

**NOAA**  
**FISHERIES**

# Alaska Fisheries Science Center

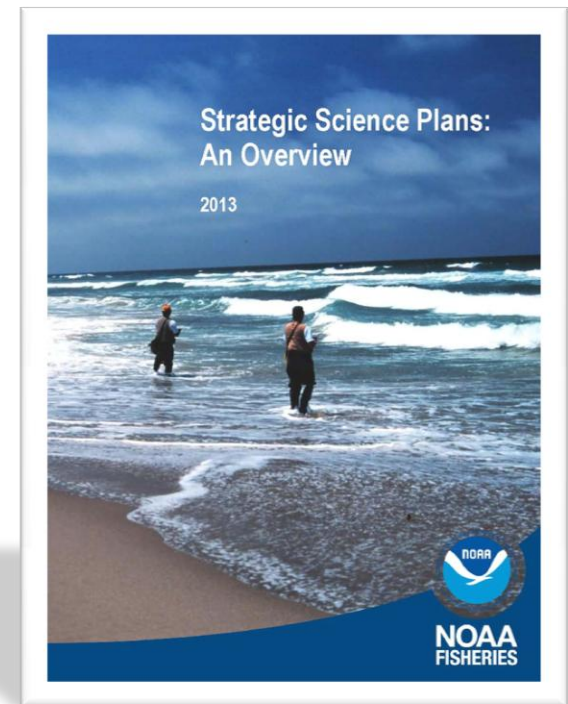
## Activities and Future Priorities

Doug DeMaster, AFSC Science and  
Research Director

February 2014

# AFSC's Strategic Science Planning: A Model for the Nation

- The “science side” of NOAA Fisheries has adopted the AFSC’s model of the Science Plan and Implementation Process to set research and funding priorities
- Each Science Center and the Office of Science and Technology now have Strategic Science Plans
- National overview document summarizing all



# AFSC Director's Guidance for FY14



- Emphasized two core research foci:
  - Support assessments required for the current NPFMC tiers for fish, crab, and marine mammal stocks
  - Provide information to the NPFMC and AKR to for management decisions, to support quota monitoring, and for legal and regulatory analyses

# AFSC Director's Guidance for FY14

Identified seven funding priorities:

- 1. Continued success with implementing the full-coverage and partial –coverage observer programs**
- 2. Funding for use of NOAA ship time and of pre-paid charter time**
- 3. Sustained stock assessments of groundfish, shellfish and protected species**
4. Research on Cook Inlet beluga whales
- 5. Research on the western population of Steller sea lions**
6. Arctic research on marine mammals, fish, and habitat including the Bering-Aleutian Salmon International Survey (BASIS) and AFSC commitments to the Arctic Ecosystem Integrated Survey (Arctic Eis)
7. Fulfilling commitments to the Bureau of Ocean Energy Management and the Gulf of Alaska Project research program funded by the North Pacific Research Board

# NOAA Fisheries Science Program Reviews

- A systematic peer review process at all Science Centers and the Office of Science and Technology
- 2013 review was on Fishery Stock Assessment Data Collection and Management
  - Report and AFSC response are posted online
- 2014 review is for Fishery Stock Assessment Science
  - March 24-28 at the AFSC in Seattle
  - Terms of reference are available online
  - Public involvement is encouraged

# Cooperative Research in FY13



- Sablefish Longline Survey (with *F/V Ocean Prowler*) and Logbook Program
- Reducing salmon and halibut bycatch in the pollock fishery; reducing trawl impacts by lessening seafloor contact (with *F/V Great Pacific*)
- Crab growth, distribution, mortality, and selectivity with Bering Sea Fisheries Research Foundation
- Selectivity of Eastern Bering Sea trawl gear for Pacific cod (with *F/Vs Alaska Knight and Aldebaran*)
- Socio-economic indices identifying coastal fishing community vulnerabilities
- Electronic monitoring of catch quantity and composition of halibut and sablefish fisheries
- Continuing support for faculty positions at the University of Washington to increase quantitative ecology and socioeconomics training

