

AFSC LONGLINE SURVEY





NOAA
FISHERIES

Alaska
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Science Center

Is the AFSC longline survey a useful index of abundance for BS or AI cod?

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NOAA FISHERIES

Alaska Fisheries
Science Center

Auke Bay Labs

Survey overview

1. General survey methods
2. Survey areas covered
3. Area-specific details
4. Closing thoughts



NOAA FISHERIES

- Sablefish primary index
- More recently:
 - Rougheyeye/blackspotted
 - Greenland turbot
- New features
 - New area sizes
 - New variance estimates

Why now?



Another idiot

Japan – US cooperative 1979-1994



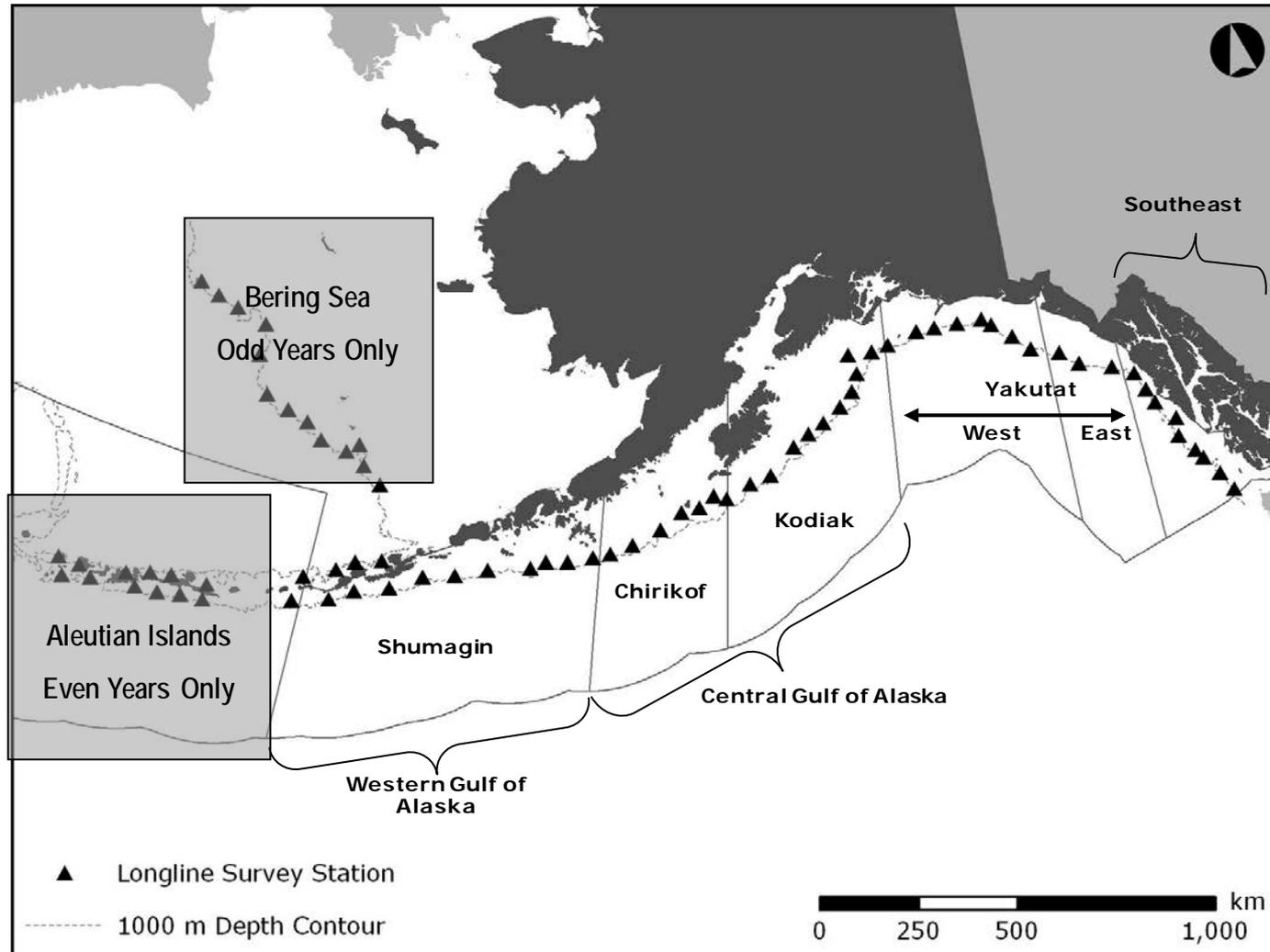
US Domestic LL Survey, 1987 - Present

F/V Alaskan Leader
150 feet



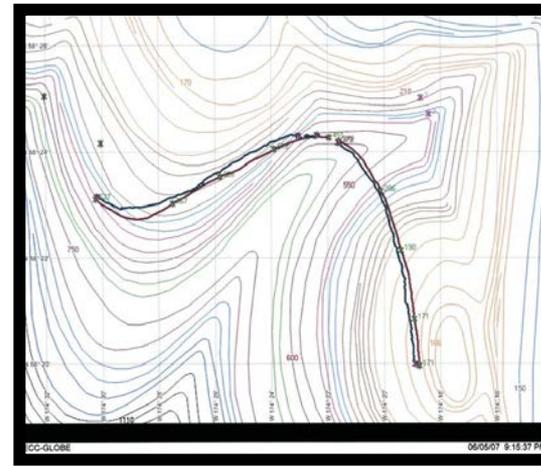
F/V Ocean Prowler
150 feet

Domestic survey coverage



Survey design

- Systematic Design
- Stations based on Japan/US cooperative survey



- 30-60 km apart
- Shelf break to slope ~125 m to 1000 m

Gear Configuration

One Skate of Gear

- 45 Hooks baited with squid
- 100 meters in length
- 2 meter hook spacing
- 7lb lead ball at each end

One Longline Set

- 80 skates (90 in BS)
- buoy, flag, anchor at each end
- 1 station = 2 sets end to end
- **1 station = 7200 hooks 16 km**



