

# Update on groundfish stock trends for the Gulf of Alaska

Gulf of Alaska Groundfish  
Plan Team  
December 2006

## GOA Plan Team Members

James Ianelli (co-chair)	AFSC
Diana Stram (co-chair)	NPFMC
Tory O'Connell	ADFG
Nick Sagalkin	ADFG
Bob Foy	UAF
Bill Clark	IPHC
Theresa Tsou	WDF
Jeff Fujioka	AFSC
Sarah Gaichas	AFSC
Jon Heifetz	AFSC
Tom Pearson	AKR
Kathy Kuletz	USFWS
Ken Goldman	ADFG (phone)
Ward Testa	NMML

# Overview

## **Tier 3 stocks mostly above B40%**

Except for pollock and sablefish

## **Agree with authors ABC recommendations**

## **Species complexes splitting process**

SR and RE rockfish

Skates

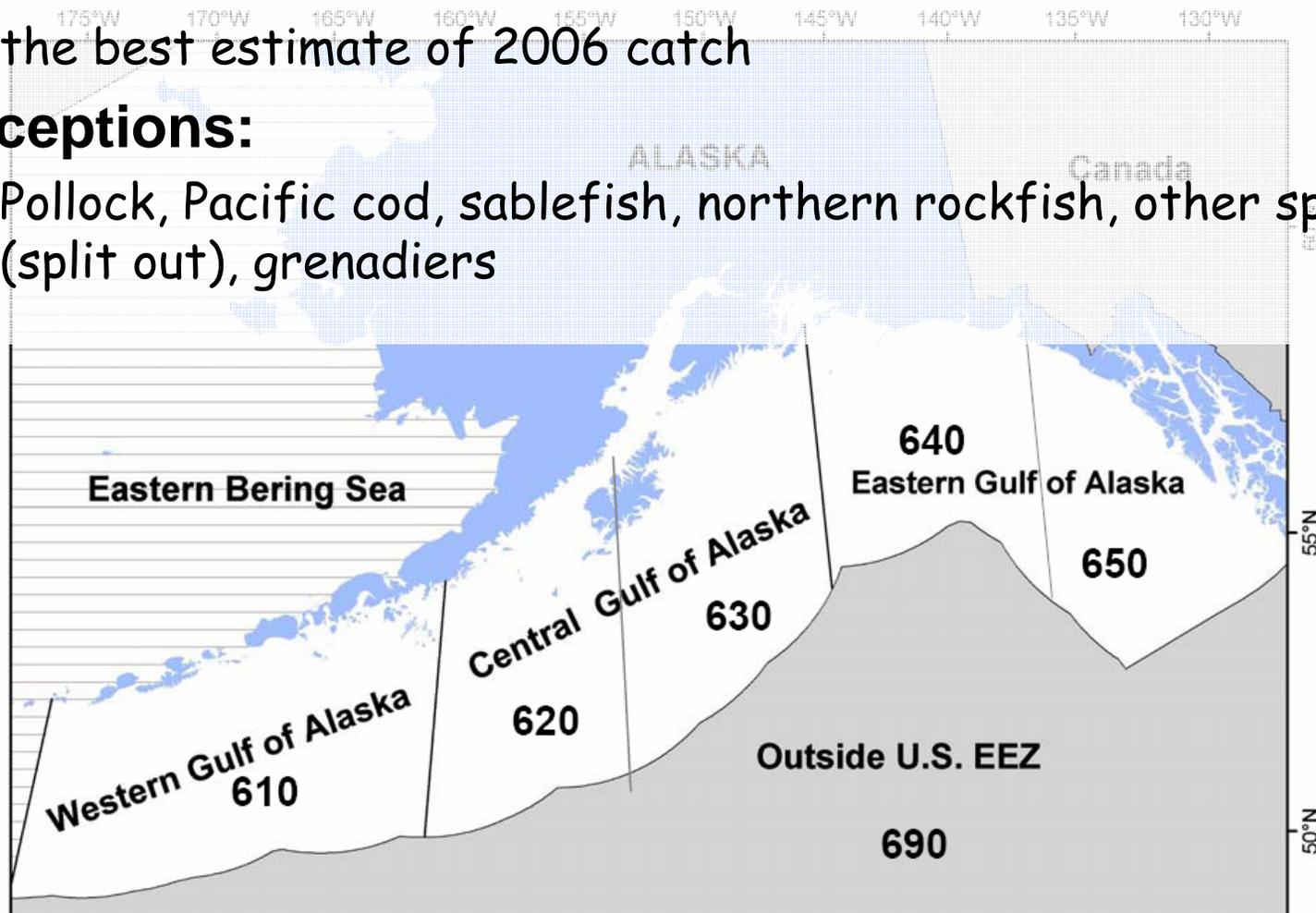
Dark rockfish state-management (initial review in Feb 07)

"Other species" trial run for amendment analysis purposes

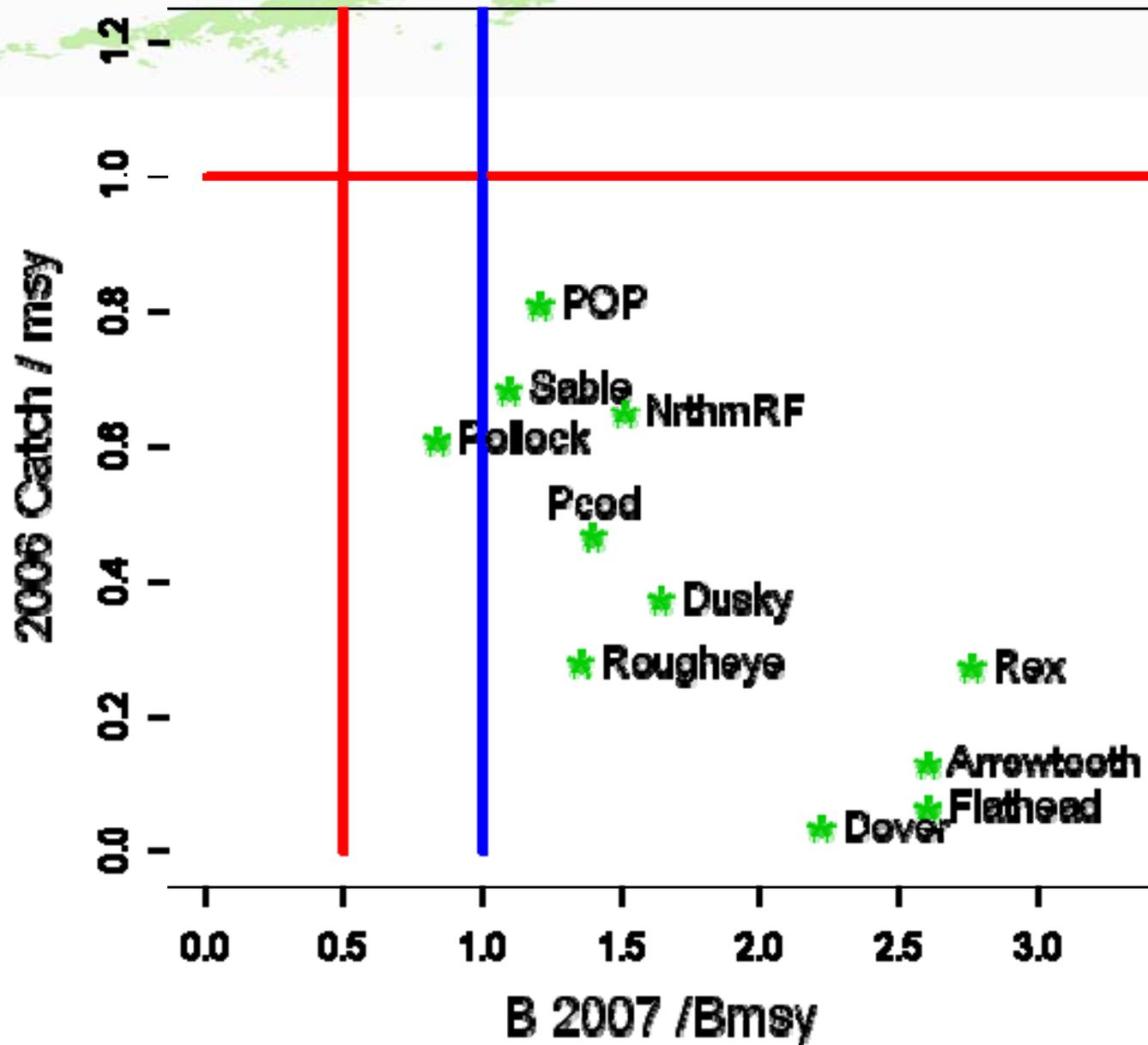
## **Other species set to incidental catch needs**

# Biennial cycle

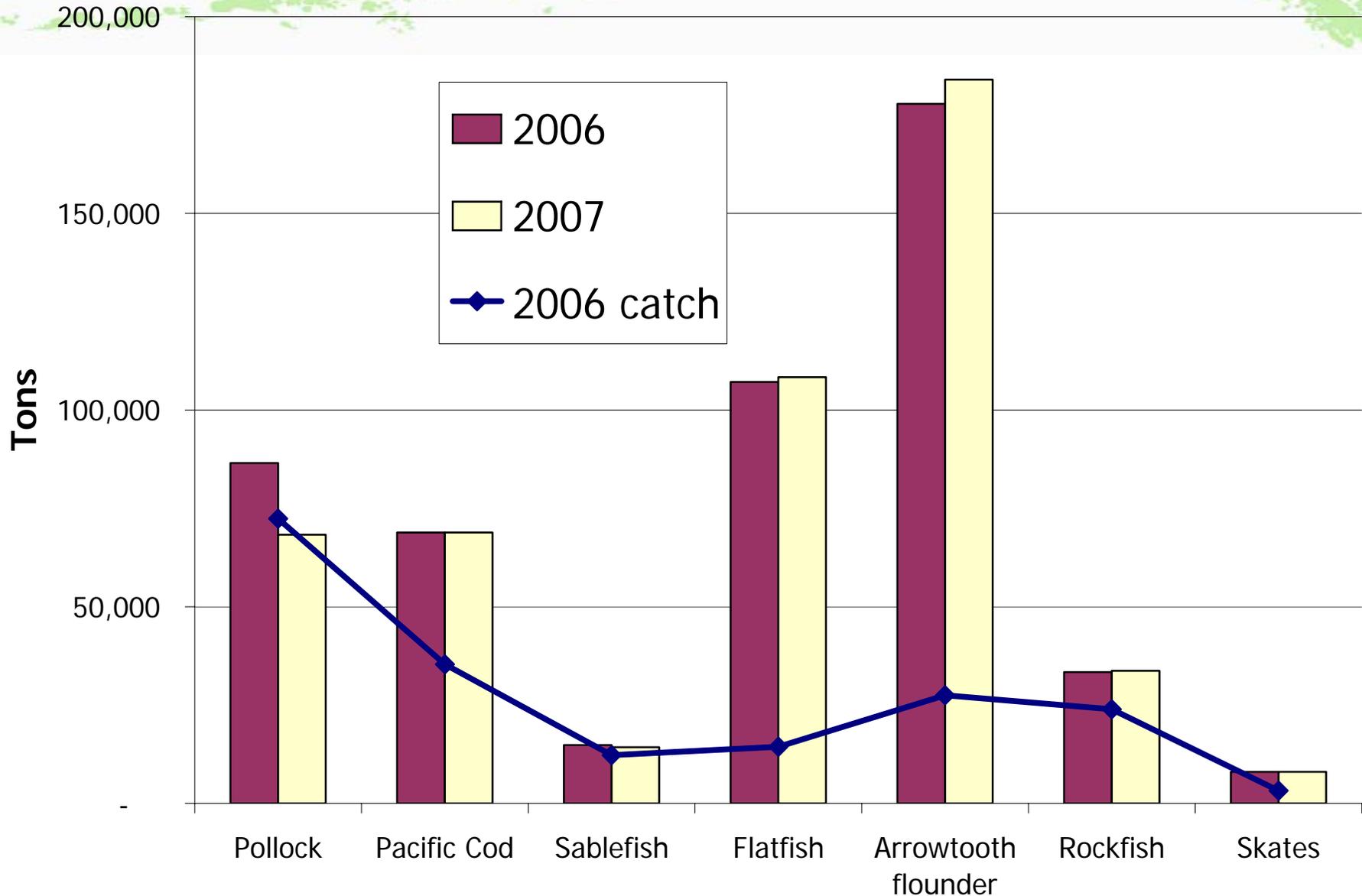
- **Coincides with main survey data**
  - ♦ Executive summaries only
  - ♦ Last year's key assessment parameters and projections for 2007 and 2008
  - ♦ the best estimate of 2006 catch
- **Exceptions:**
  - ♦ Pollock, Pacific cod, sablefish, northern rockfish, other species (split out), grenadiers



# Gulf of Alaska



# GOA Catch and ABC levels

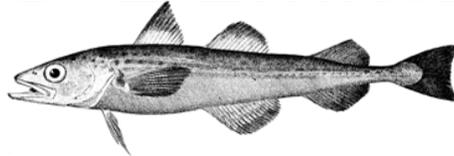


# ABC / TAC

- **Plan Team recommendations where ABC < maximum permissible:**

	<b>Percent of Max permissible</b>
<b>Pollock</b>	<b>83%</b>
<b>Pacific cod</b>	<b>85%</b>
<b>Demersal shelf rockfish</b>	<b>77%</b>

