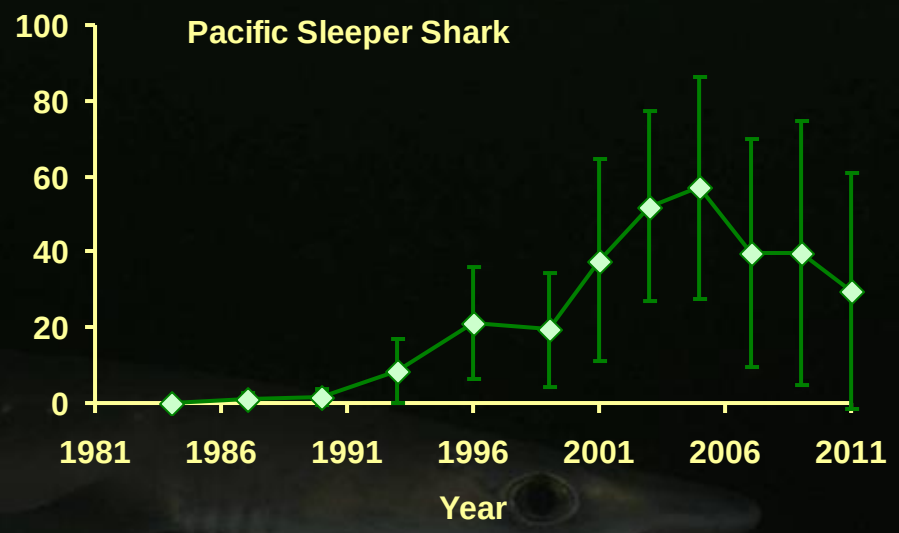


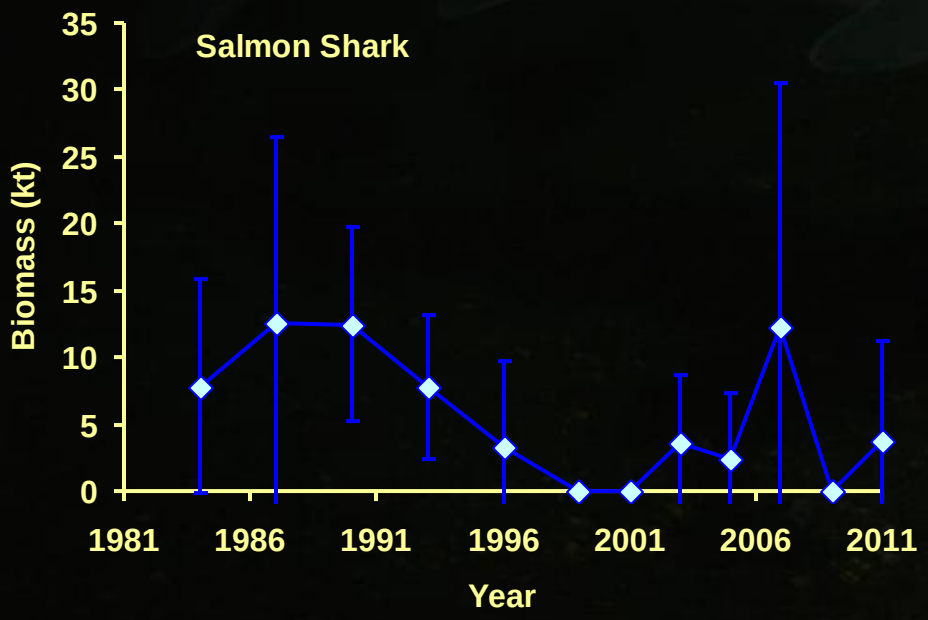




GOA Bottom Trawl Biomass







Biomass is not estimated for other or unidentified sharks

1. **Team recommends bycatch-only status**
2. **Additional model development in next full assessment:**
   - Demographic (described in this assessment)
   - Surplus Production
   - Length-based

Sharks	Biomass*	OFL	ABC
2012	76,979	8,037	6,028
2013		8,037	6,028

*spiny dogfish only for biomass estimates

21. GOA Squid

- **Biology**
  - Complex comprises many species
- **Unreliable biomass estimates**
  - Ecosystem models indicate at least order of magnitude higher than trawl survey
  - OFL and ABC recommended based on modified Tier 6 using highest catch over time frame 1997-2007
  - Continue to consider biomass-based estimation (perhaps as minimum)