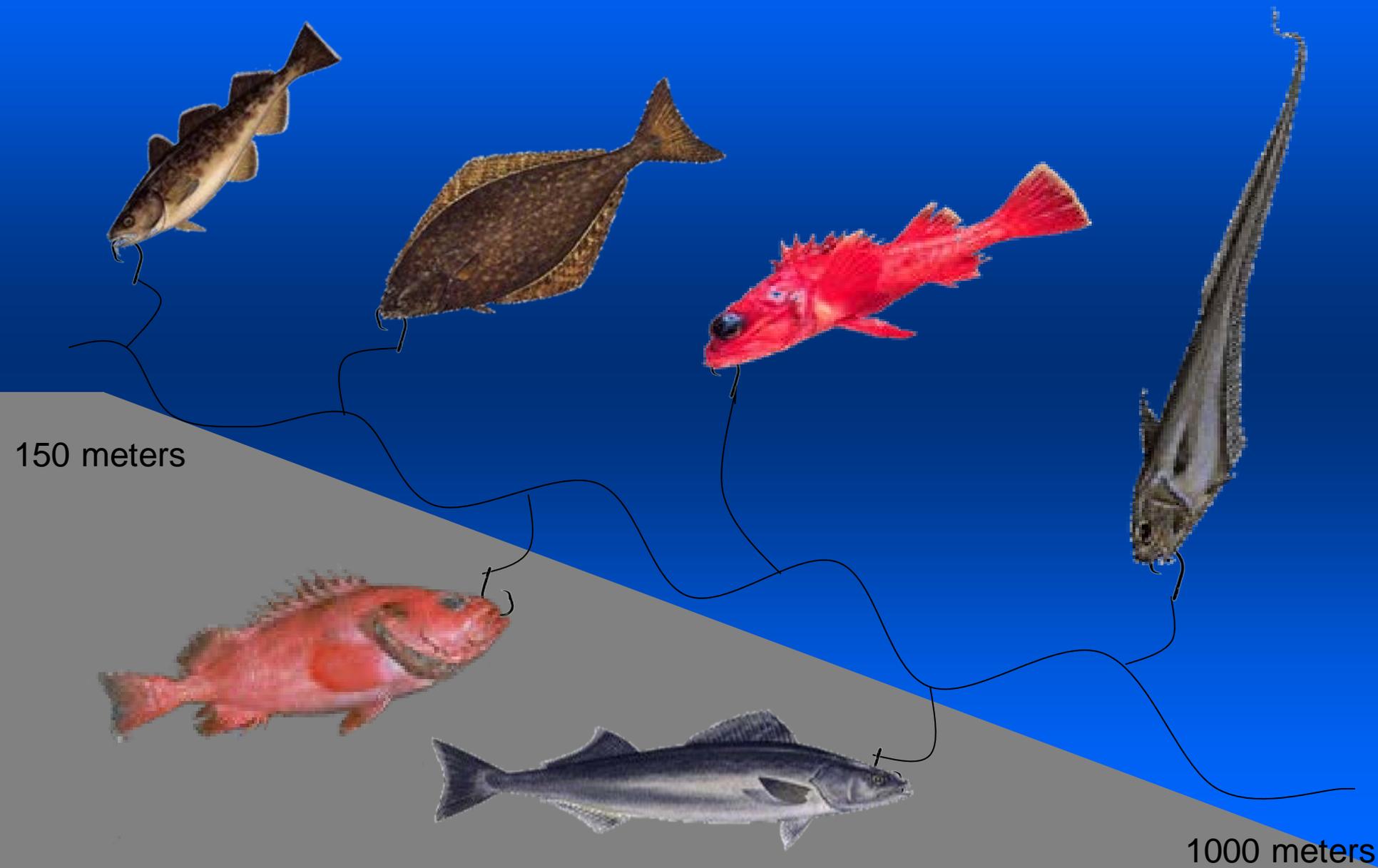
150 meters



1000 meters

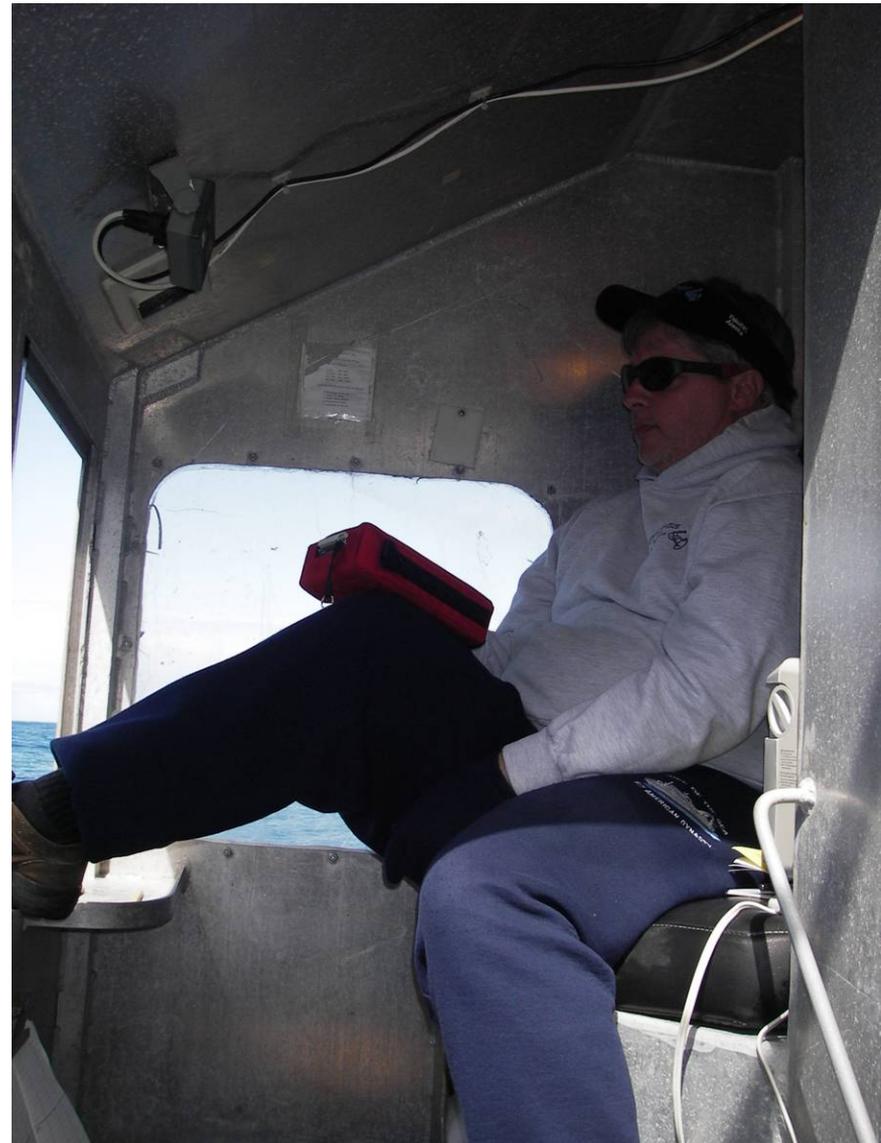


Distribution Of Catch By Depth



Data collection

- 100 % hook sampling
- Hook condition recorded for entire set
- Random (or census) length collection
- Age structures and tagging