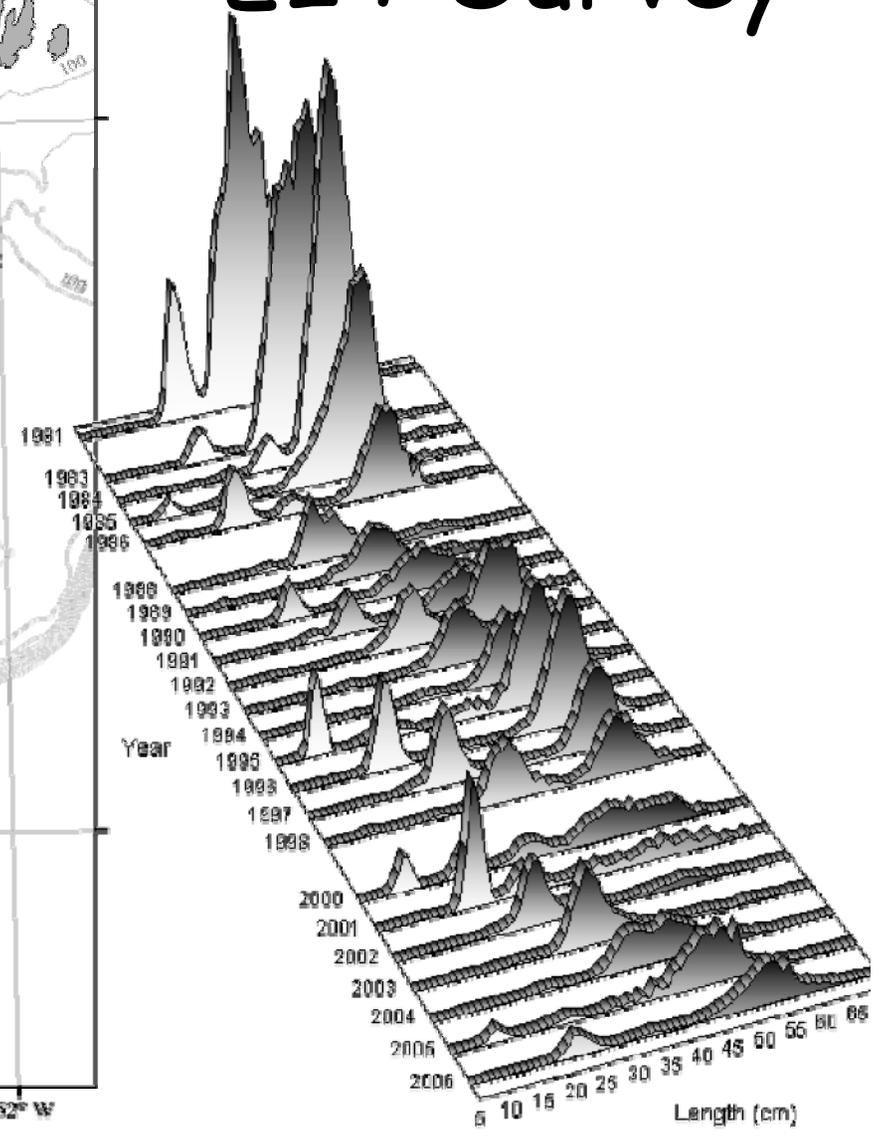
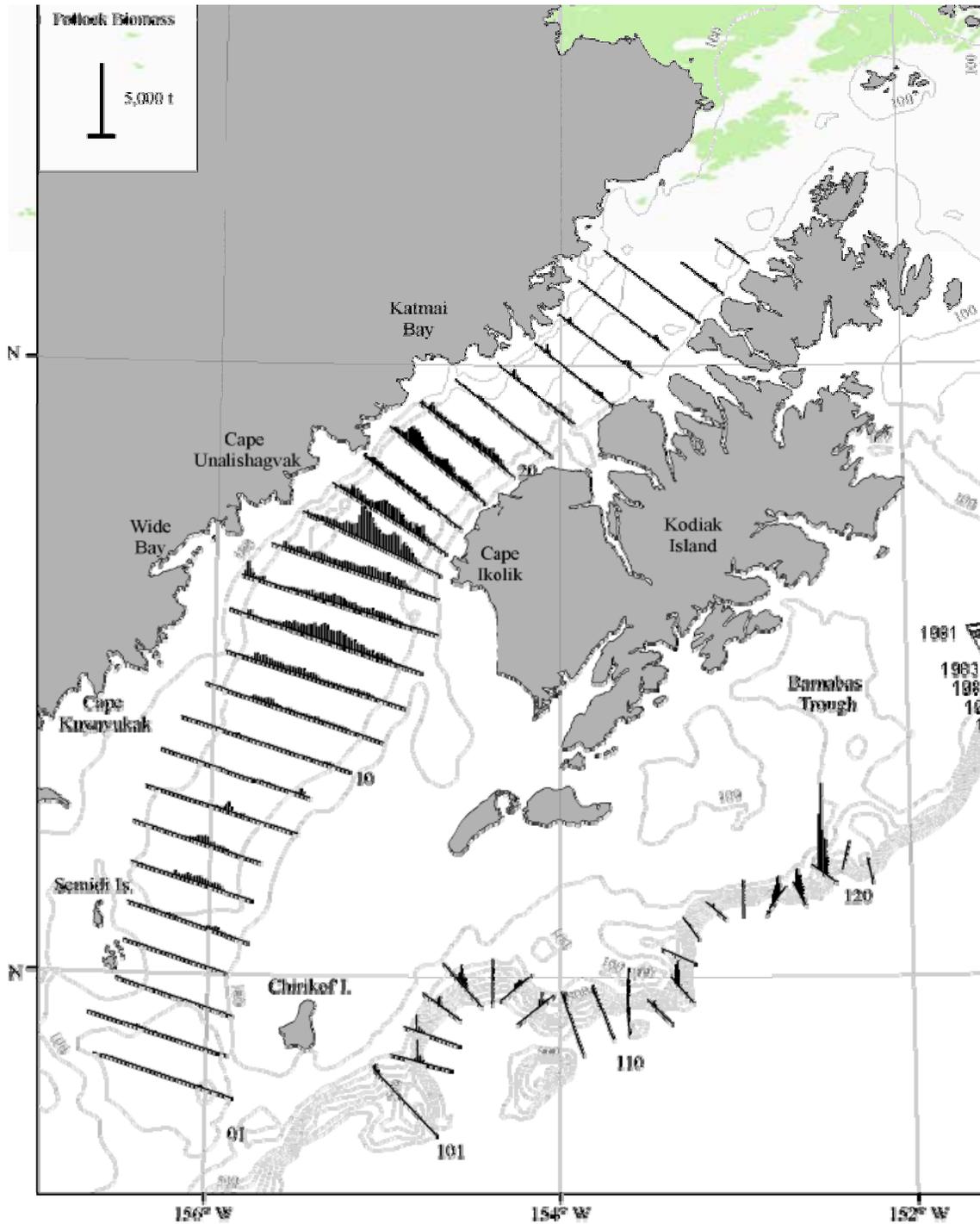
# ABC Summary



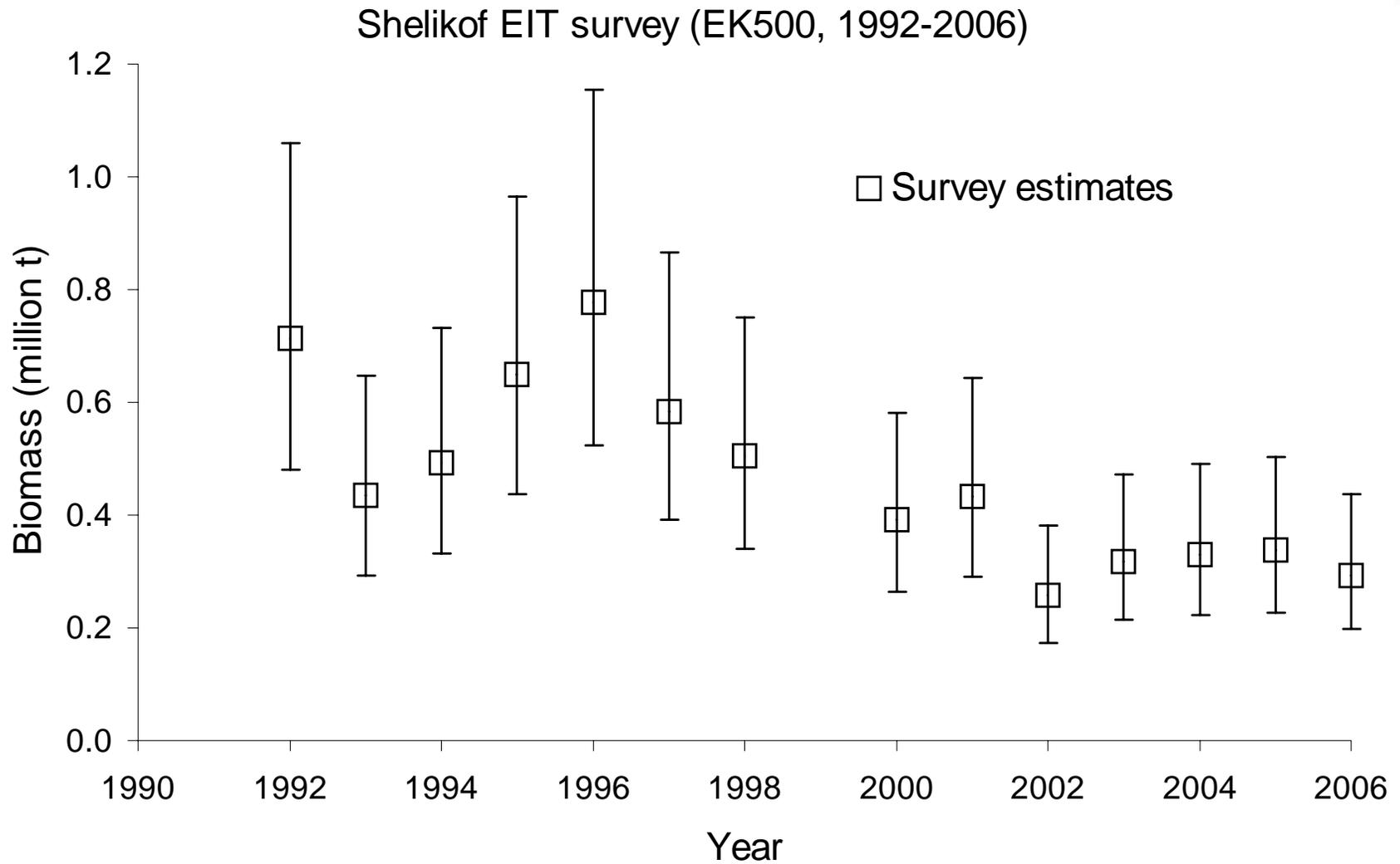
Species	2006 catch	2006	2007	Change
Pollock	72,396	86,547	68,307	down 18,240 (21%)
Pacific Cod	35,359	68,859	68,859	same (0%)
Sablefish	12,284	14,840	14,310	down 530 (4%)
Flatfish	14,403	107,135	108,367	up 1,232 (1%)
Arrowtooth flounder	27,501	177,844	184,008	up 6,164 (3%)
Rockfish	23,954	33,385	33,720	up 335 (1%)
Atka mackerel	875	4,700	4,700	Same (0%)
Skates	3,239	8,056	8,056	same (0%)
Total	189,136	501,366	490,327	down 11,039 (2%)

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# 2006 Winter EIT Survey

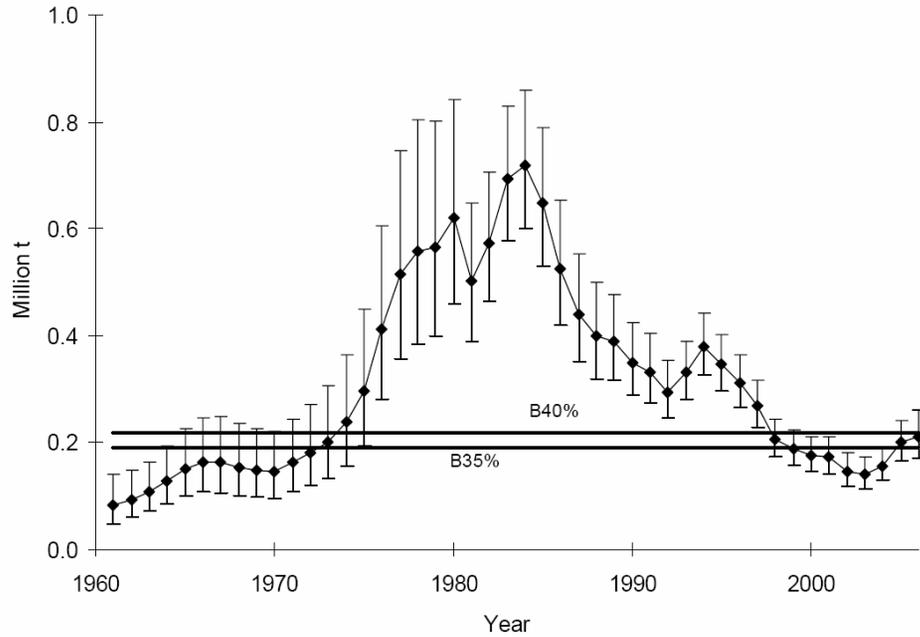


# Shelikof Strait survey



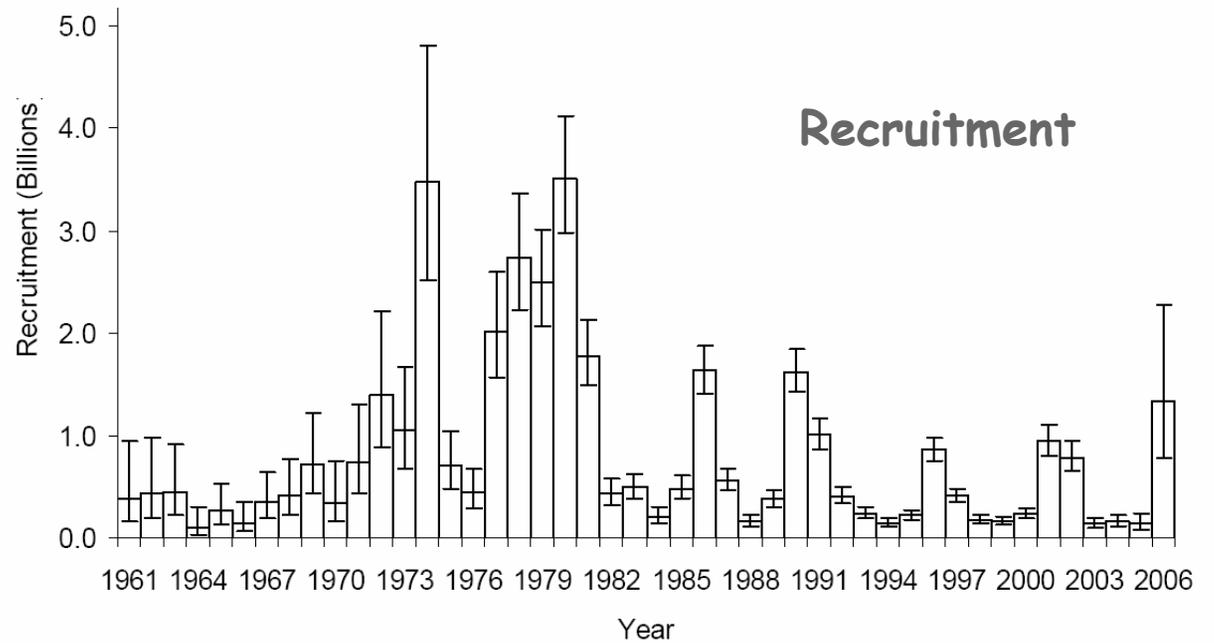
# Spawning biomass

Female spawning biomass



# Pollock model results

Recruitment



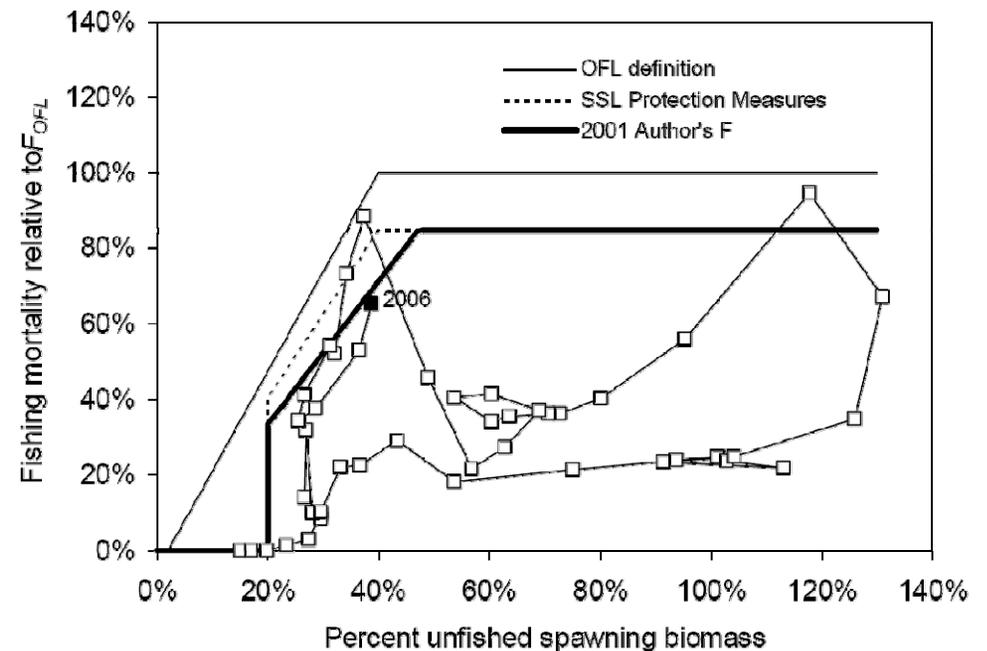
# Gulf of Alaska pollock

The 2007 ABC is 63,800 (down 22% from 2006)