# Cooperative Research Plans for FY14

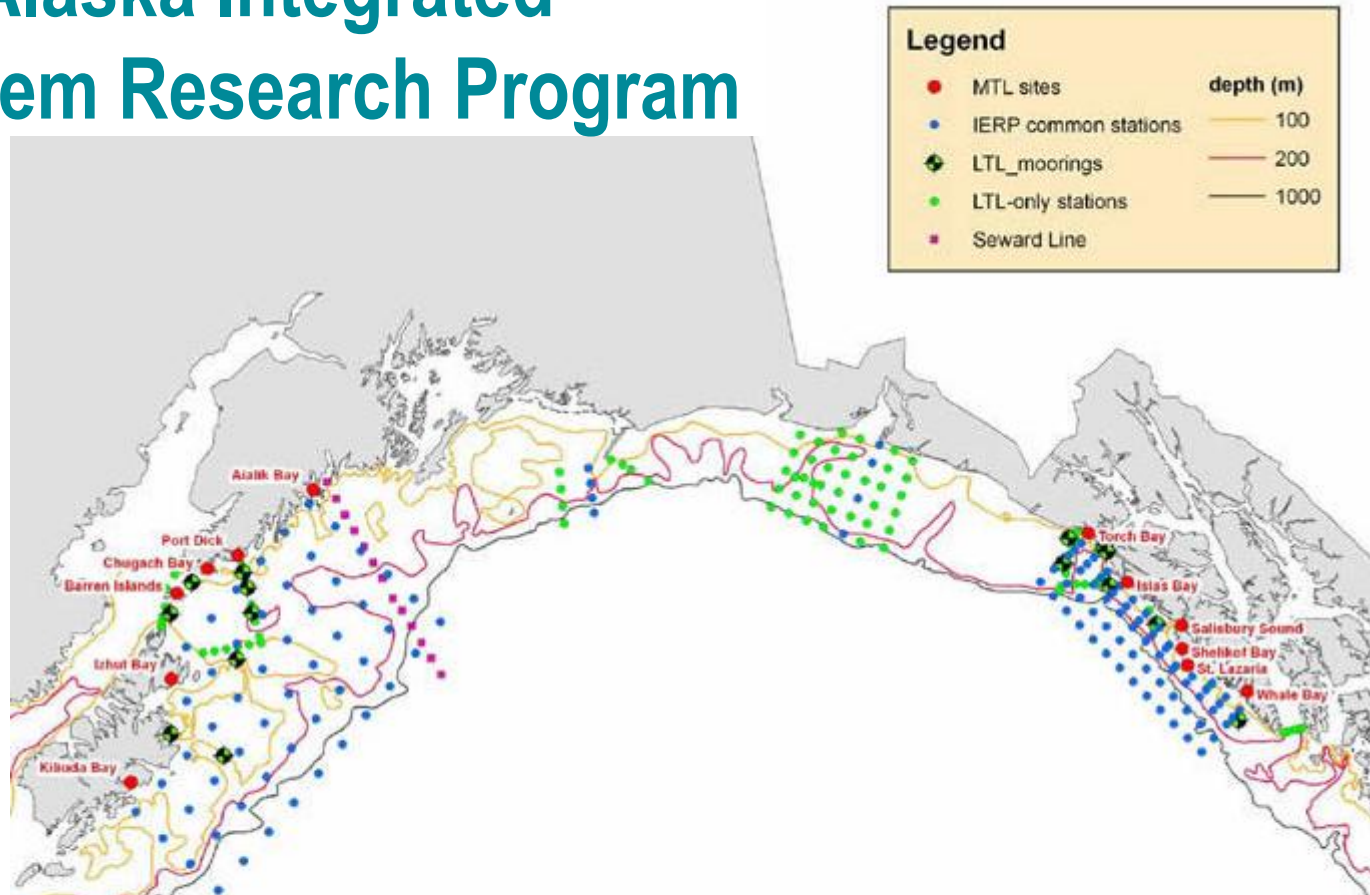


AFSC had the following proposals funded through the National Cooperative Research Program's competitive process:

- *Ground truth the presence and abundance of coral habitat on the eastern Bering Sea slope both inside and outside canyon areas*
- *Evaluation of a bottom-moored echosounder array to provide a survey-comparable index of abundance*

AFSC will announce internally-funded cooperative research projects when FY14 funding amounts are final

# Gulf of Alaska Integrated Ecosystem Research Program

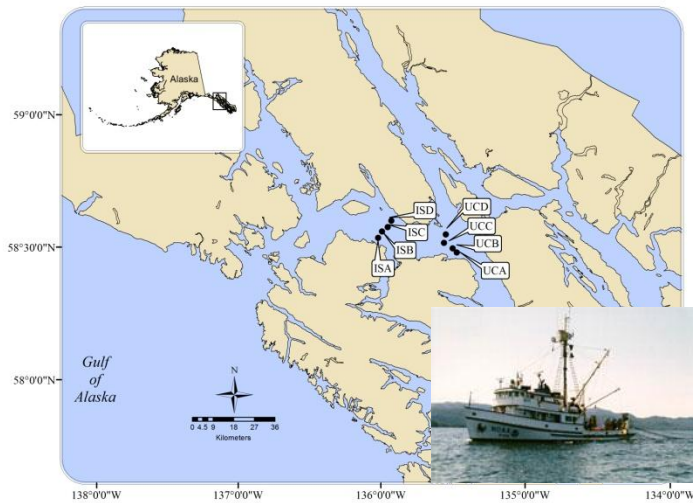


- AFSC leads biological research and collaborates on physical oceanography and modeling work to expand our understanding of the GOA ecosystem, trophic relationships among key species, and recruitment processes of commercially and ecologically important species
- First full field season was completed in 2011 and the second in 2013



# Linking Salmon Ecosystem Indicators to Sablefish Recruitment

Shared rearing habitat for juvenile salmon and age-0 and age-1 sablefish



**Indicators: age-0 sablefish stage**

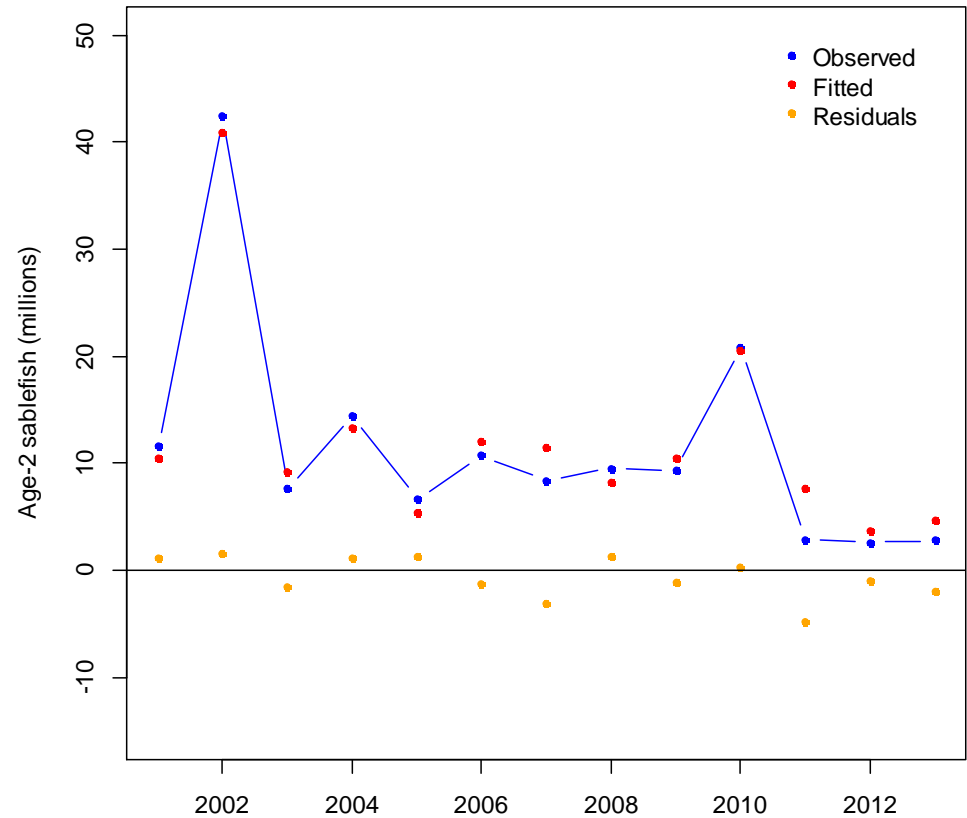
August chlorophyll a (+)

August sea temperature (+)

Juvenile pink salmon abundance (+)

2<sup>nd</sup> order autoregressive (+)

## Modeling age-2 sablefish abundance



Note: age-2 sablefish abundance as a function of chlorophyll a and sea temperature.