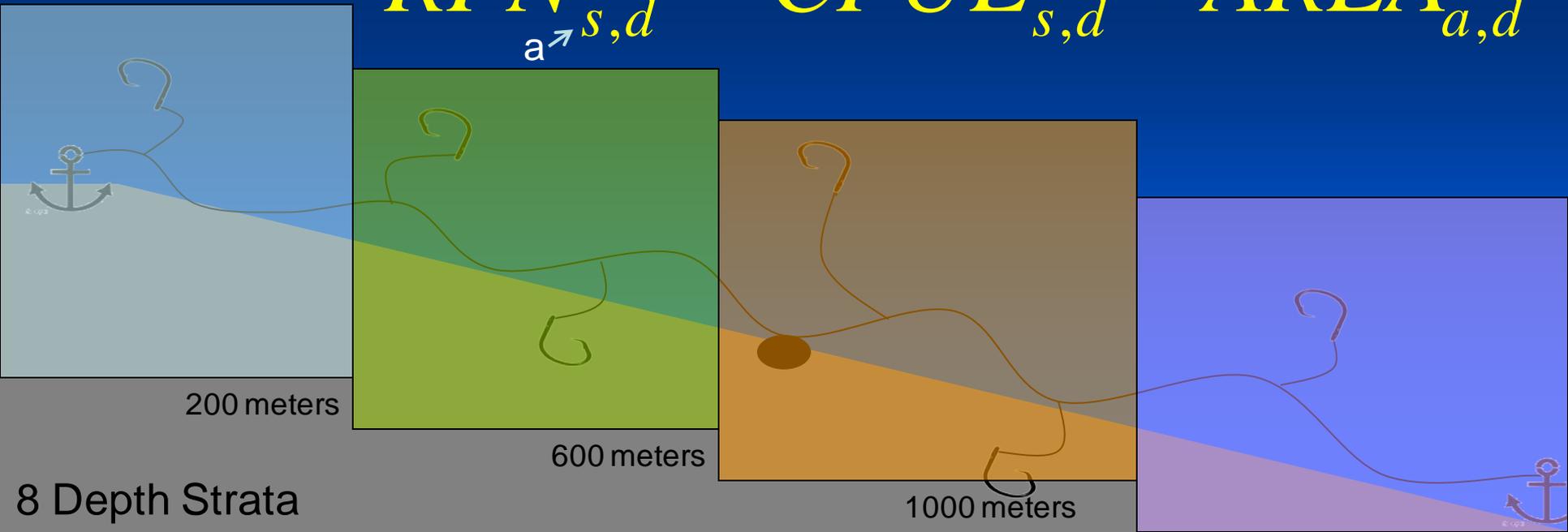
Relative Population Numbers

- Sampling Unit is a Station
- Depth stratification

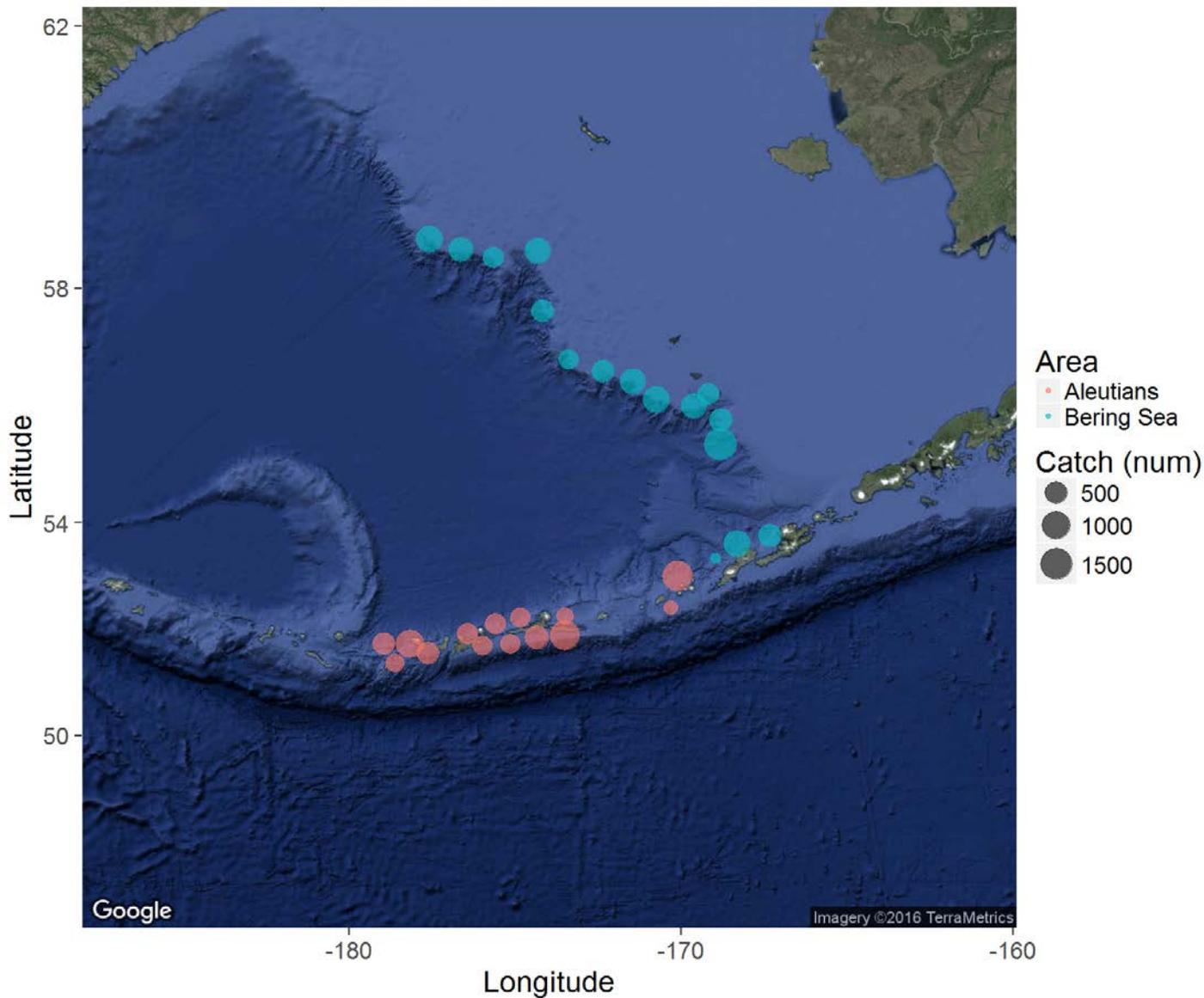
8 strata