- Projected to increase in 2008

The 2004 year class may be relatively strong

2007 SSB is **below** B35%



# ABC Summary

## Pacific cod

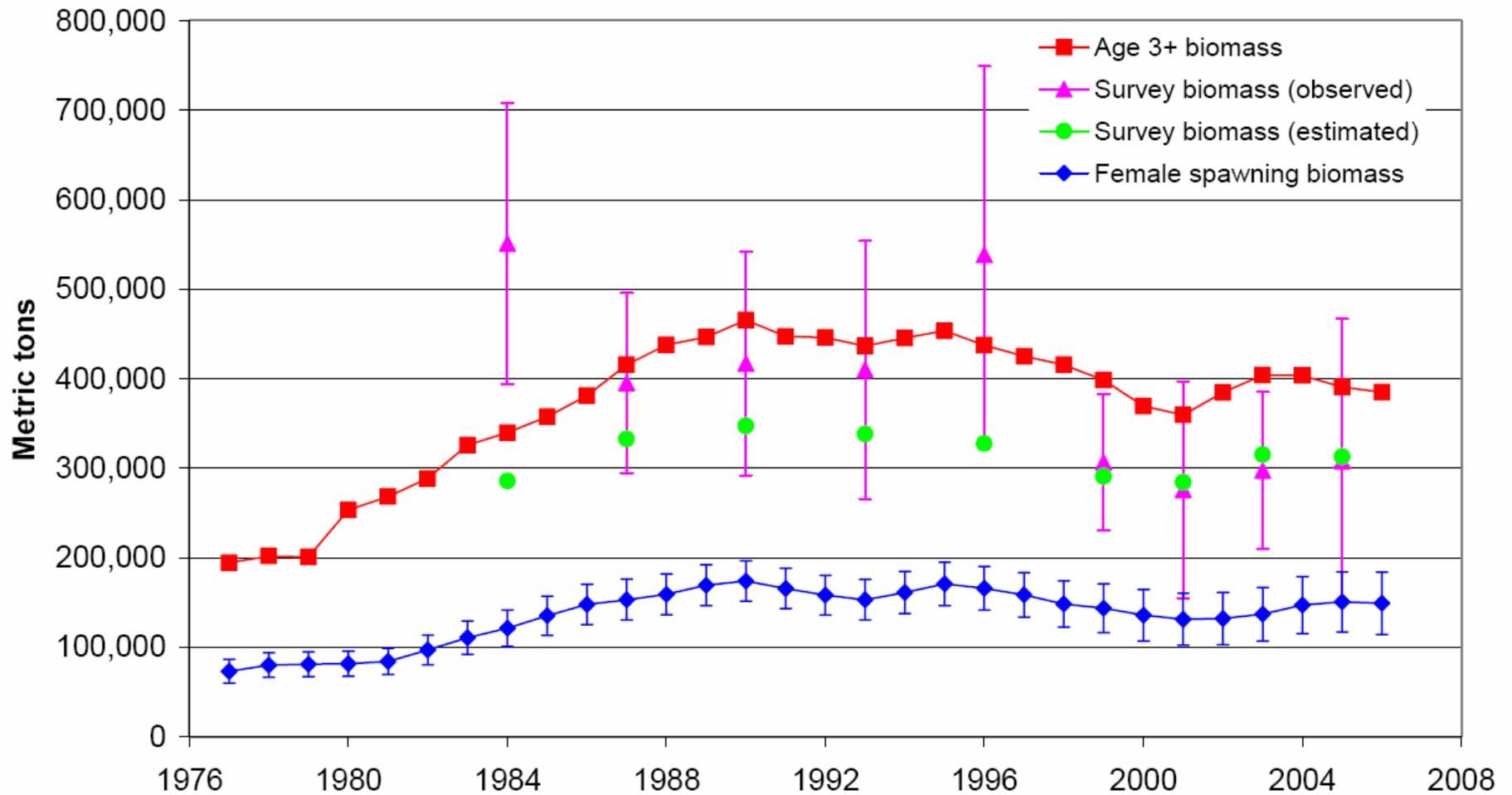
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# GOA Pacific cod notes

- **Longline survey to be evaluated in coming year**
- **Growth estimated outside model**
  - ♦ New age data
- **Limited time for detailed study on model evaluations**

# GOA Pacific cod biomass



# Recruitment Strengths

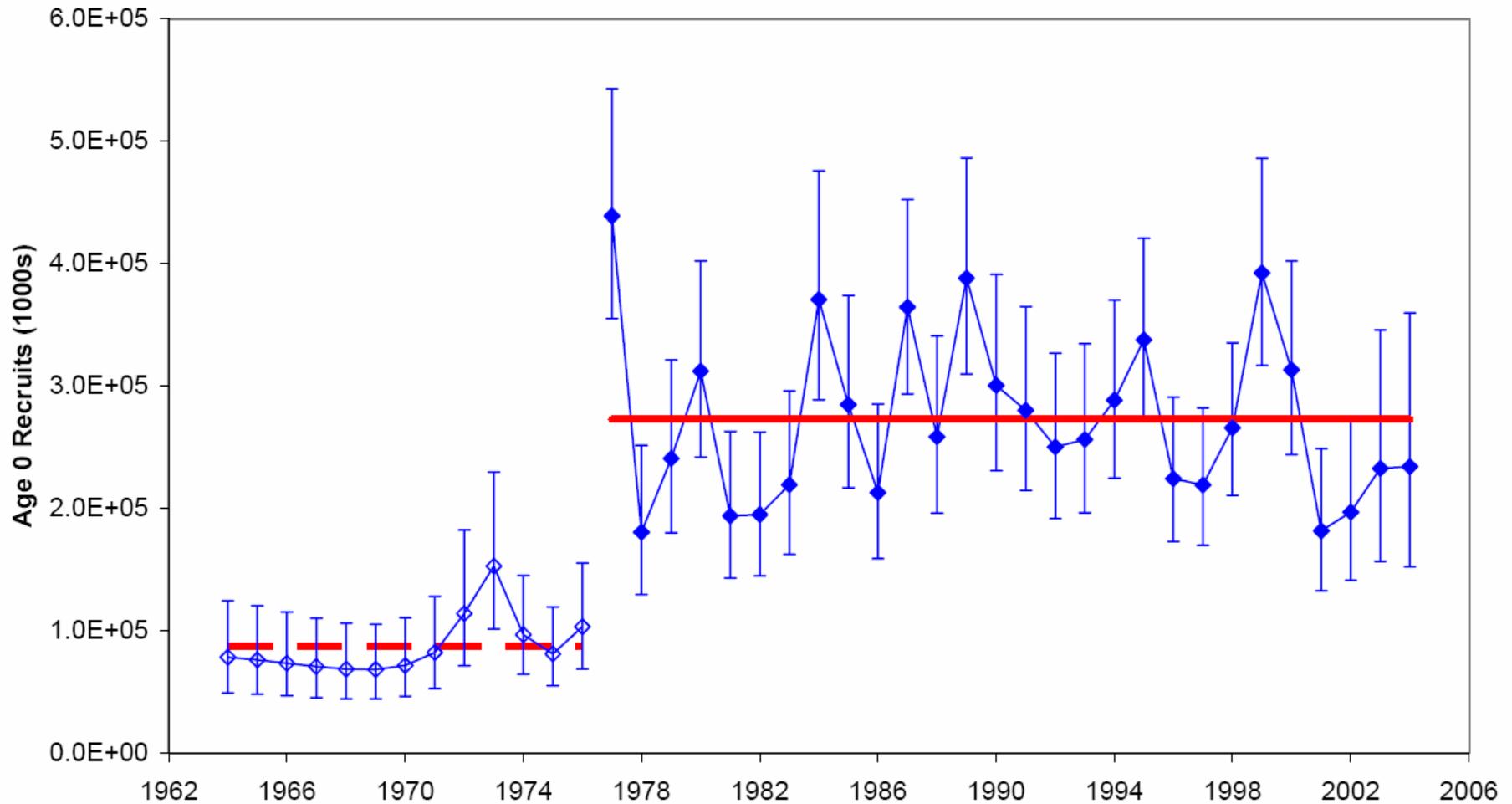


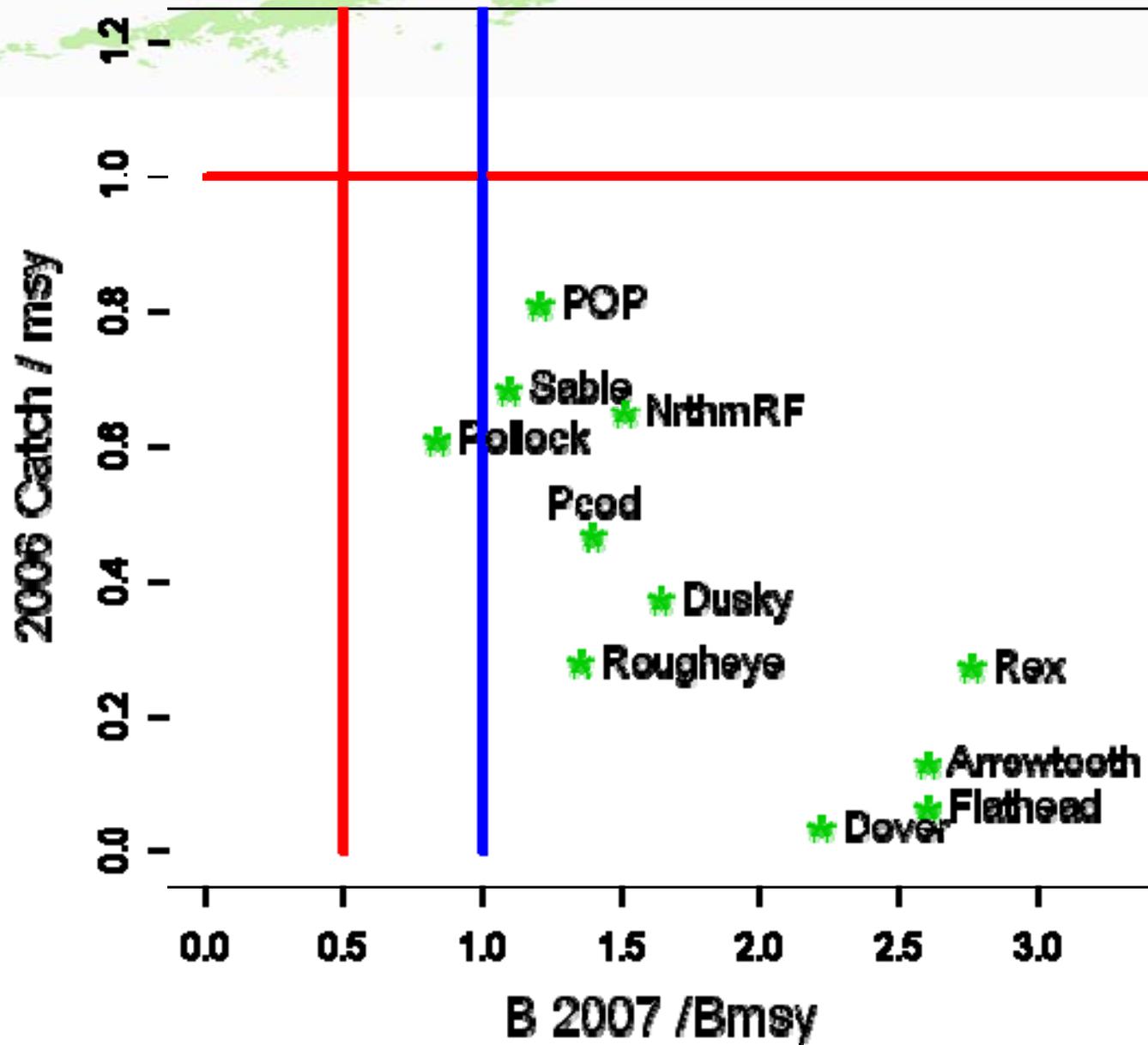
Figure 2.4—Time series of GOA Pacific cod recruitment at age 0, with 95% confidence intervals, as

# Pacific cod ABC/TAC considerations

## Reasons ABC < maximum:

- Large increase while declining spawning biomass
- SSC advised against a large increase last year
- The increase would likely be short-lived (1 yr)
- 2006 fishery seems unlikely to take the current ABC
- Alternative GOA model structures should be evaluated