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Yasumiishi, Shotwell, Hanselman, Orsi, Fergusson. In prep

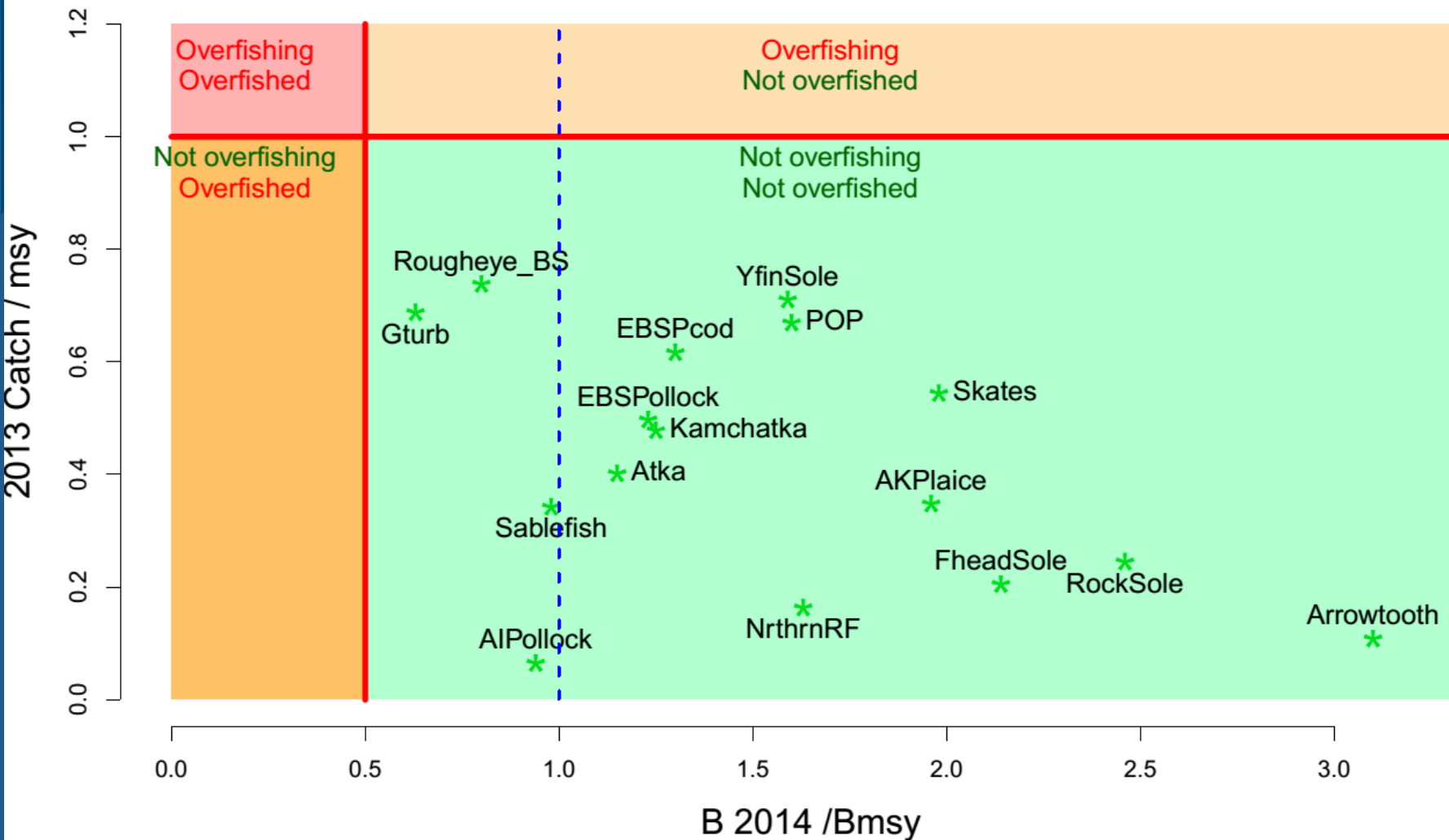


# Observer Program in FY13

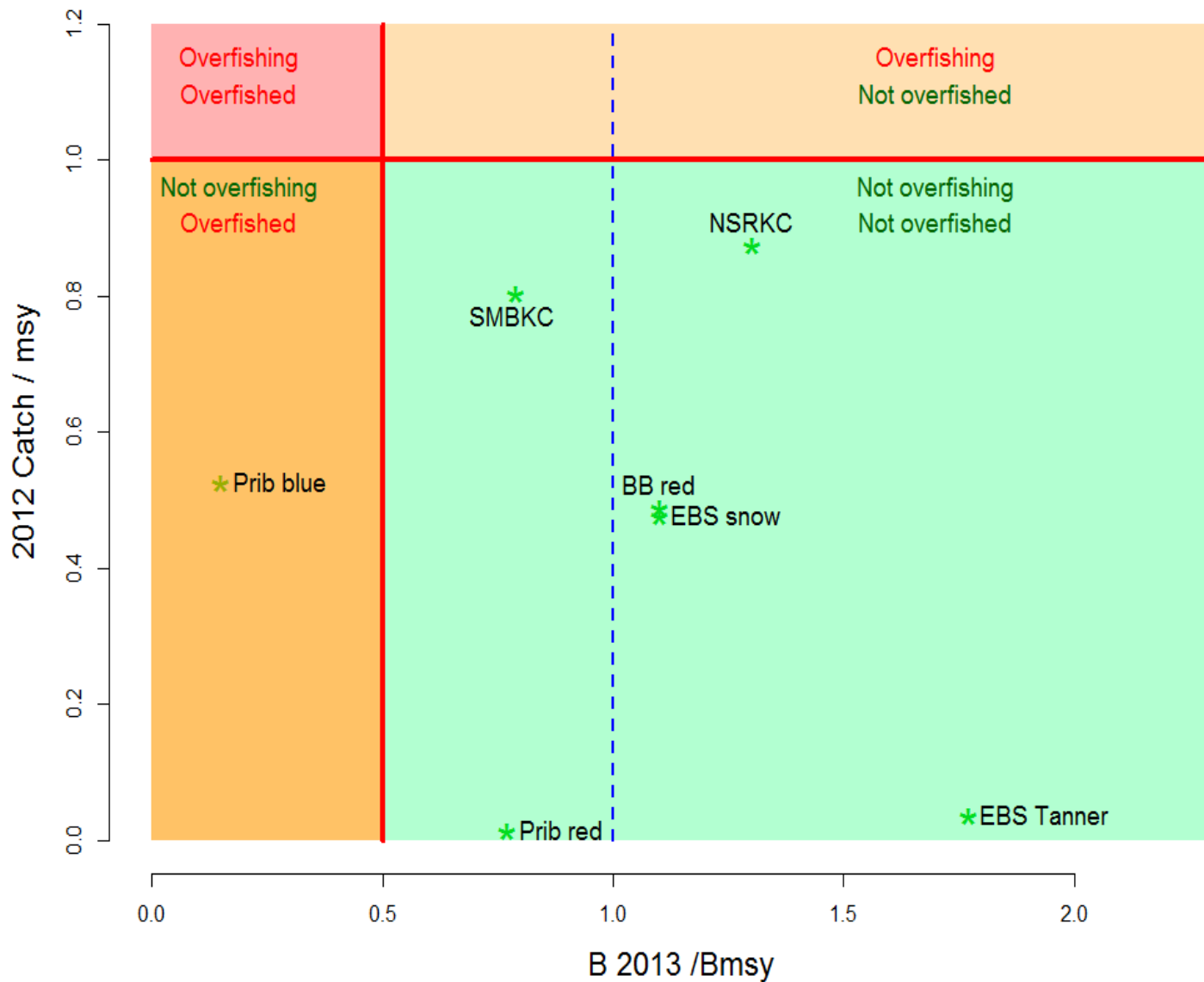
- Deployed first observers in the partial-coverage program (the “restructured” observer program)
- Engaged with the NPFMC, the OAC sub-committee, the AKR, and fishing industry on improvements to the Annual Deployment Plan
- Dedicated resources toward development of electronic monitoring tools for use in Alaskan fisheries management
- The observer programs totaled 43,643 observer days on vessels and at shoreside processing plants in 2013
- 2014 Observer Sampling Manual has been updated to reflect data collection changes in the partial-coverage program