$$CPUE_{s,d} = \frac{\# Fish_{s,d}}{\# Skates_{s,d}}$$

$$RPN_{a \rightarrow s,d} = CPUE_{s,d} * AREA_{a,d}$$

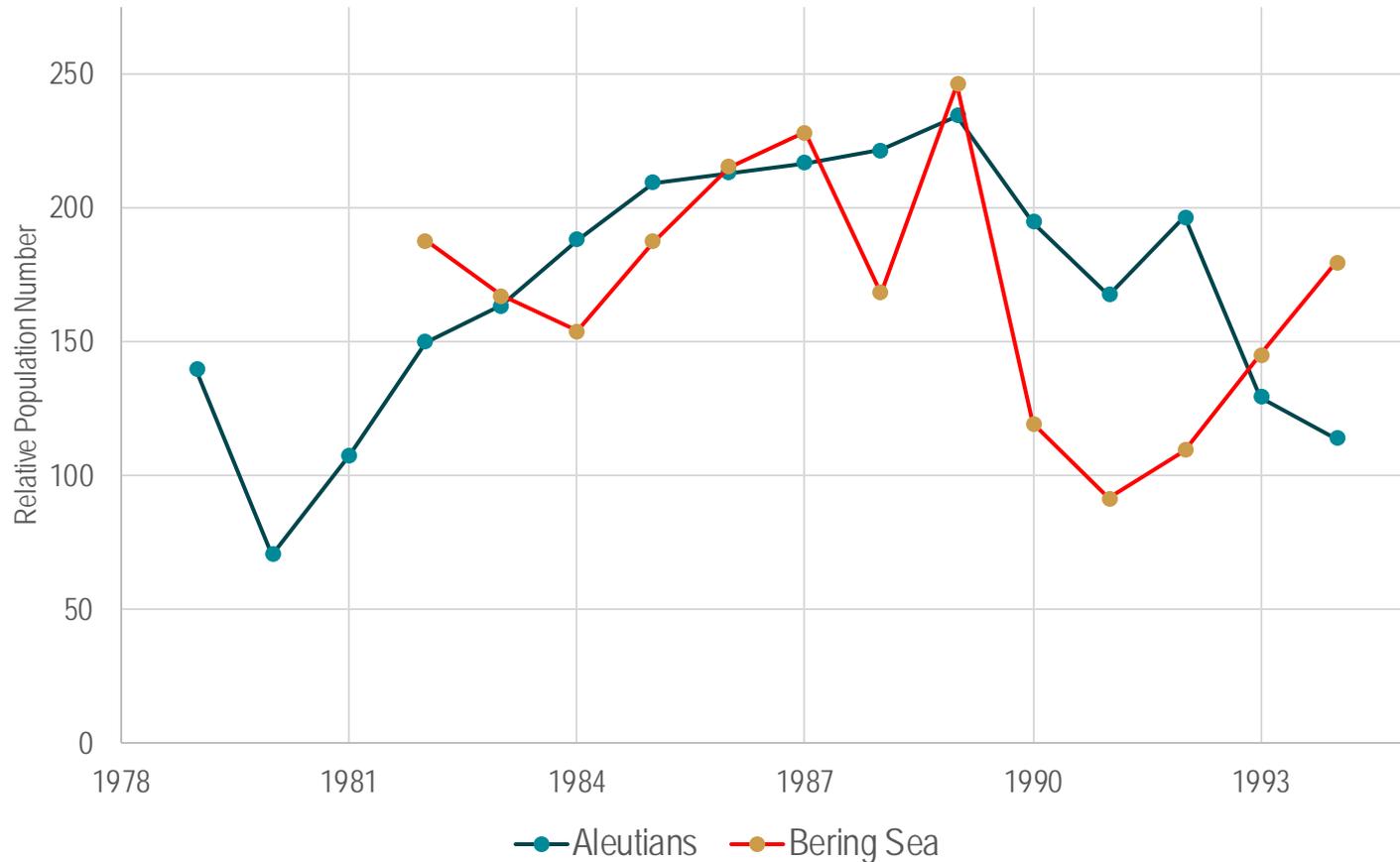


Annual longline catches of P. Cod by station