# Gulf of Alaska



# ABC Summary

## Sablefish



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# Sablefish

## **New sex-specific model implemented**

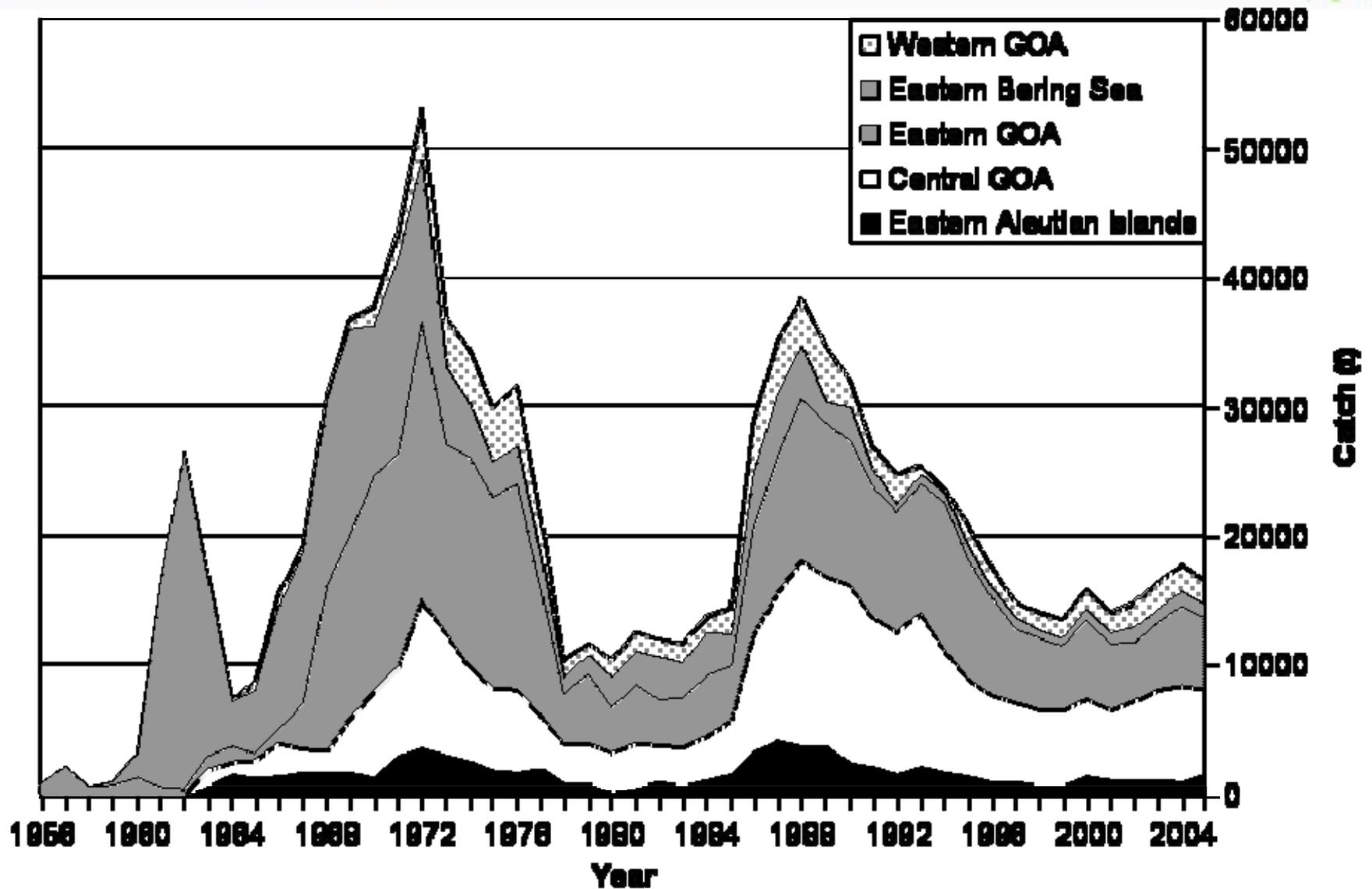
- ♦ Length-age updated
- ♦ Female SSB recorded

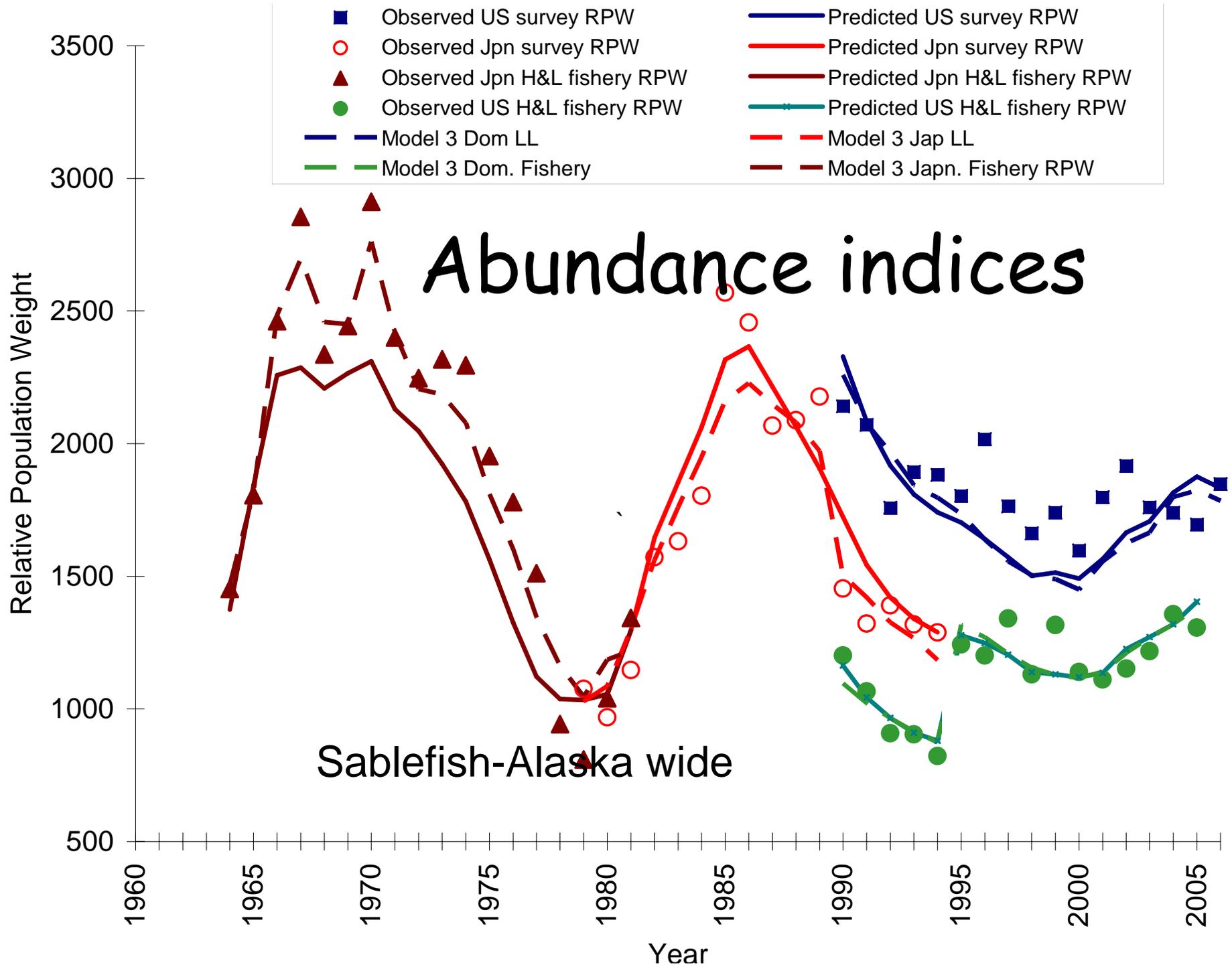
## **Trawl survey included—improves recruitment estimates**

## **2006 longline survey value up ~8% from 05**

- ♦ Plan Team agreed with author's recommended ABC
  - Supported the careful examination of uncertainty