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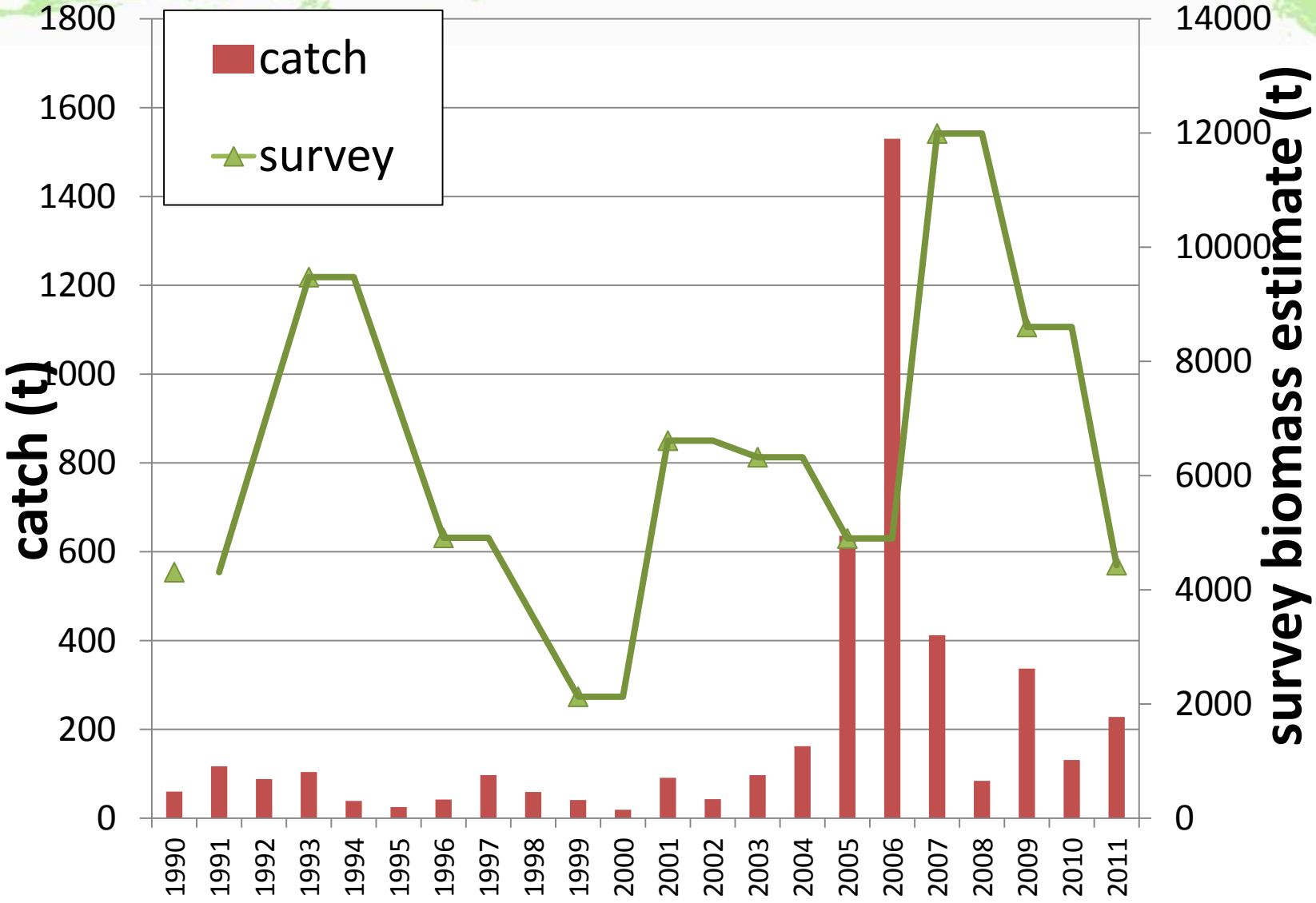
catch and biomass trends

Catches low since peak in 2006, catch primarily in 620



21. GOA squid

Alternative Tier 6

Use maximum historical catch level (1997-2007)