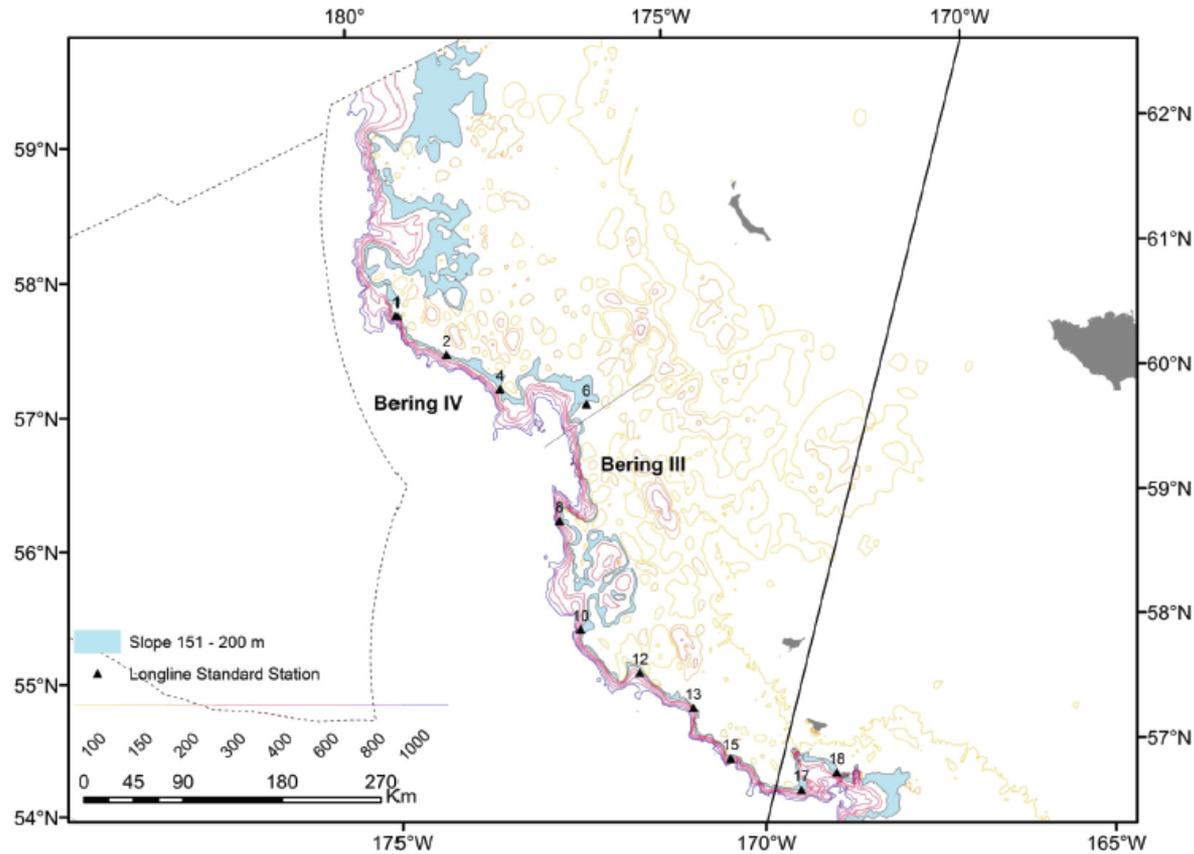


BS/AI Pacific cod, continued

Japanese/Cooperative Longline Survey

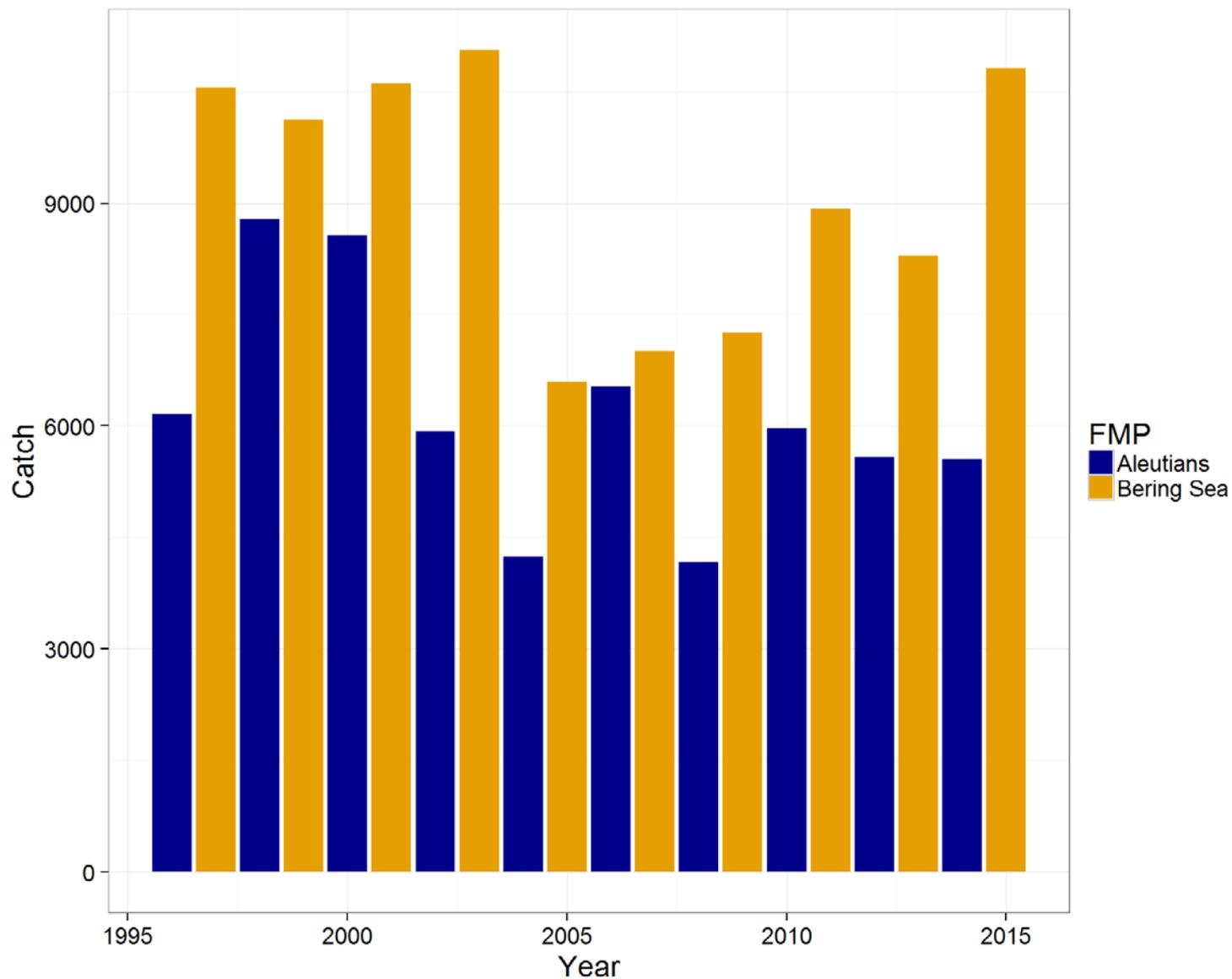


Shallow depth strata, EBS

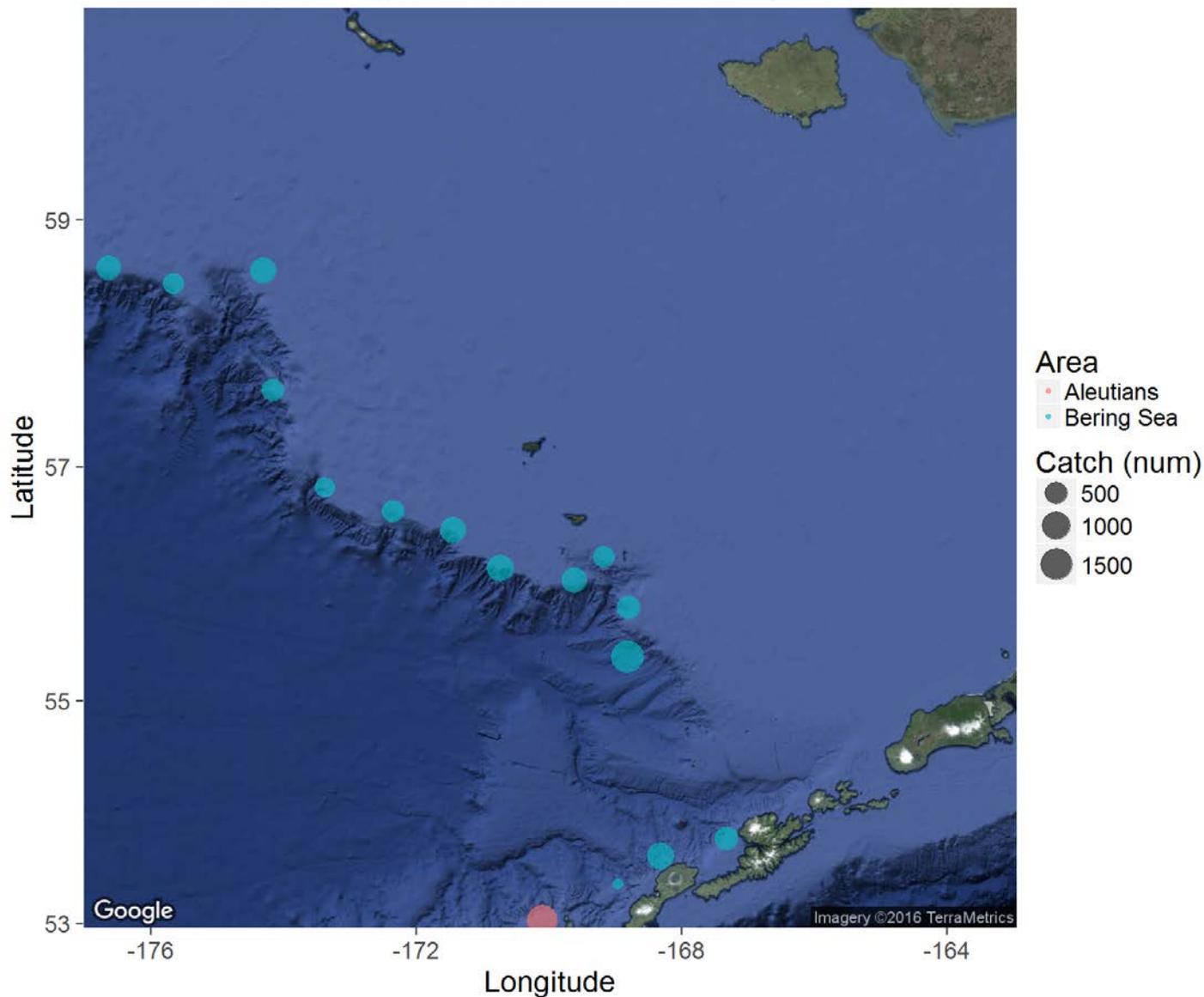