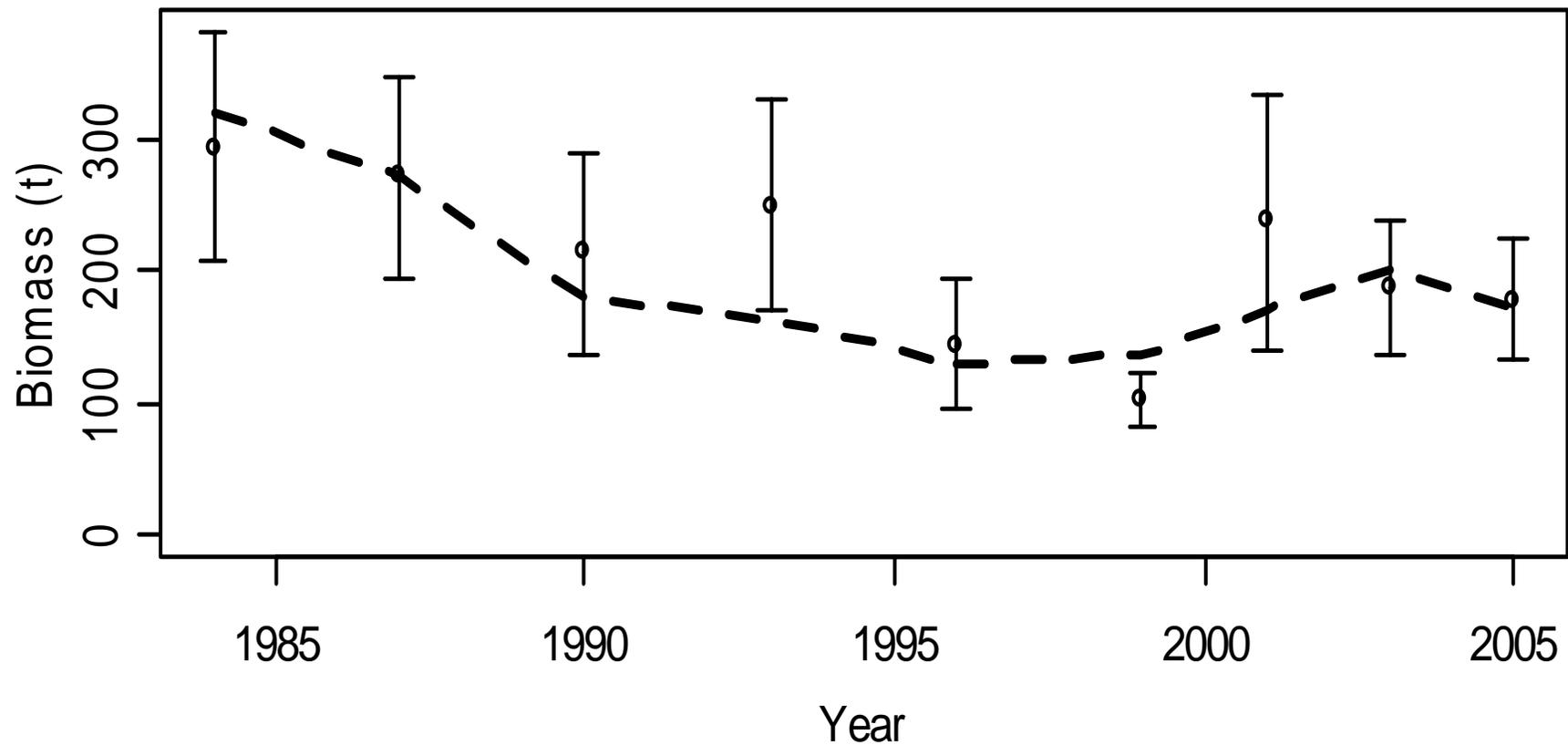
# Sablefish catch



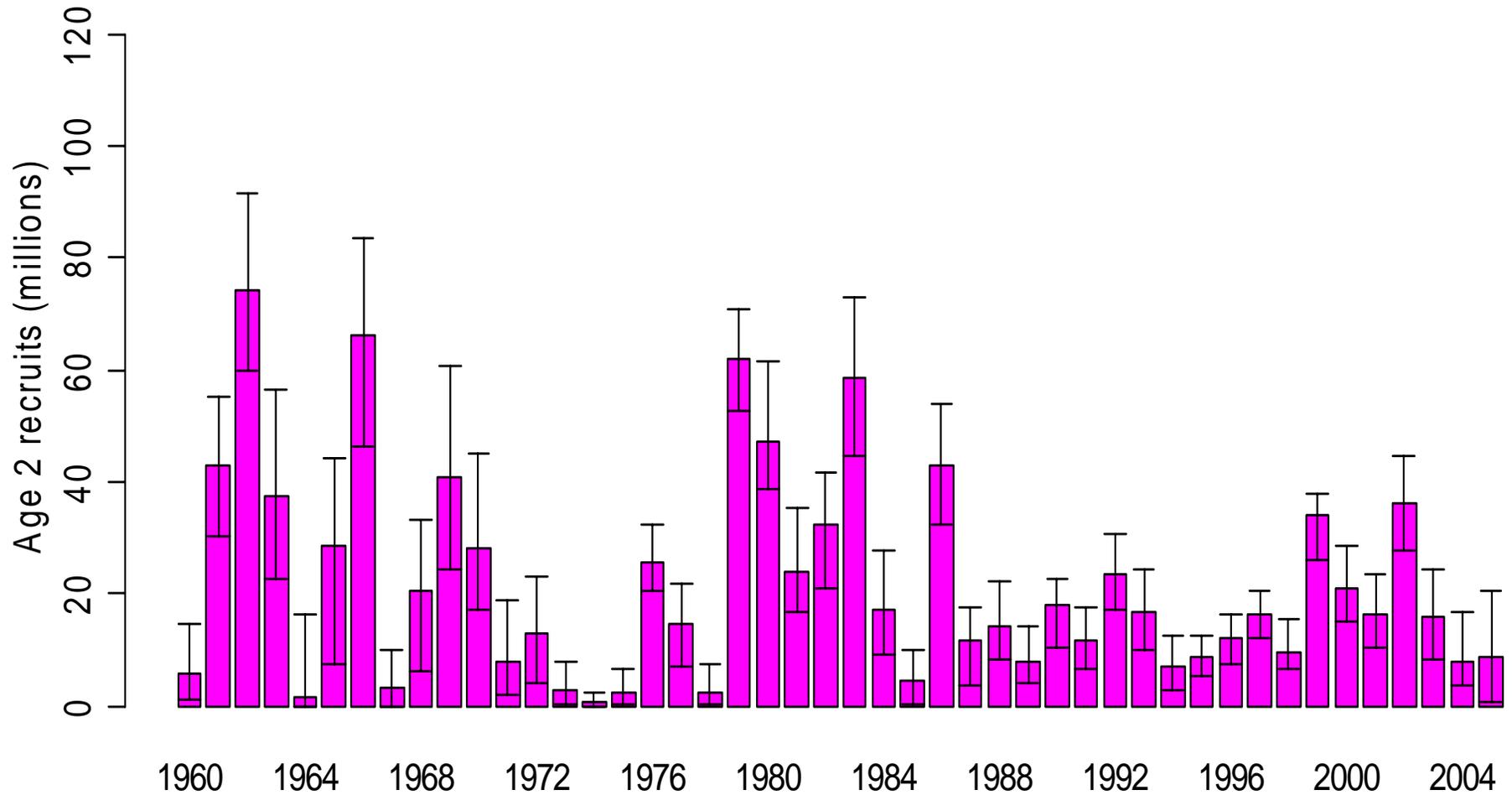


# Sablefish fit to trawl survey

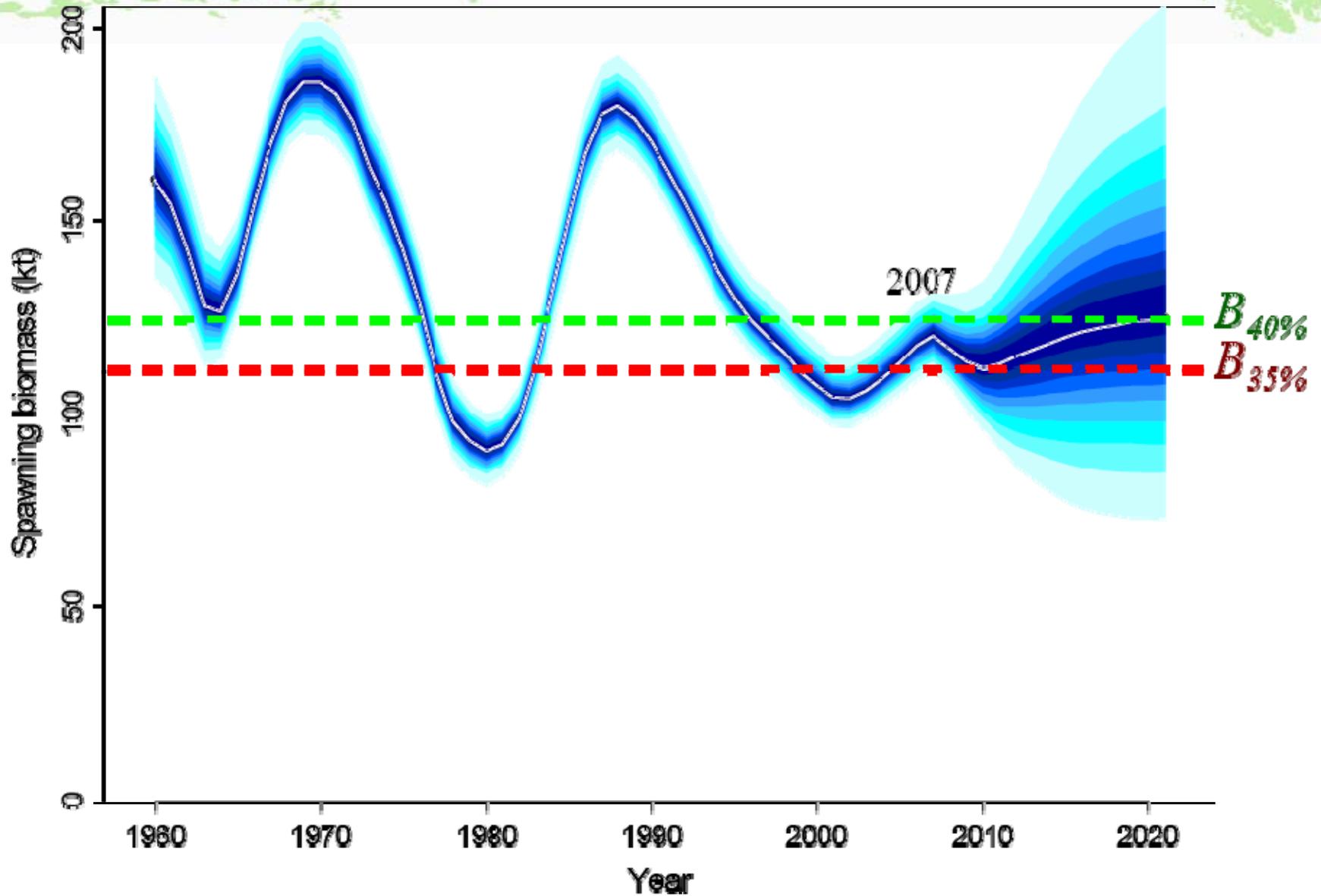
**500 meters and shallower only**



# Sablefish Recruitment



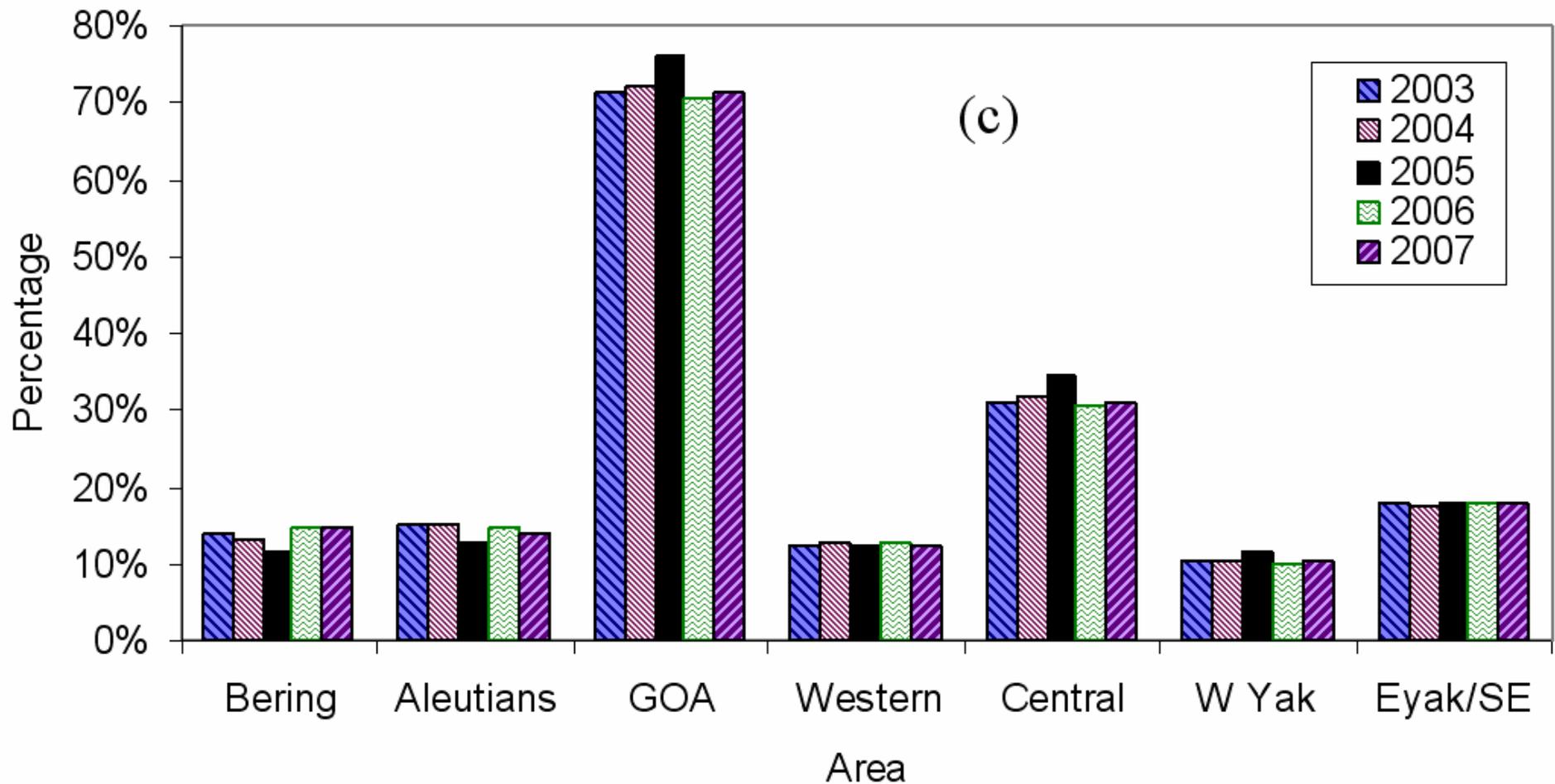
# Sablefish spawning biomass trend



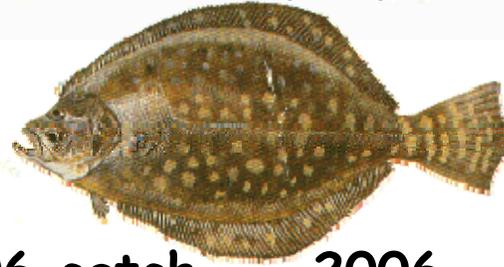
# Apportionment

(based on survey and fishery weighted CPUE)

Apportionment percentages for 2003-2007



# ABC Summary



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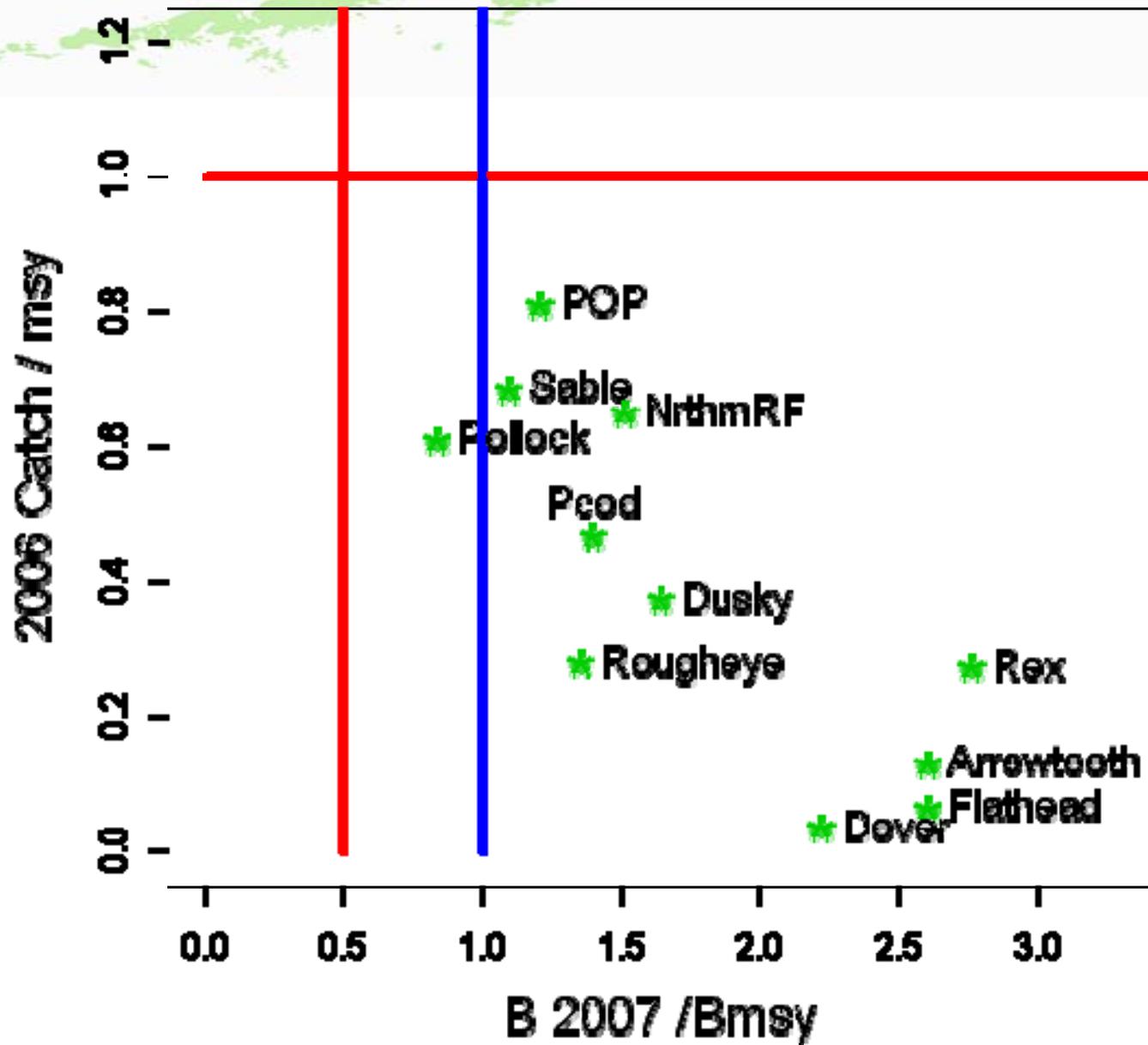
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# Flatfish ABC's

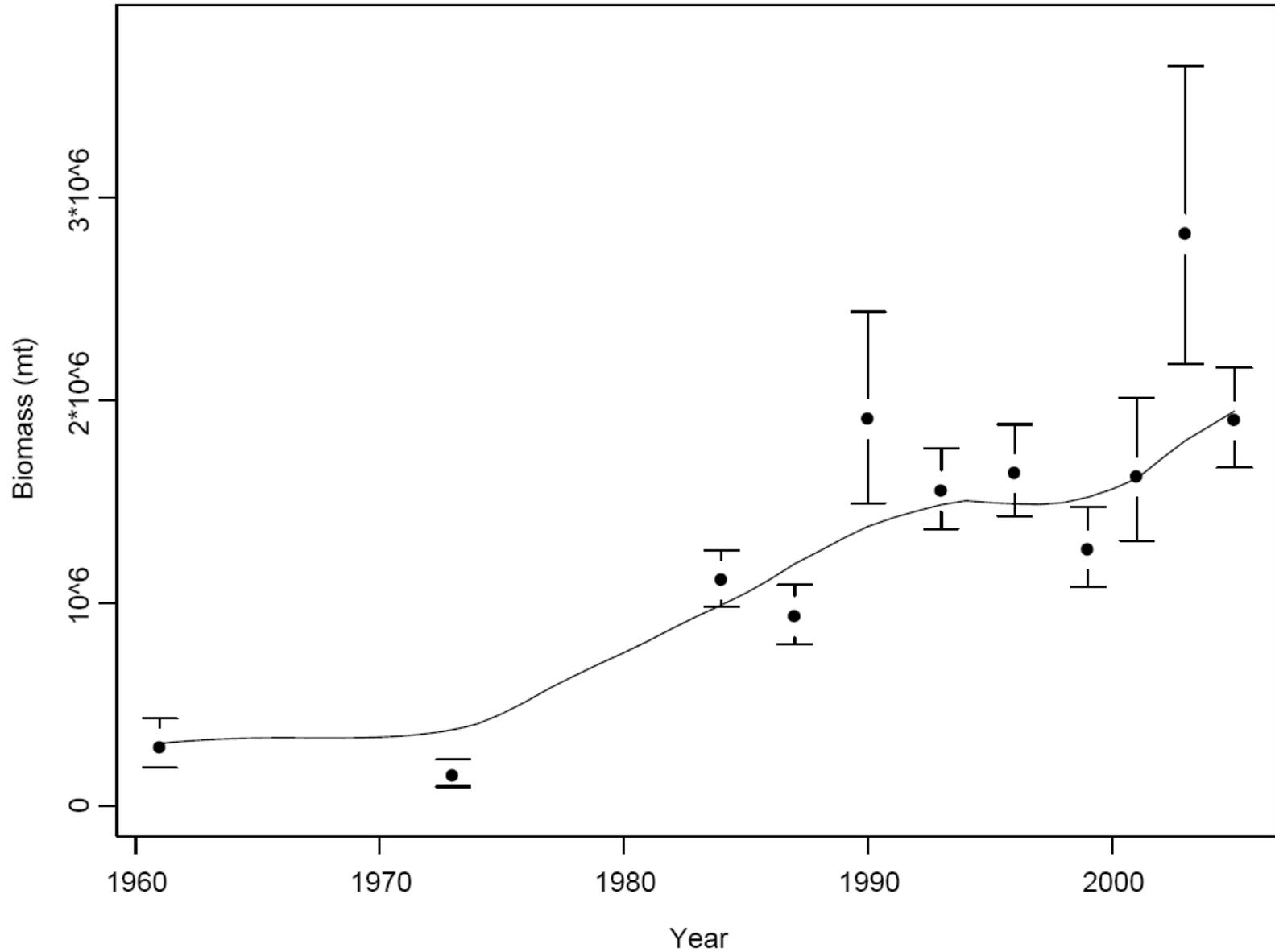
Species	2006 ABC	2007 ABC	Change
Deep water flatfish	8,665	8,707	up 42 (0%)
Rex sole	9,200	9,100	down 100 (1%)
Shallow water flatfish	51,450	51,450	same (0%)
Flathead sole	37,820	39,110	up 1,290 (3%)
Arrowtooth flounder	177,844	184,008	up 6,164 (3%)

Deep-water ABC derived from Dover assessment (Tier 3) + others (Tier 5)