# Bering Sea and Aleutian Islands

## Bering Sea and Aleutian Islands

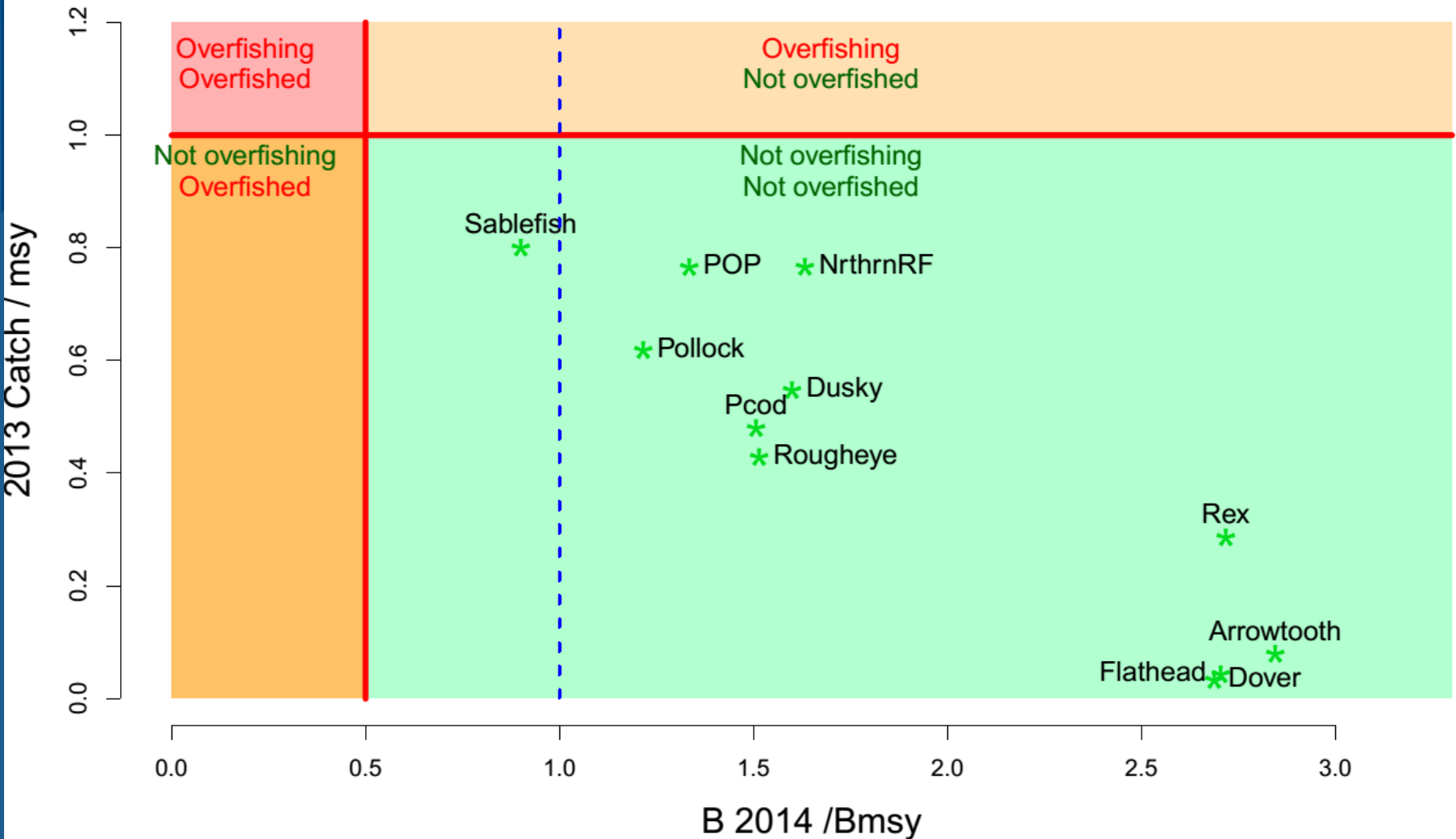


# Bering Sea Crab



# Gulf of Alaska

## Gulf of Alaska



# 2014 Planned Fishery Survey Effort for the Gulf of Alaska

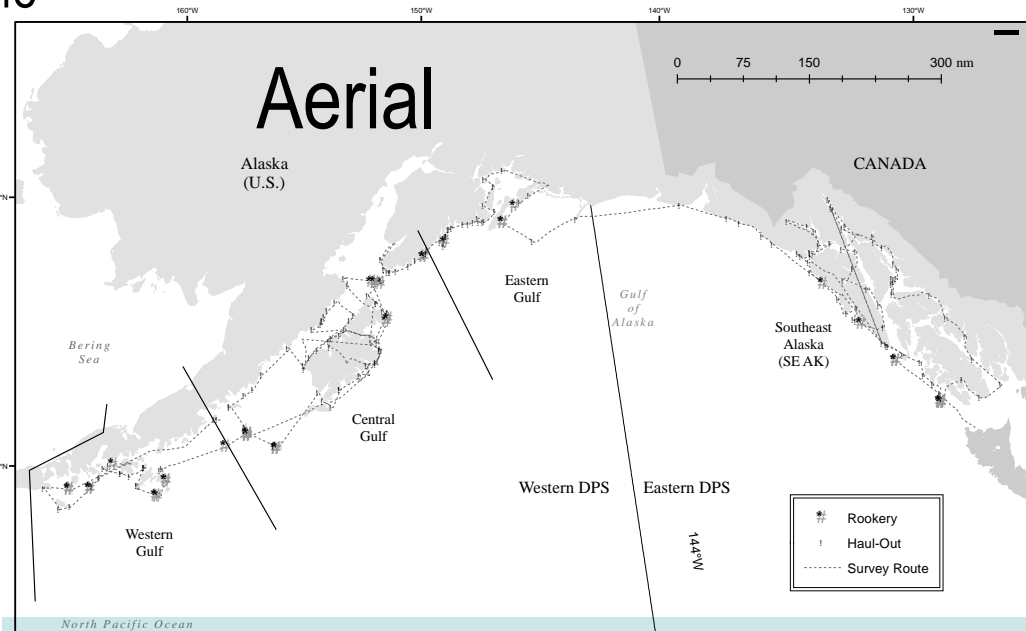
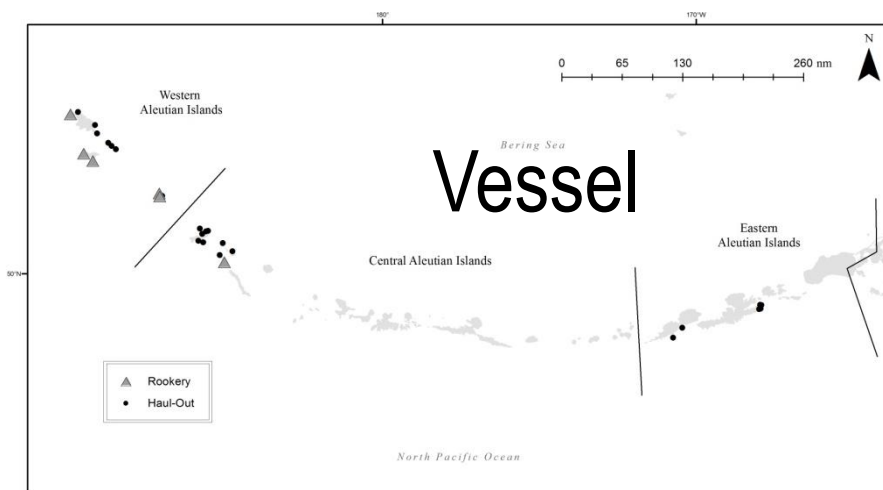
- Winter Shelikof Strait, Shumagin Islands, and Bogoslof Islands echo-integration trawl (EIT) surveys of walleye pollock
- Late larval recruitment processes survey
- Fall juvenile pollock survey
- Longline survey in the GOA and Eastern Bering Sea/Aleutian Islands for sablefish, Greenland turbot, giant grenadier, and rougheye, shortraker, and thornyhead rockfish