ABC setting process very tenuous due to abundance uncertainty

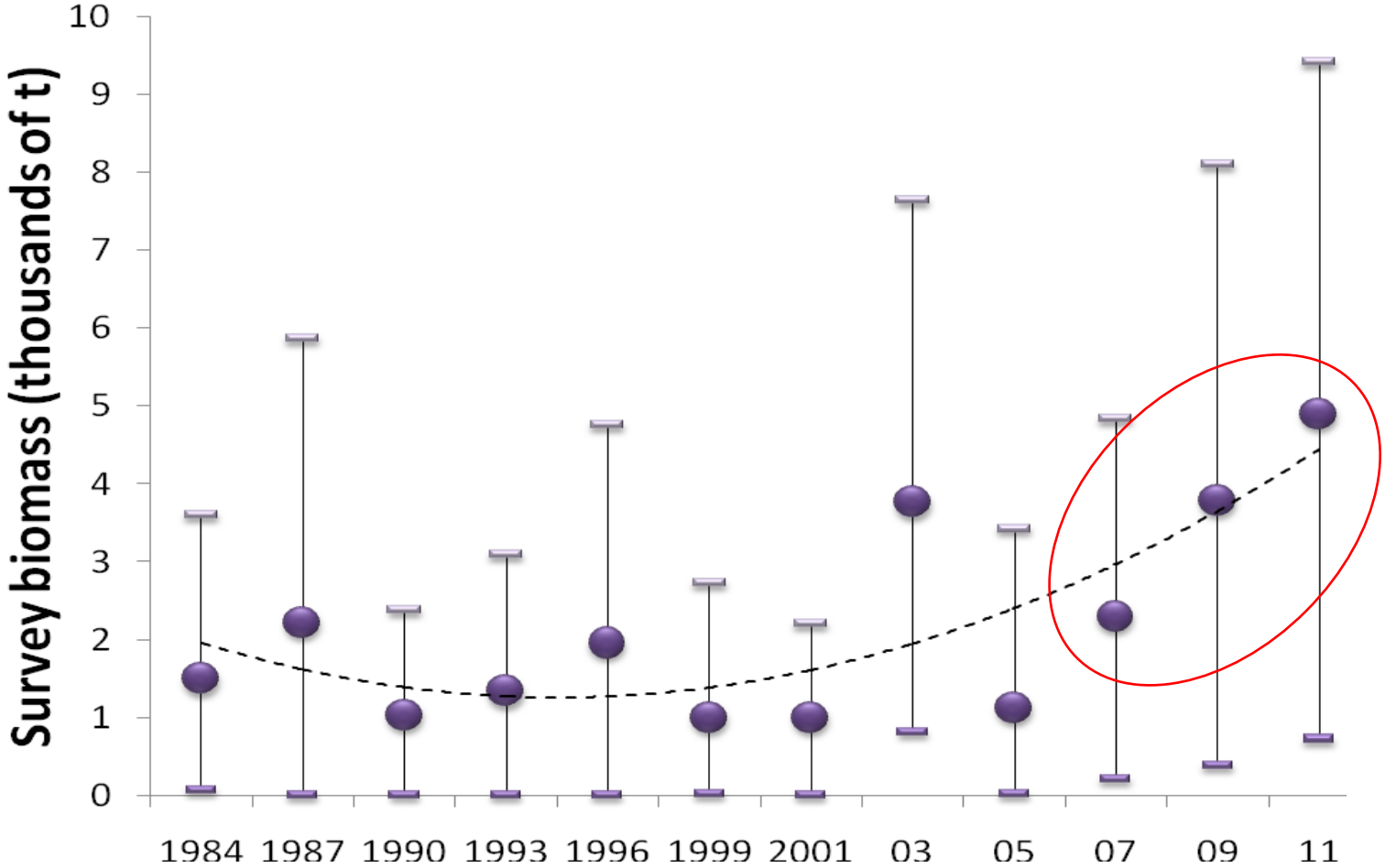
Recommend bycatch-only status

Squid	Biomass	OFL	ABC
2012	unknown	1,530	1,148
2013		1,530	1,148

Team recommends Tier 5 calculation next year assuming minimum biomass estimate from survey

22. Octopus

GOA Octopus Survey Biomass: sufficient as minimum biomass estimate



Octopus

Alternative Tier 6

	Biomass	OFL	ABC
2012	2,400	1,941	1,455
2013		1,941	1,455

Team recommendations:

- Recommend bycatch-only status
- Continue discard mortality studies
- Include consumption-based approach for M (as with BSAI assessment)

Appendix: Grenadiers

- Not part of FMPs so assessment not officially required
- Unofficial full assessments done in 2006 & 2008
- Giant grenadier by far the dominant species; other species include Pacific & popeye