# Gulf of Alaska

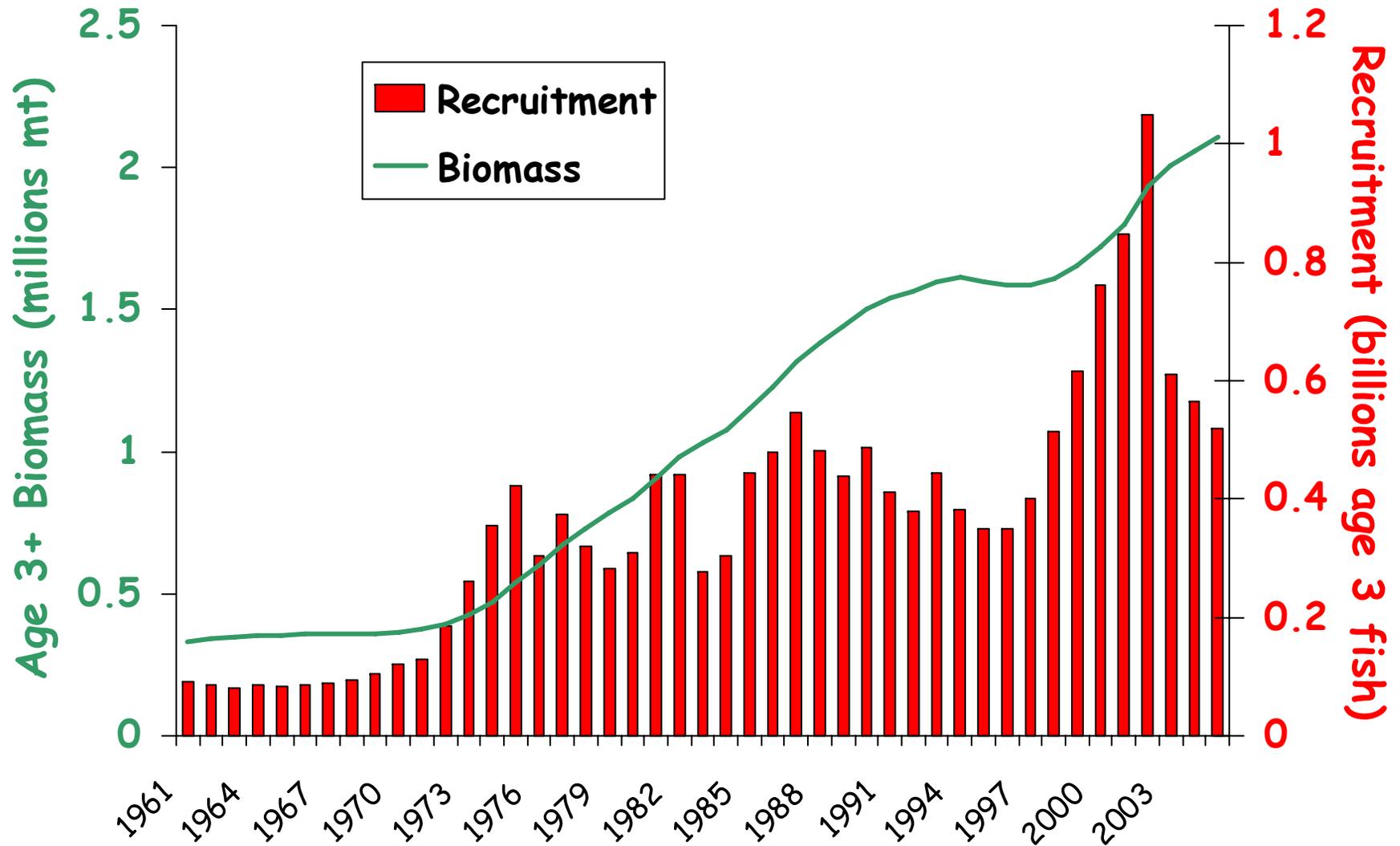


# Arrowtooth flounder



# Arrowtooth flounder

MRA revisions for future

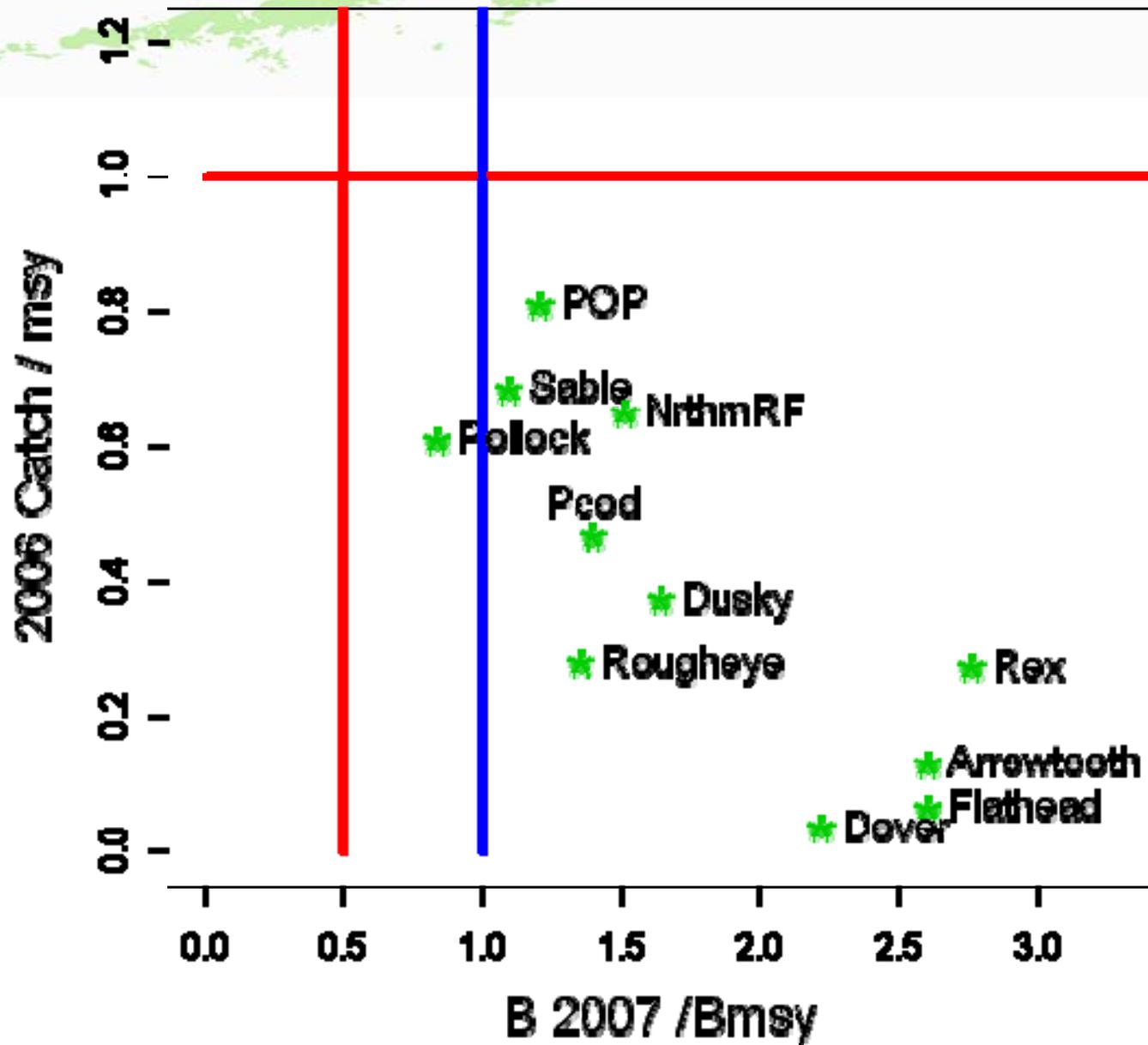


# Rockfish overview

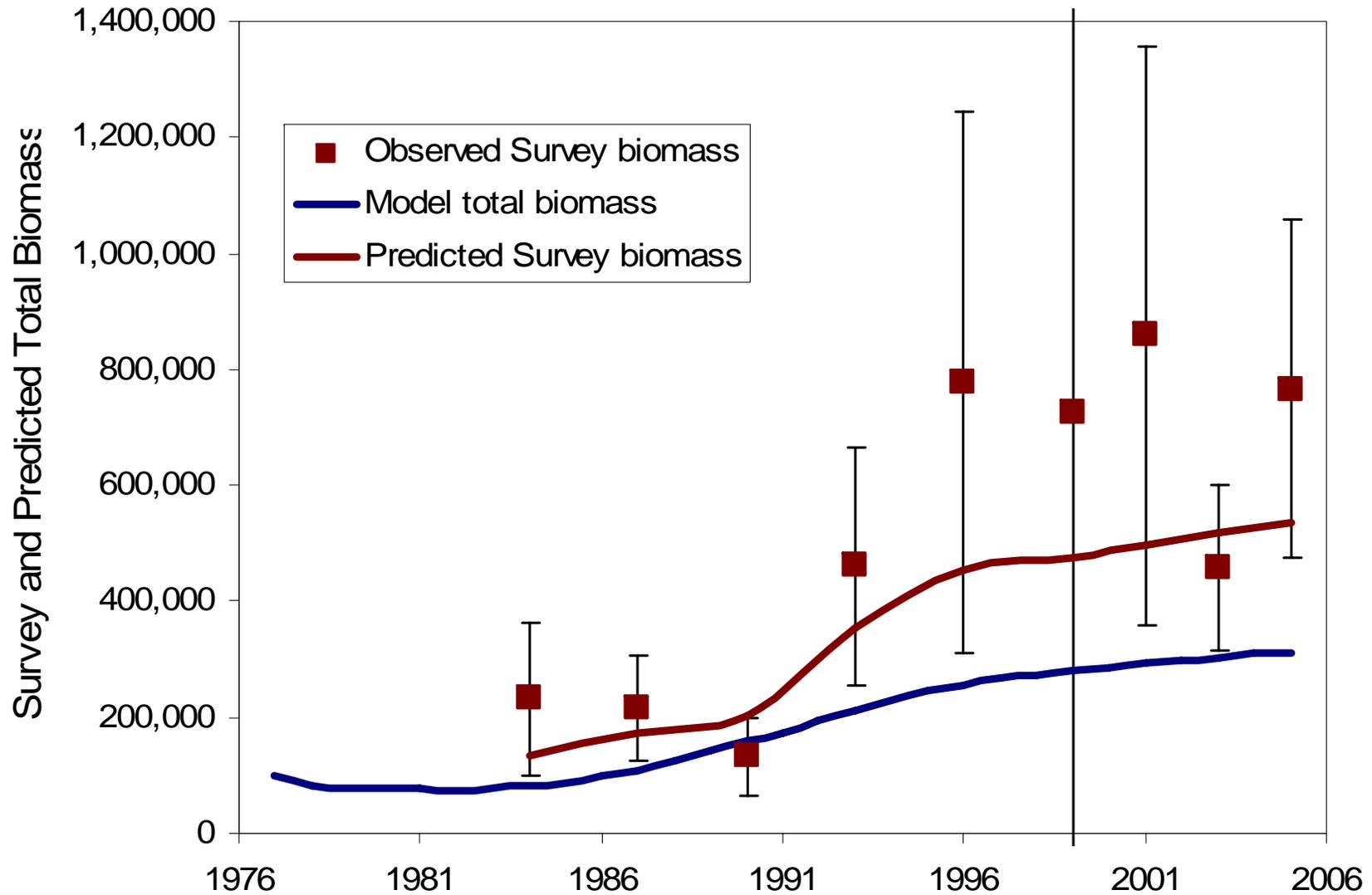
## Modeling workshop, CIE review completed in 2006

Species	2006 ABC	2007 ABC	Change
Other Slope rockfish	4,152	4,154	up 2 (0%)
Northern rockfish	5,091	4,938	down 153 (3%)
Pacific ocean perch	14,261	14,636	up 375 (3%)
Shortraker/ roughey	1,826	1,831	up 5 (0%)
Shortraker	843	843	same (0%)
Roughey	983	988	up 5 (1%)
Pelagic shelf rockfish	5,436	5,542	up 106 (2%)
Demersal Shelf Rockfish	410	410	same (0%)
Thornyhead rockfish	2,209	2,209	same (0%)
Total	33,385	33,720	up 335 (1%)