# 2014 Planned Fishery Survey Effort for the Bering Sea

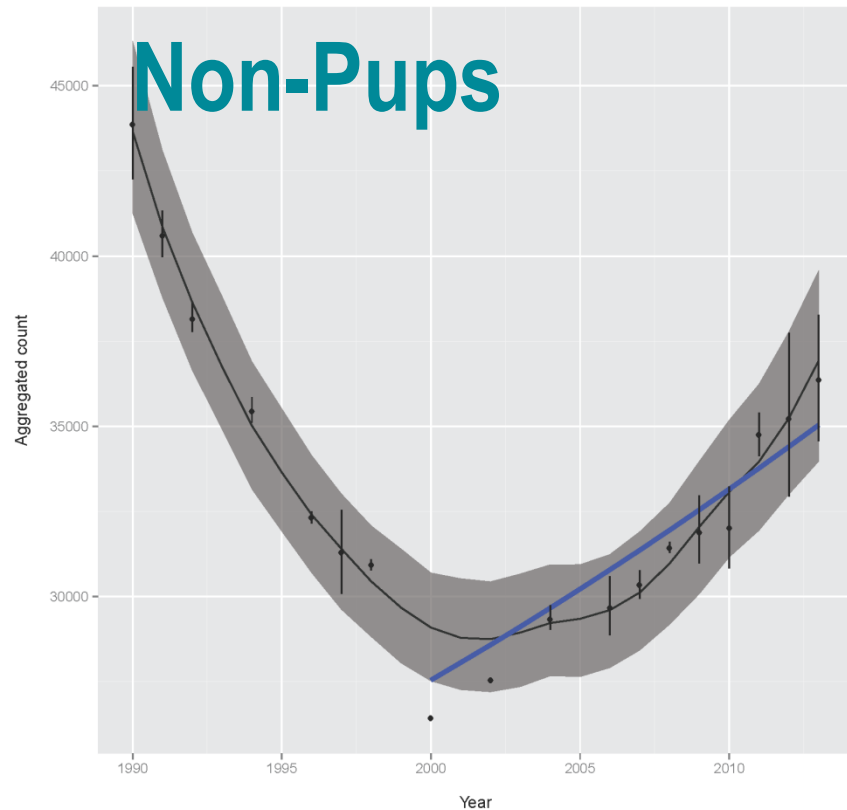
- Eastern Bering Sea EIT survey of walleye pollock
- Annual bottom trawl survey of eastern Bering Sea continental shelf crab and groundfish stocks
- Biennial Aleutians Islands trawl survey of crab and groundfish stocks
- Biennial bottom trawl survey of eastern Bering Sea continental slope crab and groundfish stocks
- Spring recruitment processes ichthyoplankton survey in southeastern Bering Sea
- Bering Arctic Subarctic Integrated Survey (BASIS)