Echave et al. 2013

Annual longline catches of P. Cod by area

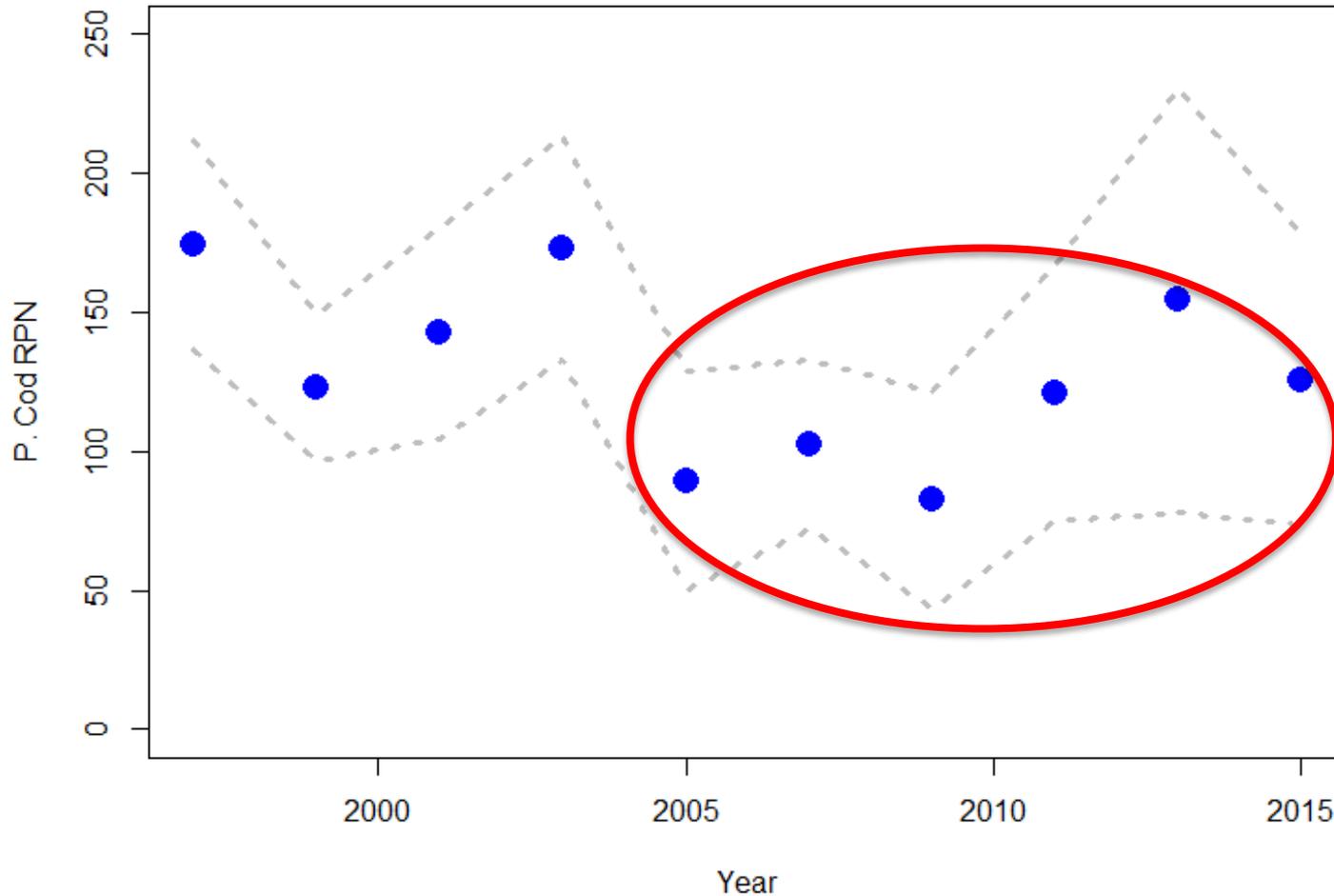


Annual longline catches of P. Cod by station



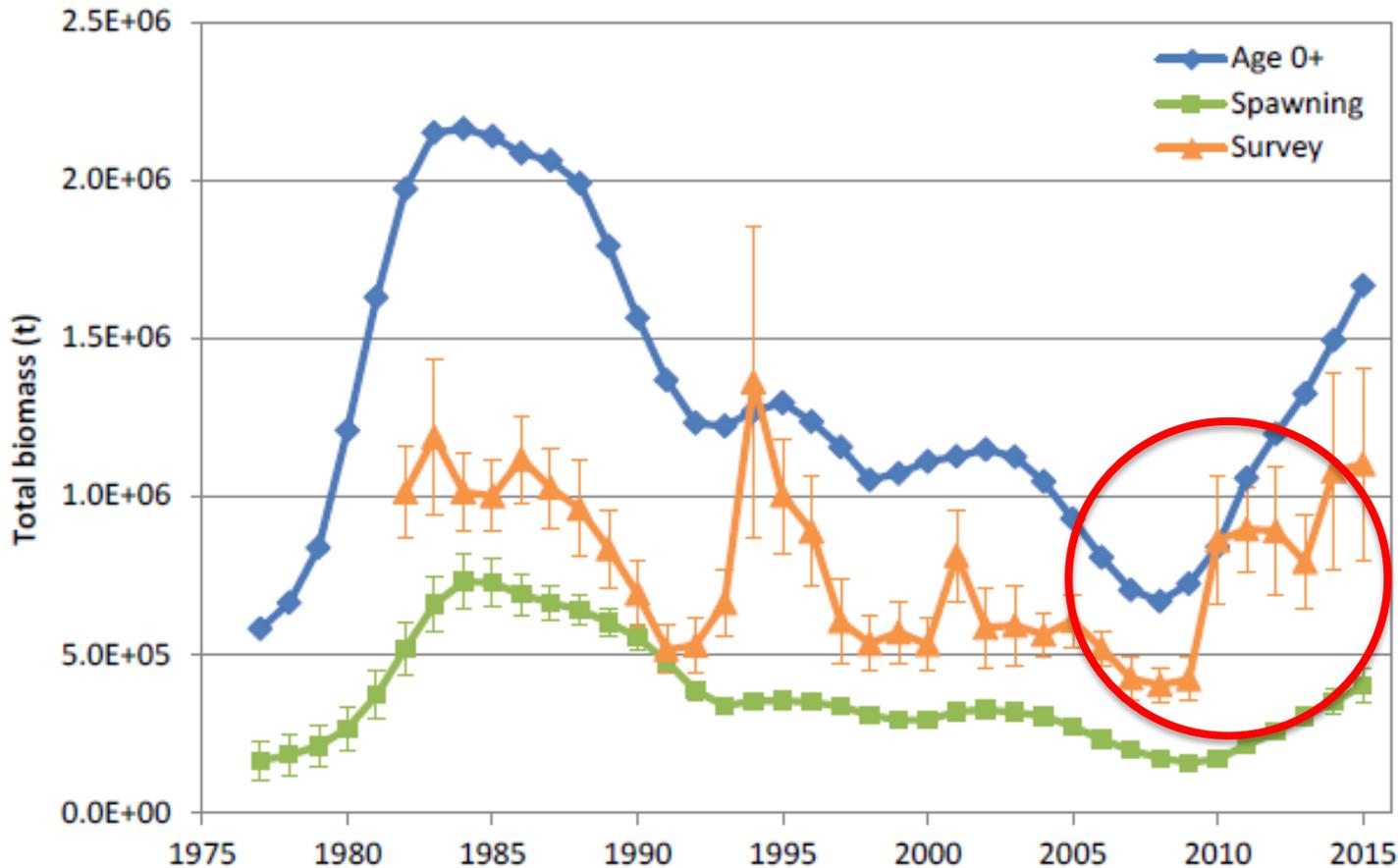