# Gulf of Alaska

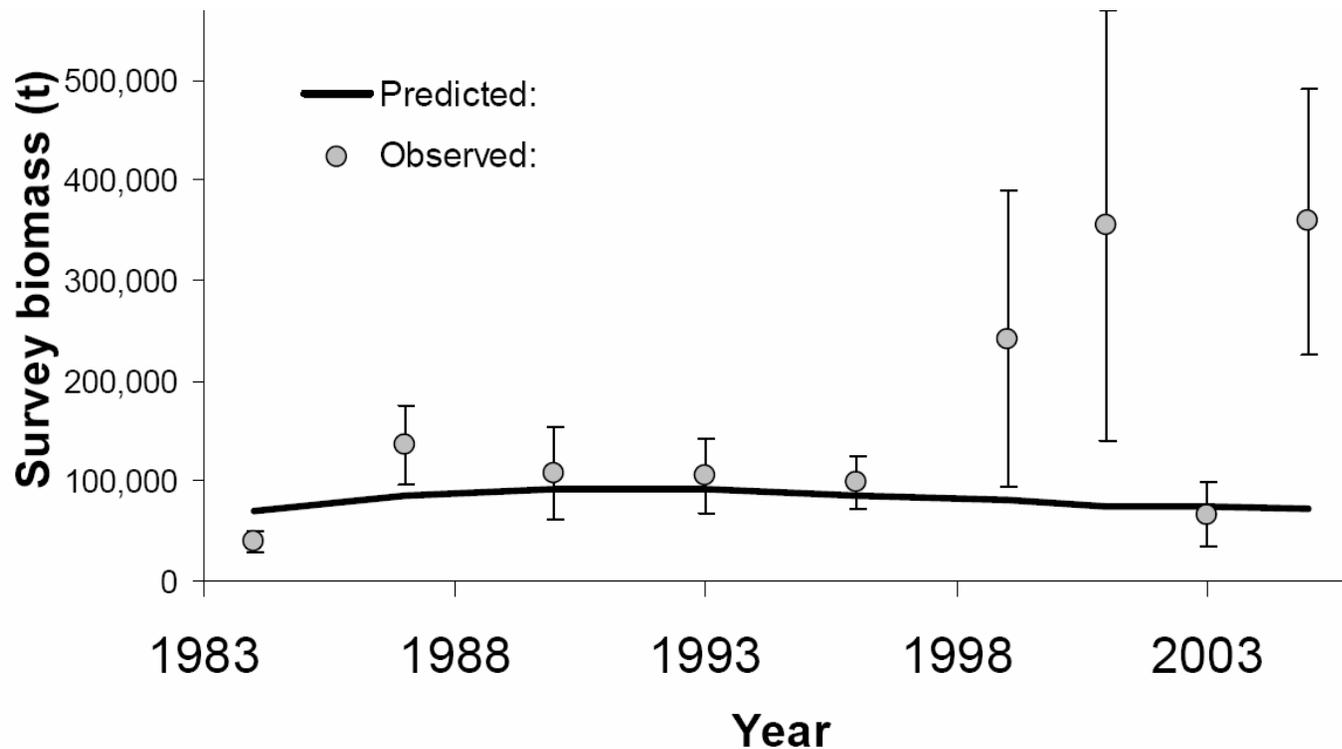


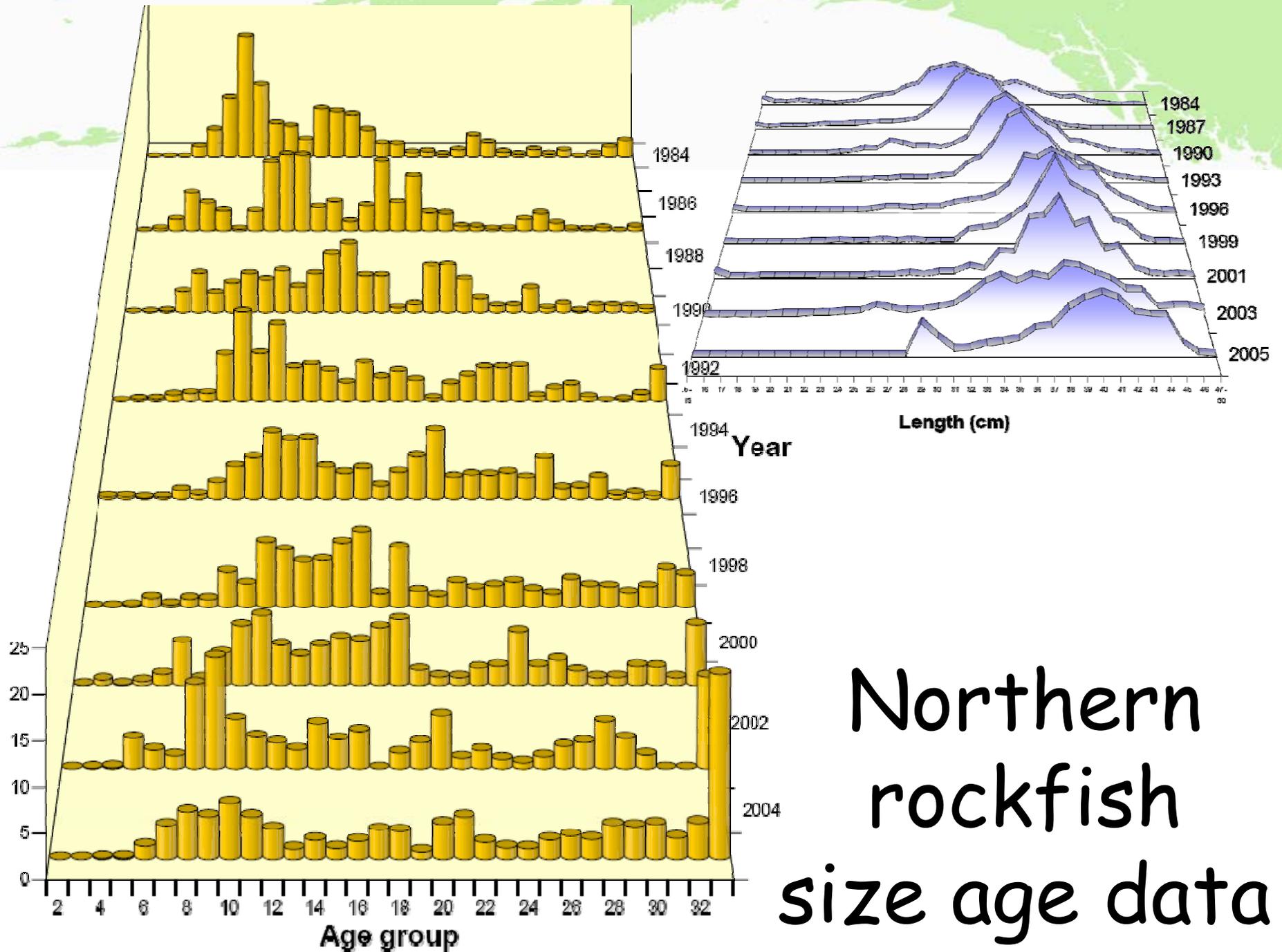
# POP Biomass



# Northern rockfish

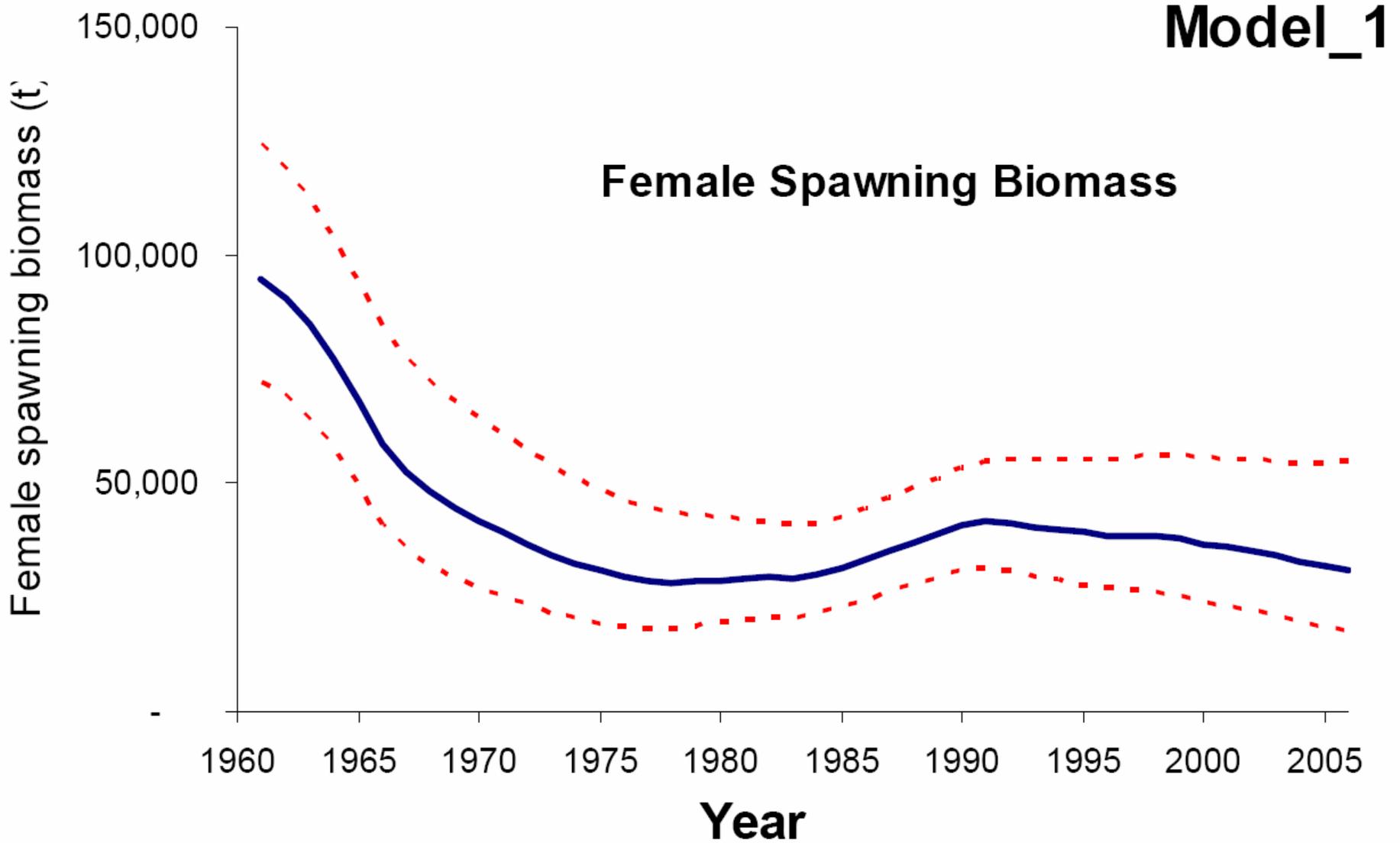
- Model revised based on workshop and CIE
- Female spawning biomass stable at 36,000 t
- Above  $B_{40\%}$



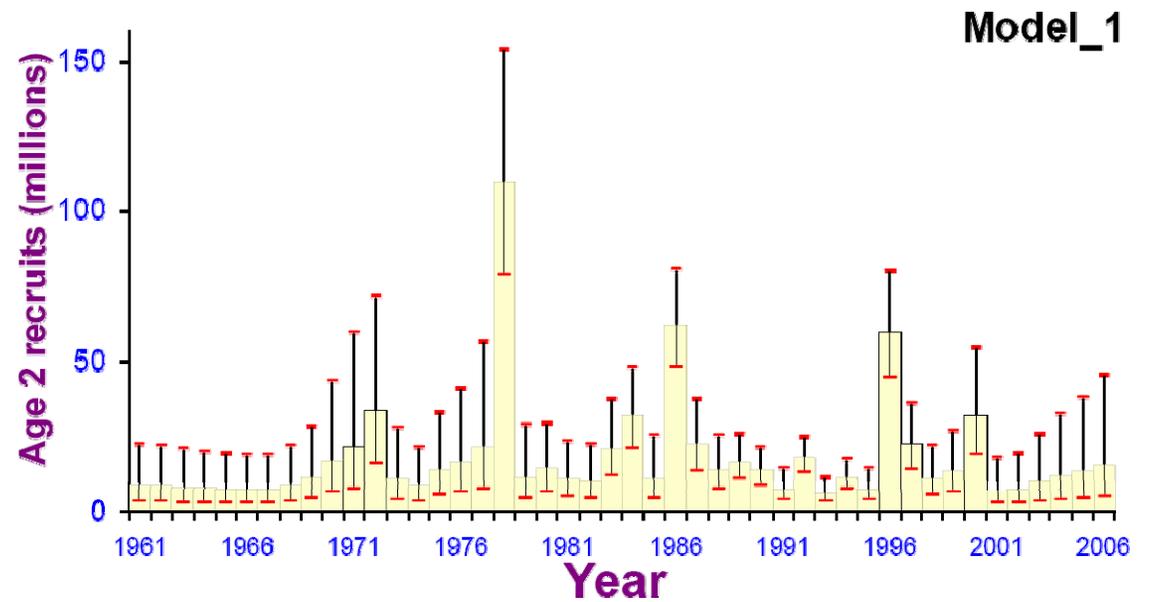
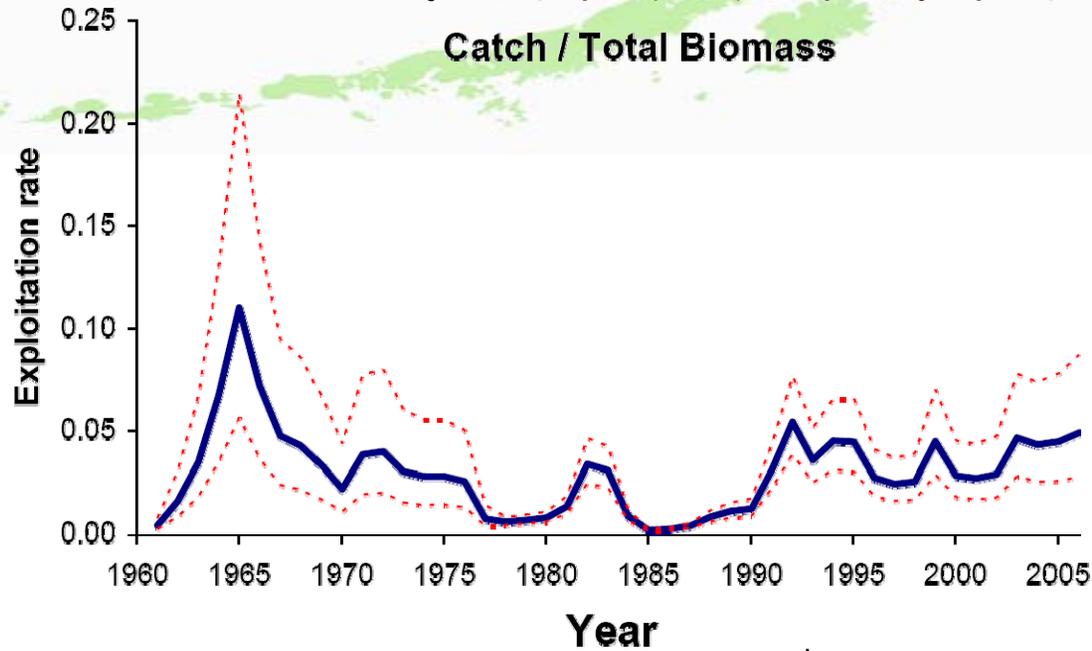


Northern  
rockfish  
size age data

# Northern rockfish spawning biomass



# Northern rockfish



# Rougheye rockfish

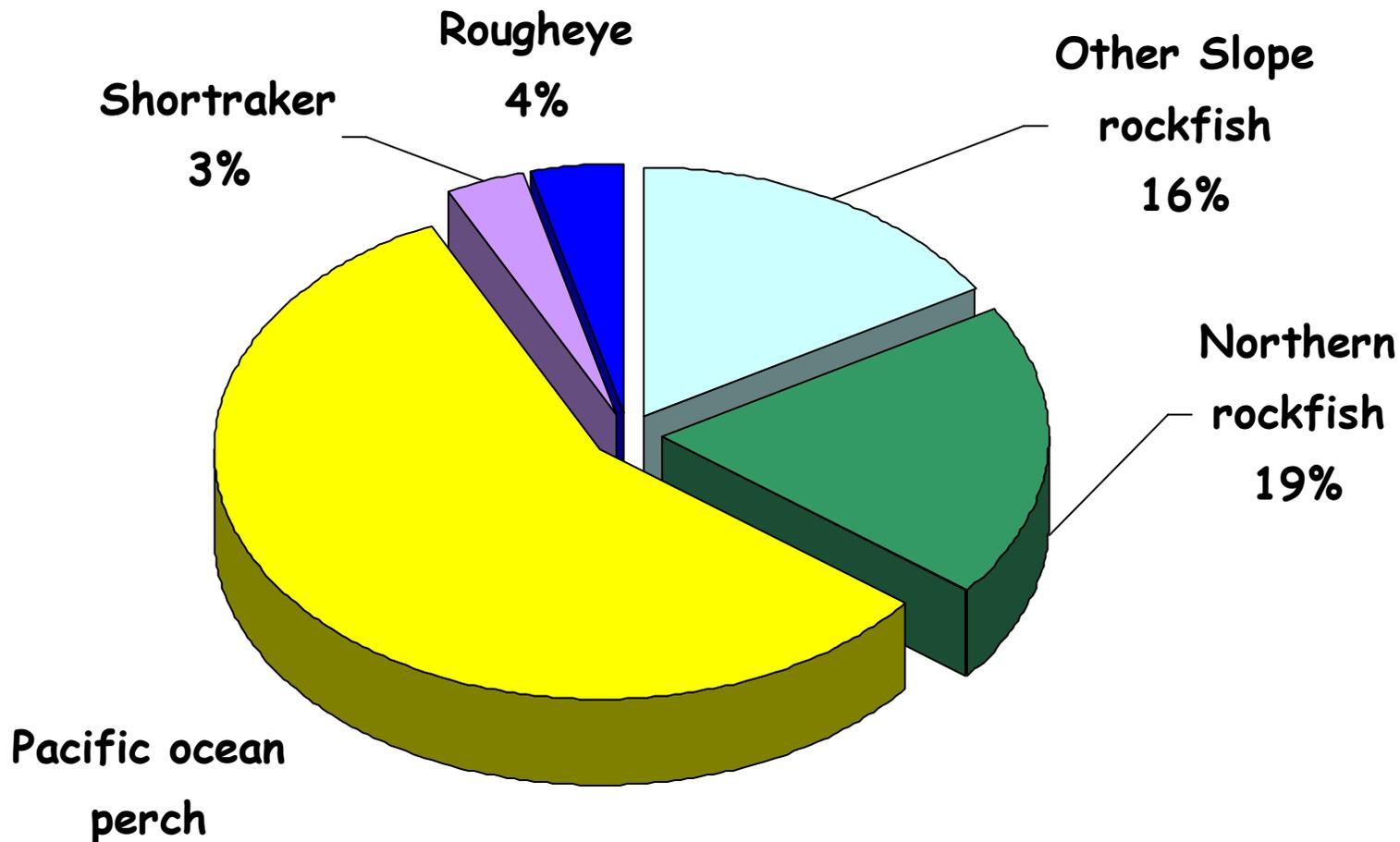
**Split from Shortraker for management**

**Two reports presented:**

- a) Sensitivity to trawl and longline survey indices
- b) Two species of rougheye rockfish...