# NMFS Steller Sea Lion Surveys, 2013

- Aerial survey in Alaska from SE Alaska through False Pass
  - Eastern Stock – SE Alaska
  - Western Stock – Eastern, Central and Western Gulf of Alaska
- Vessel survey at selected sites in the Aleutian Islands
- Complete Eastern Stock survey from SE Alaska through California with collaborators
  - SE Alaska – NMFS/AFSC/NMML
  - British Columbia - Fisheries and Oceans Canada
  - Washington – WA Dept of Fish & Wildlife
  - Oregon – OR Dept Fish & Wildlife
  - California – NMFS/SWFSC



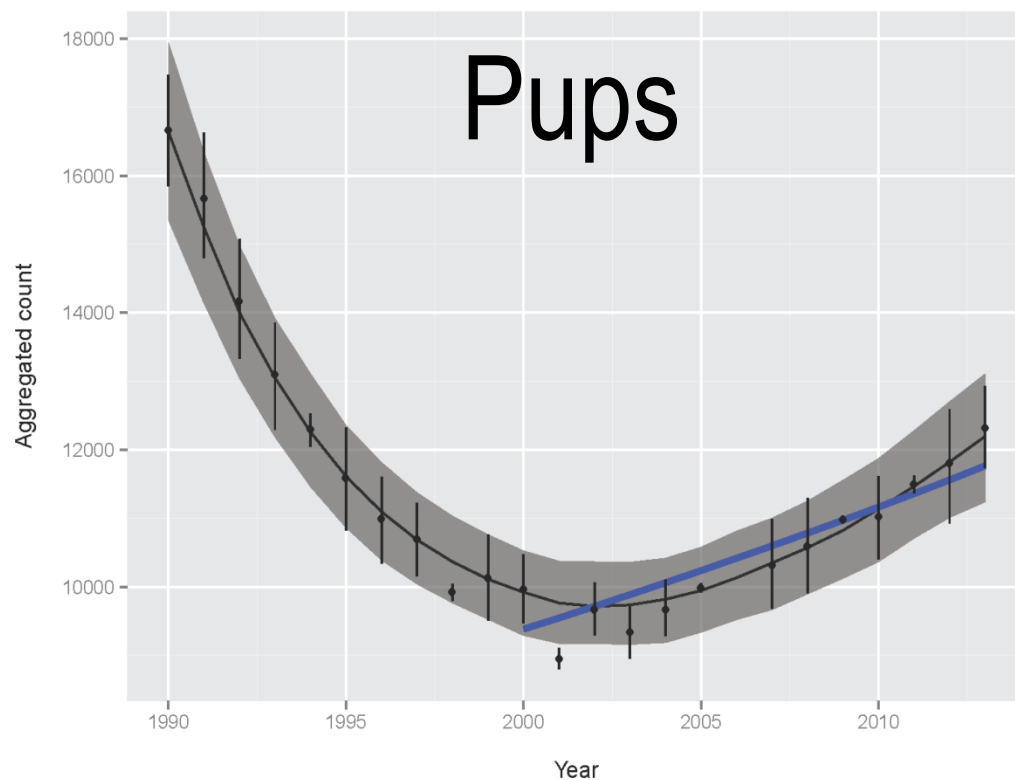




# Western Steller Sea Lions in Alaska

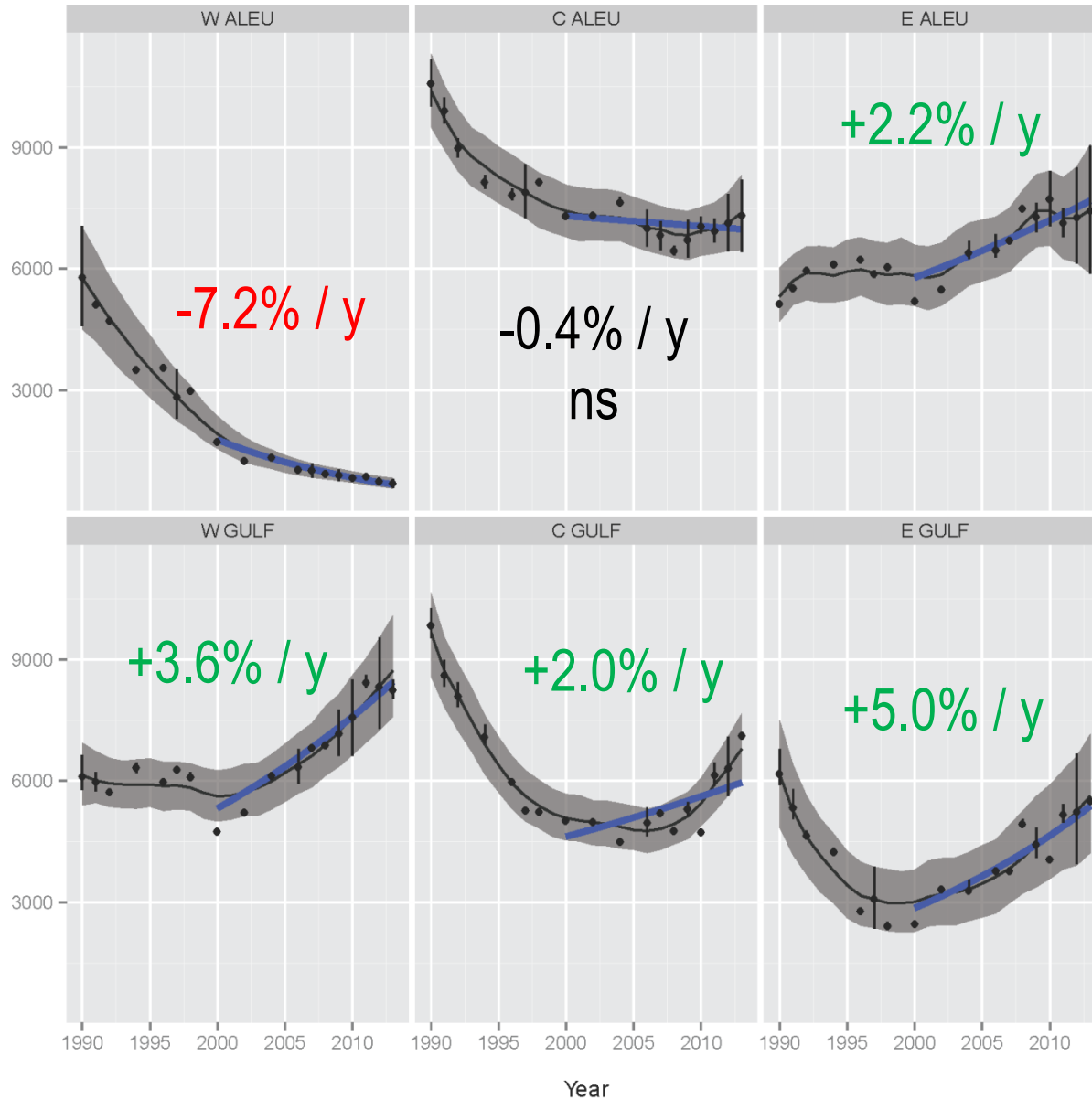
## 2000-13 Trends

- Non-pups: +1.87% per yr (1.25-2.50)
- Pups +1.75% per yr (1.07-2.40)



# Western Steller Sea Lions in AK by Region

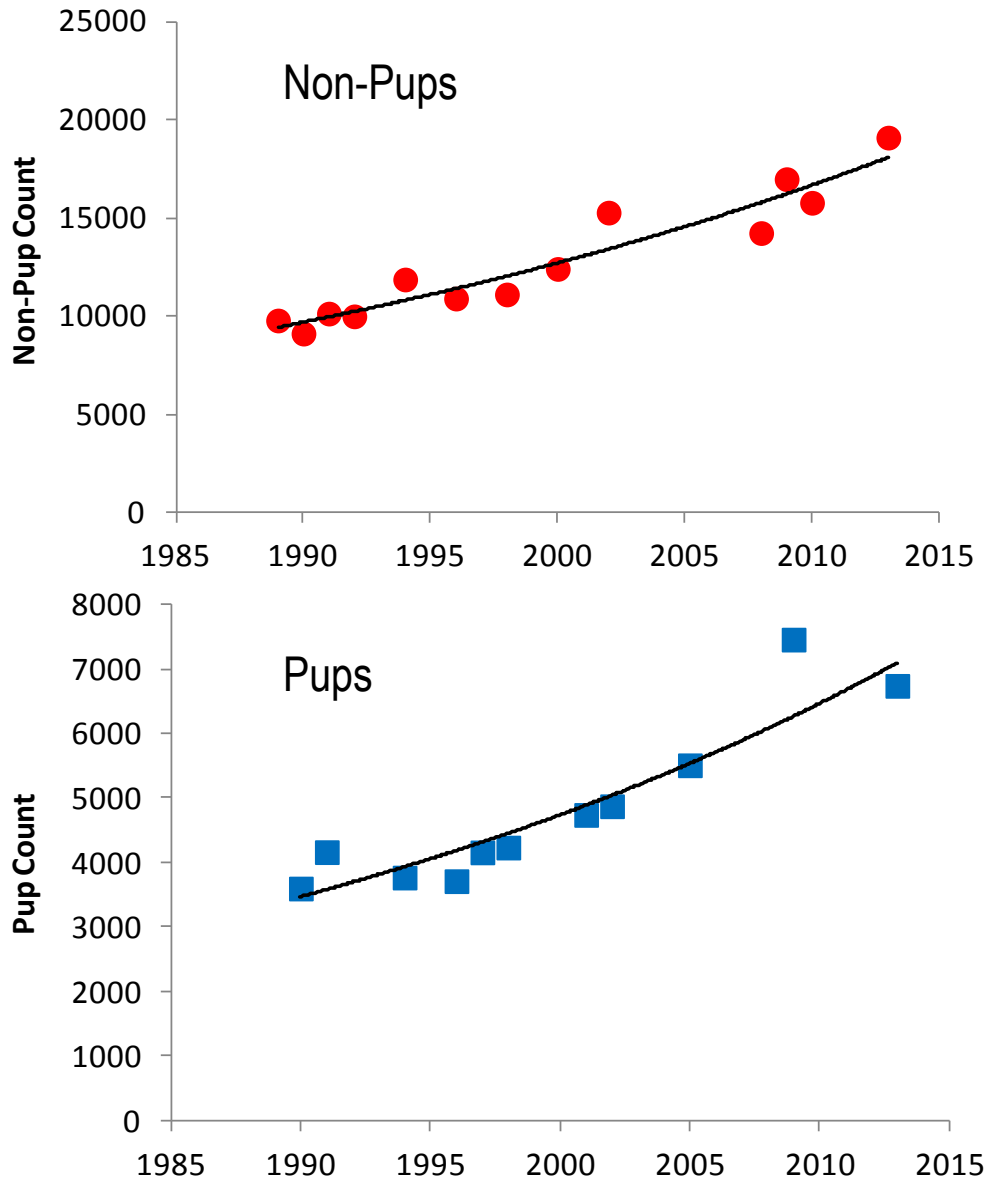
wDPS Region



## Non-Pups

- 2000-2013
- Continued significant decline in W Aleutians
- Non-significant decline in C Aleutians
- Significant increases all regions east of Samalga Pass

# Eastern Steller Sea Lions in AK



- Southeast AK only
- 2013 Non-pup count was largest ever
- 2013 Pup counts
  - Lower than 2009 at southern 'mature' rookeries (Hazy and Forrester)
  - Greater than 2009 at northern, younger rookeries (Biali, White Sisters, Graves Rock)

# Posters Featuring AFSC Research

Seasonal Habitat Use and Productivity of Commercially Important Rockfish in the Gulf of Alaska (*Knoth et al.*)

Long-term Surveillance of Steller Sea Lion Rookeries with Time-Lapse Cameras in Russia and Alaska (*Burkanov et al.*)

Local Abundance and Movement of Atka Mackerel and Other Steller Sea Lion Prey in the Aleutian Islands (*McDermott et al.*)

Climate Change Impacts on Predator-Prey Dynamics in the Bering Sea (*Holsman and Aydin*)