EBS Pacific cod, continued

Bering Sea P. Cod Abundance

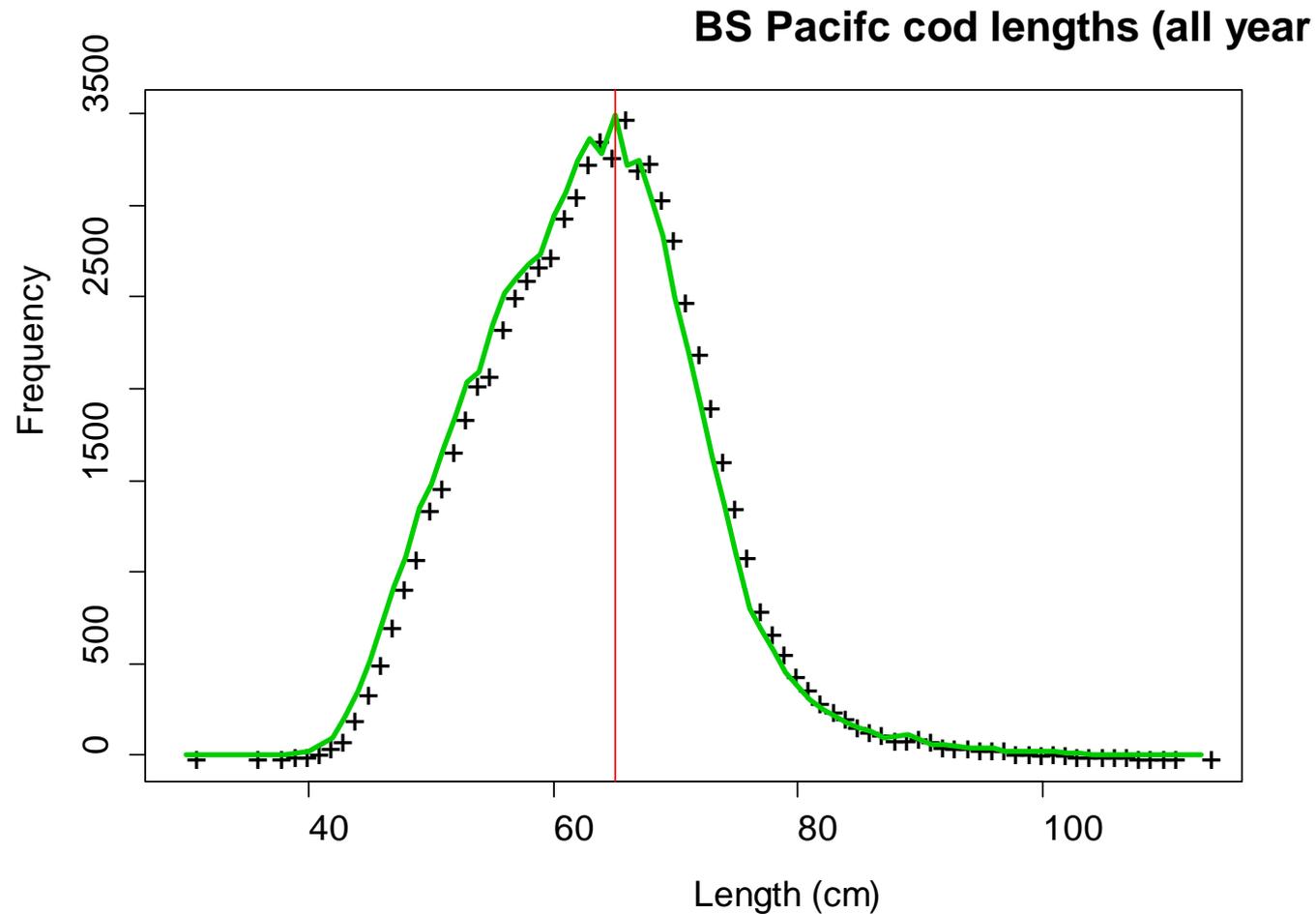


EBS Pacific cod, continued

- Age 0+ biomass, spawning biomass, survey biomass