# Slope Rockfish 2007 ABC's 25,600 tons total



# Pelagic Shelf rockfish

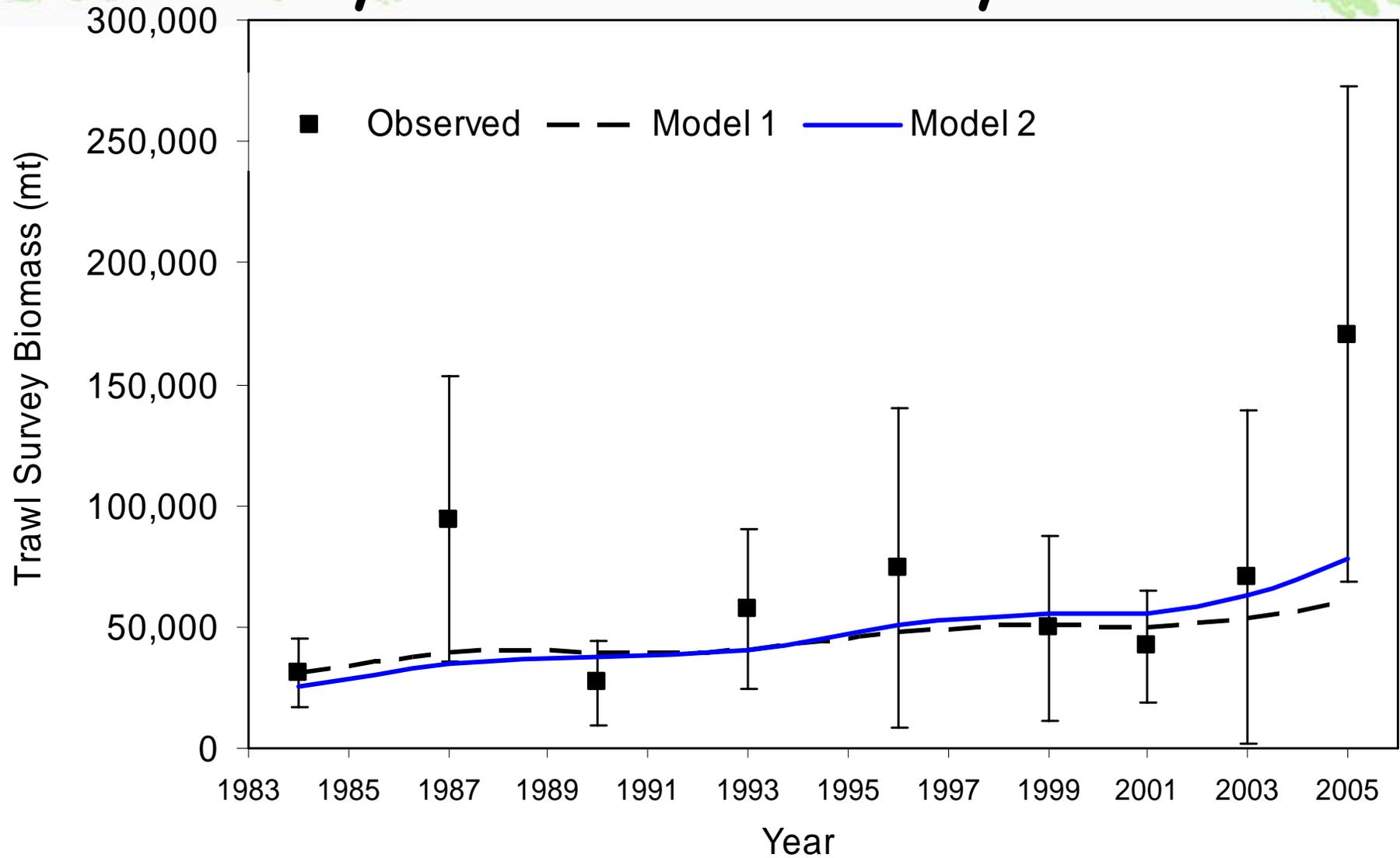


## Management tiers combined for aggregate ABC

- ♦ Dusky: tier 3a, based on age-structured model
- ♦ Dark, widow, yellowtail: Tier 5

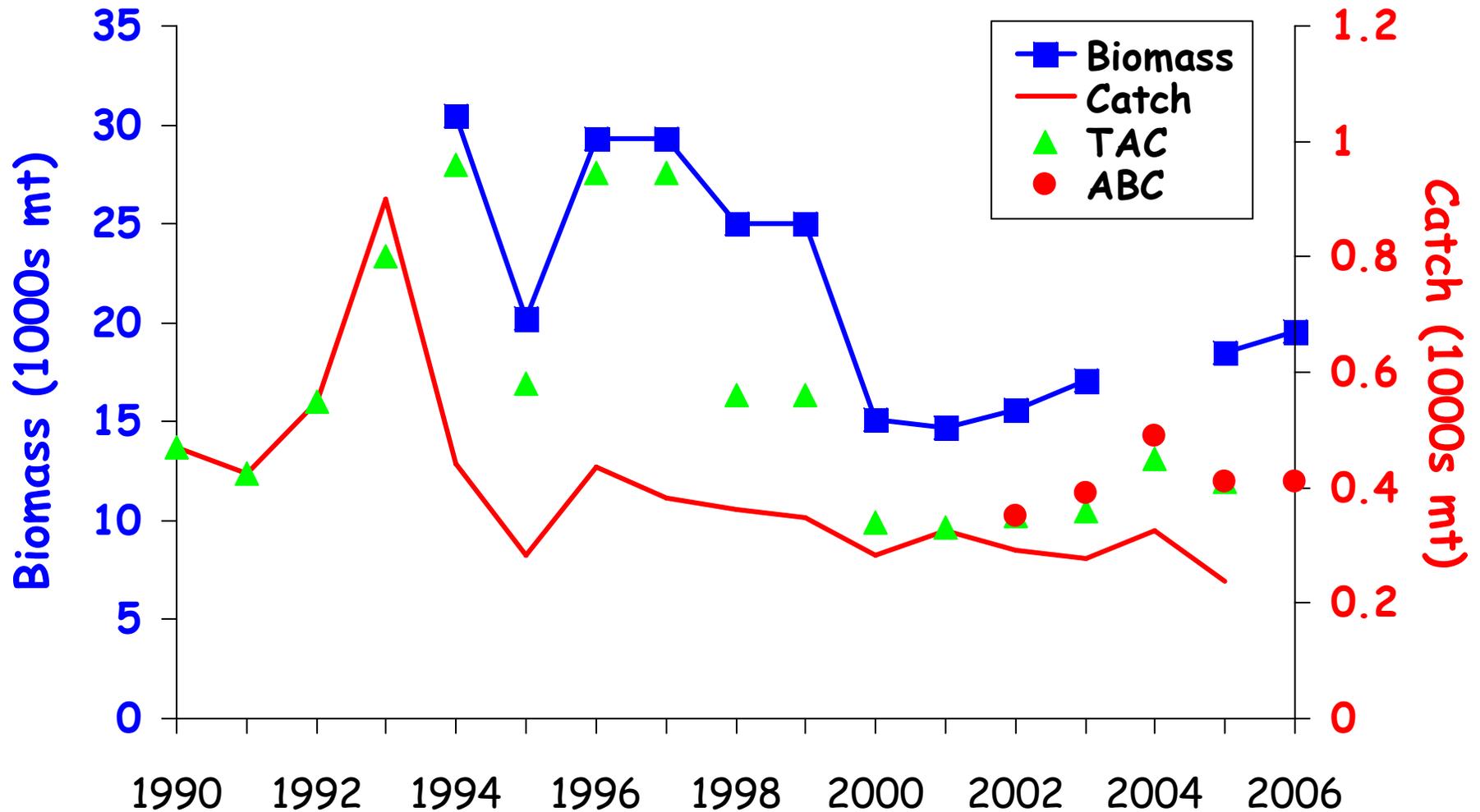


# Pelagic shelf: Dusky rockfish survey trend



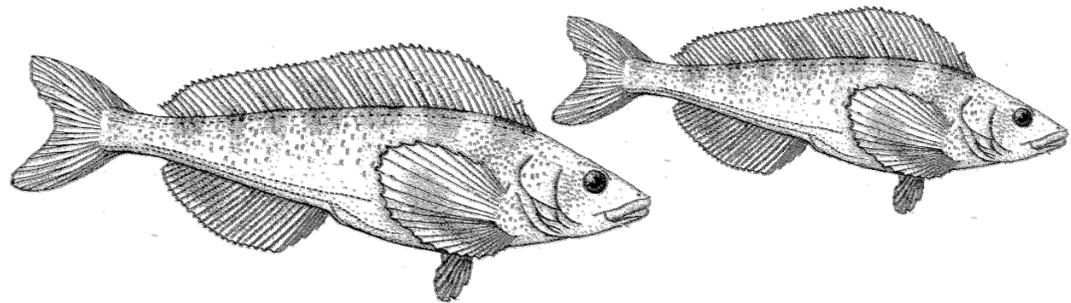


# Demersal shelf rockfish



# Atka mackerel

- **Executive summary only**
- **Confirmation that 1999 year class strong in GOA**
- **TAC set to meet incidental catch levels**



# Skates

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

## Rough relative biomass estimates (in GOA)

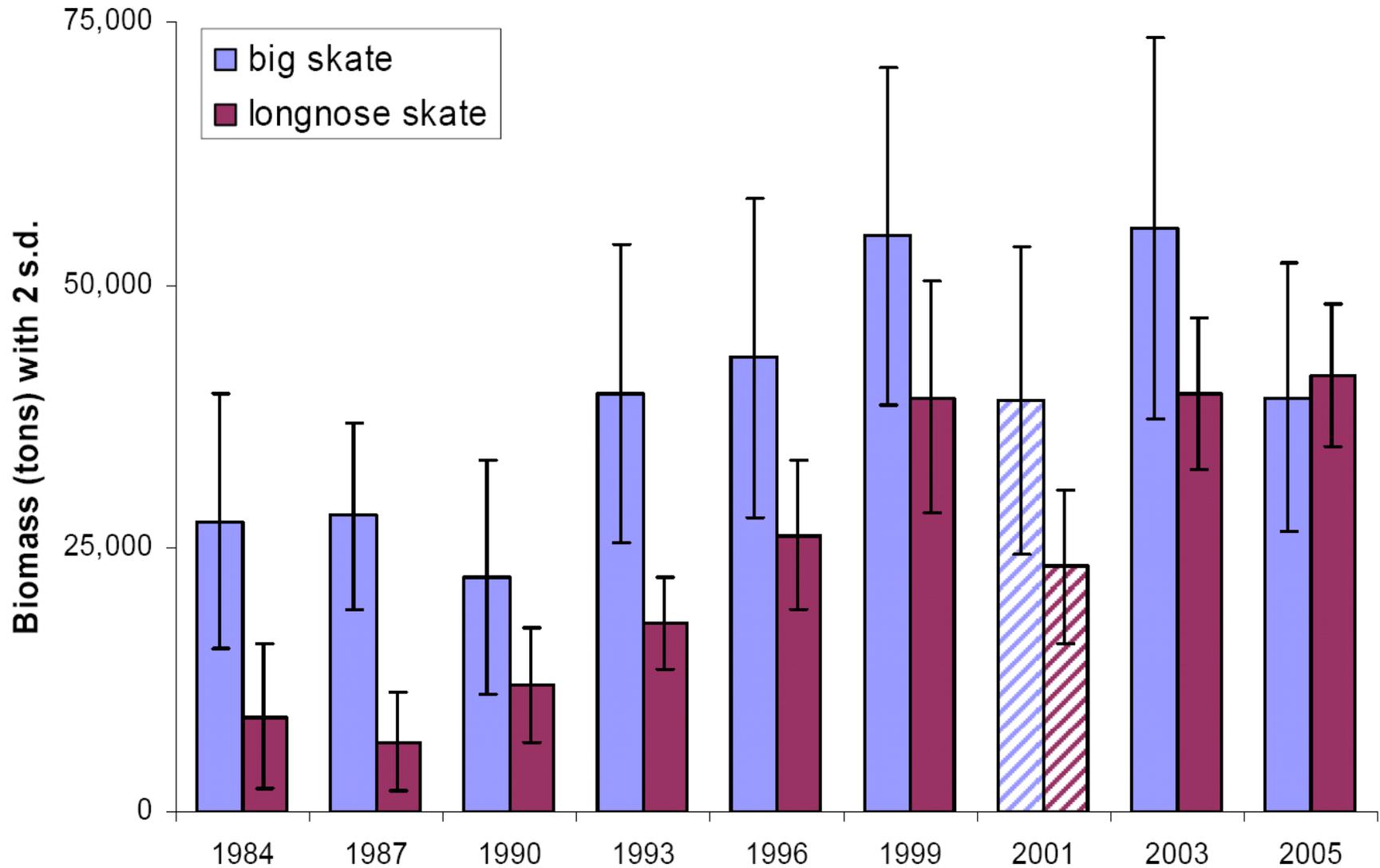
Big skate ~50%,

longnose about 32%,

~18% to *Bathyraja spp.*



# Survey biomass estimates



# Other species

## **Preliminary assessments included as appendices**

- ♦ SSC reviewed in Feb 2006
- ♦ Include: Squid, sharks, sculpins, octopus, and grenadiers
- ♦ Team recommended ABCs and OFLs for amendment analysis

## **Evaluated alternative Tier 6 calculations**

Historical catch period representative of incidental catch only

$TAC < ABC$  for limited retention and encouragement of EFP

Linked to OFL explicitly

# Other discussions

- **Concerns over budget outlook for surveys**
  - ♦ Particularly for deeper species
- **Review process**
  - ♦ *General issue:* Is status quo adequate?
  - ♦ *External reviews:* Improved process is needed