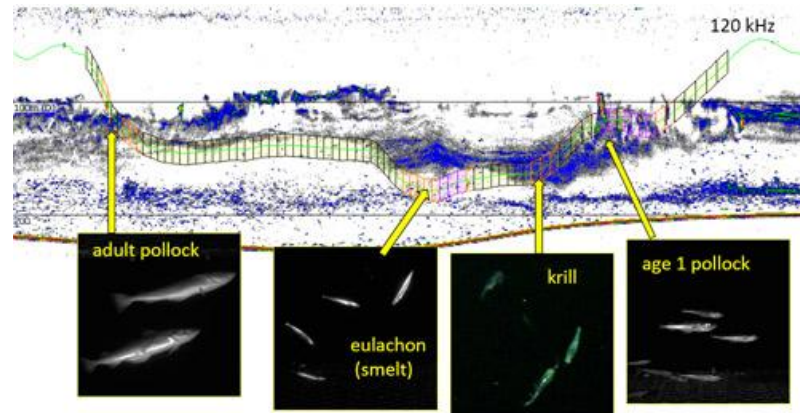
FishSET: Spatial Economics Toolbox for Fisheries (*Haynie*)

Foraging and Prey Differences Between Populations of Bigg's Killer Whales (Mammal-eating "Transients") in Western and Eastern Aleutian Islands (*Wade et al.*)

Long-term Monitoring of Demersal Macrofauna in Alaskan Arctic Seas Using Bottom Trawls: a Comparison Study (*Lauth and Norcross*)



# Electronic Monitoring and Cam-Trawl



- Evening session Thursday (February 6) after Council
- Cam-Trawl, with Stereo-Camera system, will be on display





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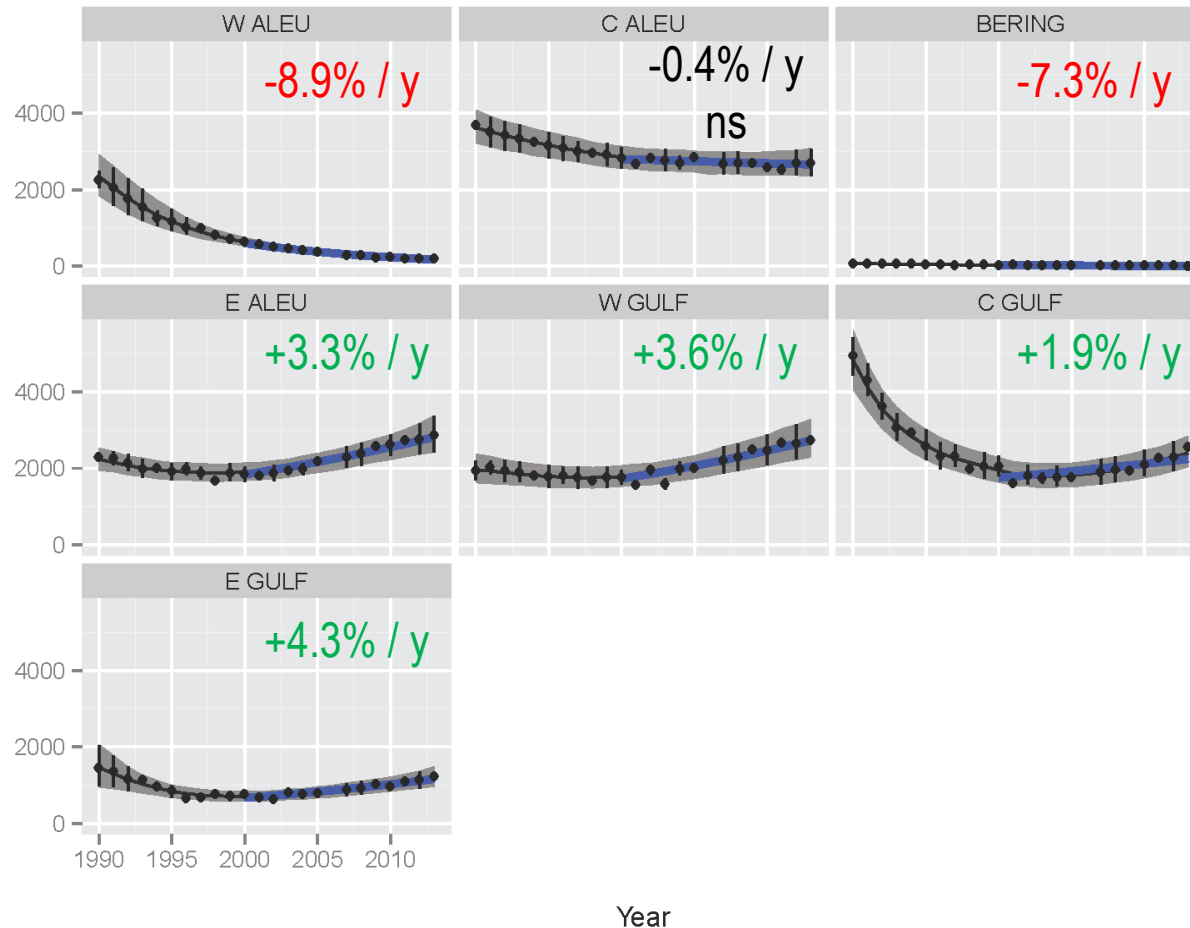
**Questions?**

# Western Steller Sea Lions in AK by Region

wDPS Region

## Pups

- 2000-2013
- Continued significant decline in W Aleutians and Bering Sea (Walrus)
- Non-significant decline in C Aleutians
- Significant increases all regions east of Samalga Pass



# Conn et al. 2014: Power analysis

.... “Our analysis revealed that even under idealized study conditions (independent populations, annual sampling, a single prey species, and an unbiased fish index), that many combinations of dependent and independent variables resulted in poor power or misleading results. For example, analyses that used fishing metrics (catch, effort) as independent variables often led to insignificant or positive regression coefficients. Analyses using adult survey counts as the dependent variable also performed poorly. ...

Conn et al. 2014. Use and misuse of fishery and survey data to detect prey removal effects on Steller sea lions (*Eumetopias jubatus*)



# Steller Sea Lion Non-Pup Rates of Change: 2000-2013

<b>Region</b>	<b>Rate (%)</b>	<b>LCI</b>	<b>UCI</b>
E/C Gulf combined	3.23	2.00	4.50
Western Gulf of Alaska	3.60	2.36	4.98
Eastern Aleutian Is.	2.24	0.66	3.76
East of Samalga Pass	3.06	2.26	3.82
<b>Central Aleutian Is.</b>	<b>-0.36</b>	<b>-1.34</b>	<b>0.63</b>
Western Aleutian Is.	-7.20	-9.14	-5.51
W of Samalga Pass	-1.33	-2.19	-0.40
Western DPS in AK	1.87	1.25	2.50