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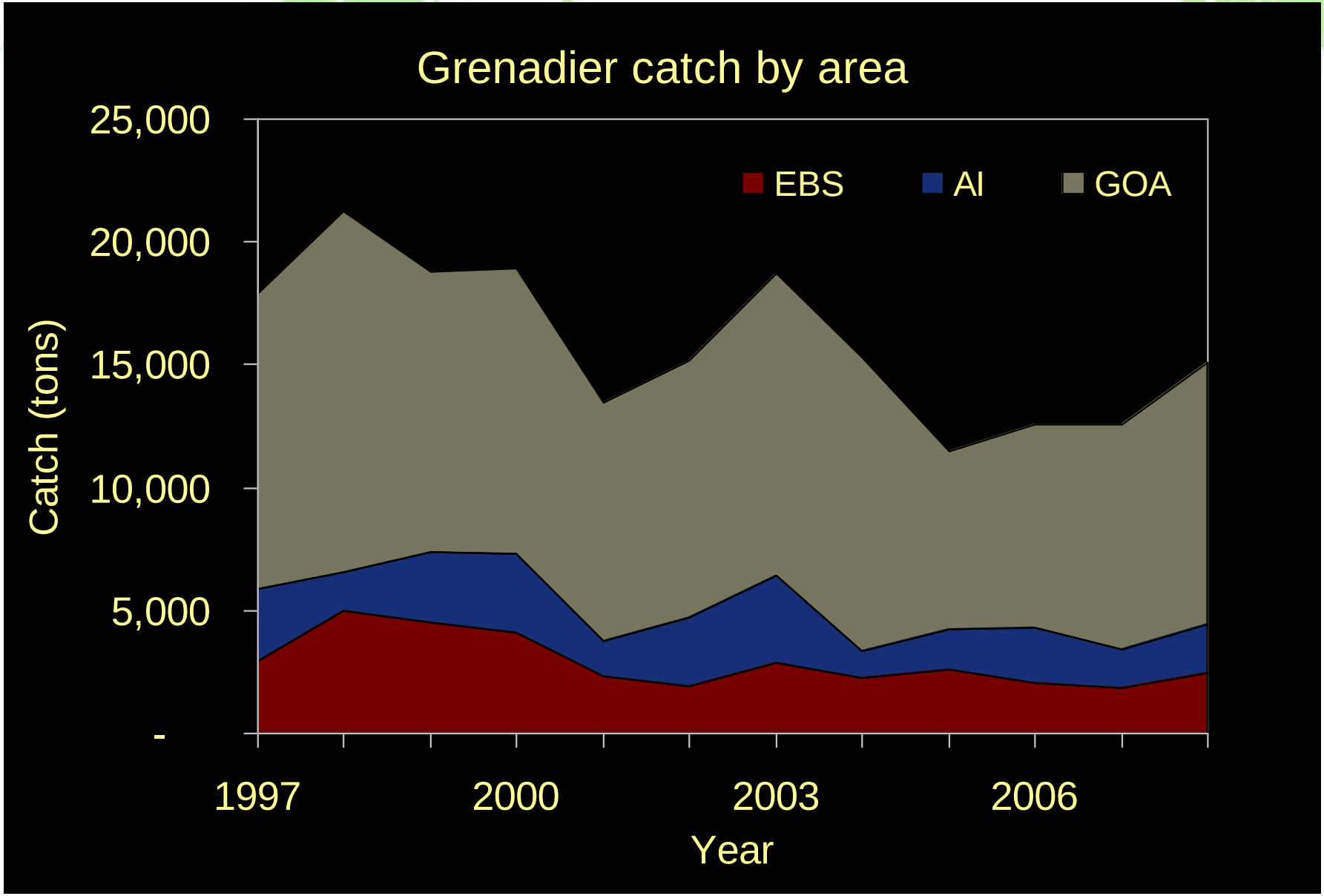
Appendix: Grenadiers



Appendix: Grenadiers

- **Tier 5 seems reasonable given reliable biomass estimates from the trawl surveys**
  - Information exist for possible Tier 3

- **Both Teams recommend moving into the FMP for management purposes**

Appendix: GOA forage fish

Executive summary

Ecosystem Component of FMP

Issues highlighted

- 2011 eulachon survey biomass estimate (71,507 t) down from 2009 (87,227 t):
- Less in CGOA, more in EGOA
- Incidental catches of eulachon relatively low since 2008
- GOAIERP finished first field season – data analyses and retrospective work available in 2012
- Discussion of 2% MRA

Additional Plan Team discussions

GOA Halibut PSC analysis

EA should include biological reference points comparable to N Pacific groundfish stocks

Alternatives

- Should include a biomass based floating cap
- Currently lack incentives for bycatch reduction

Team requests:

Presentation to JPT in Sept on halibut assessment model

Rationale for retaining/modifying 32in size limit

Recommendations for September 2012 Team discussions

IPHC presentation

Discussion paper:

- Comparison of biomass estimation and apportionment by species based on life-history characteristics and
- Treatment of expansion of unsurveyed areas and depths across assessments

PSA analysis of other rockfish complex

SWF complex discussion

Catch by species compared with species-specific ABCs

Yelloweye survey

Models for review:

- Pacific cod
- Dover sole
- Yelloweye (?)

PWS pollock GHL rationale/method

CIE reports for pollock and some flatfish