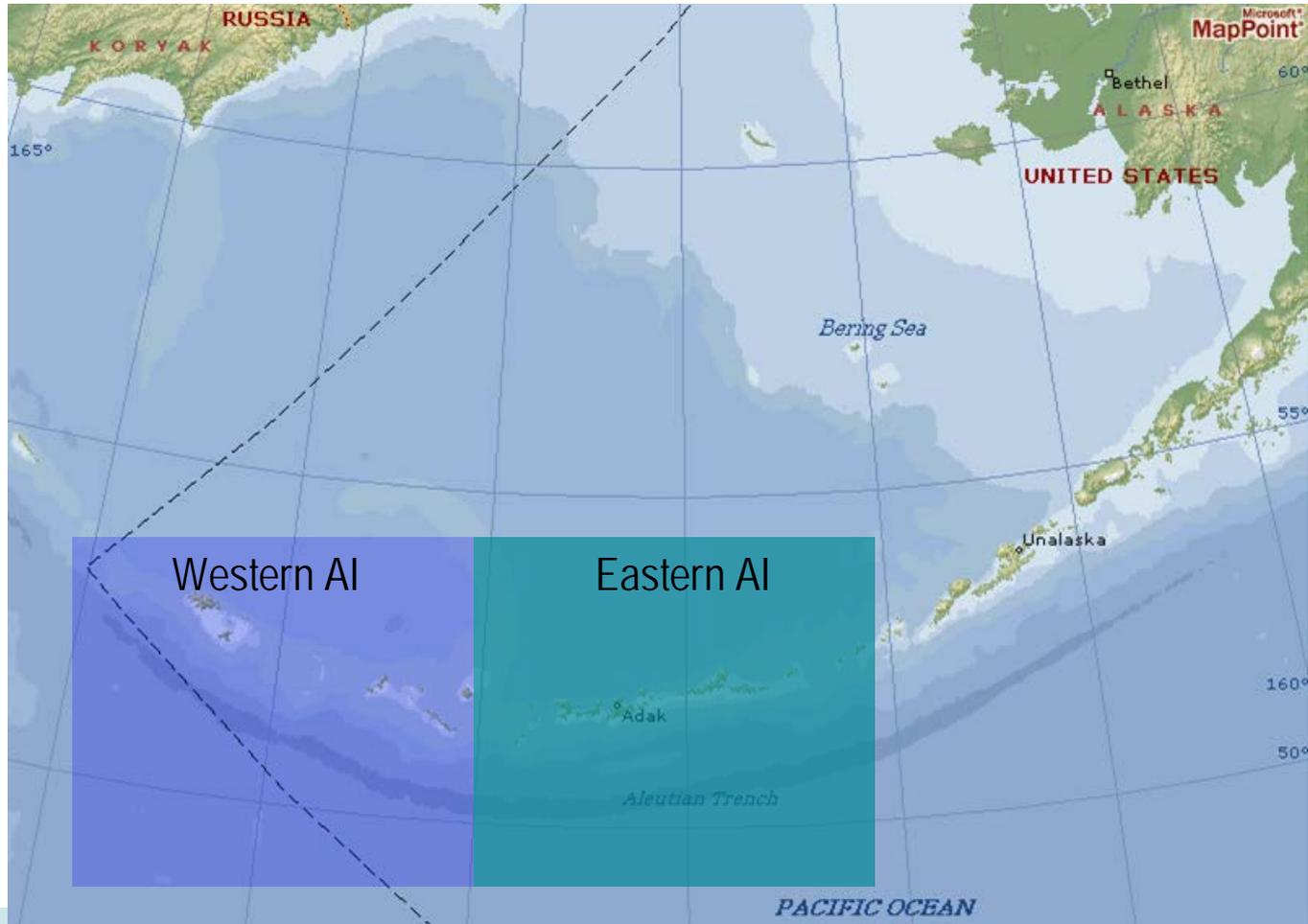


BS Pacific cod, continued

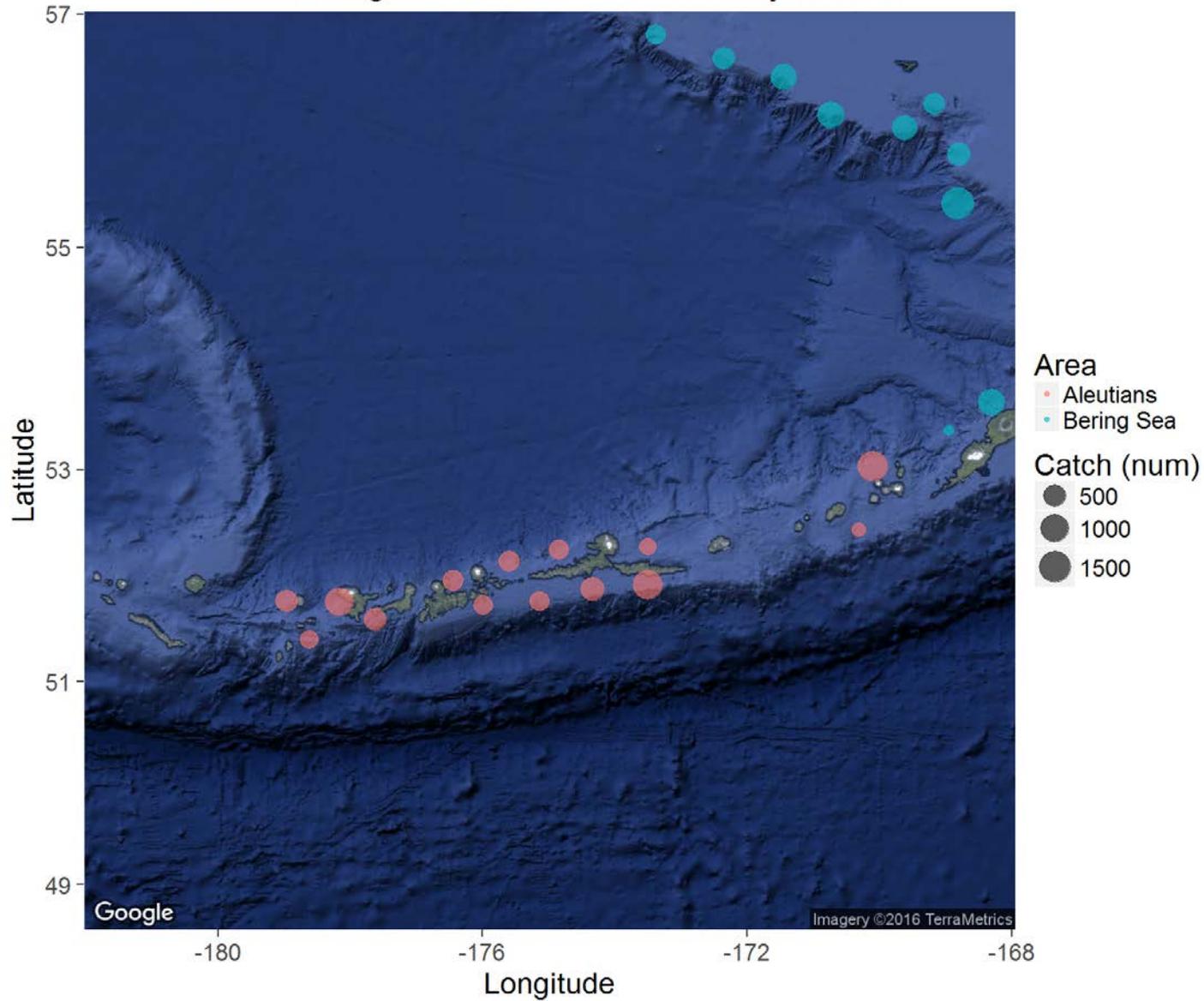


AI Pacific cod, continued

Western Aleutians are not sampled in the domestic survey

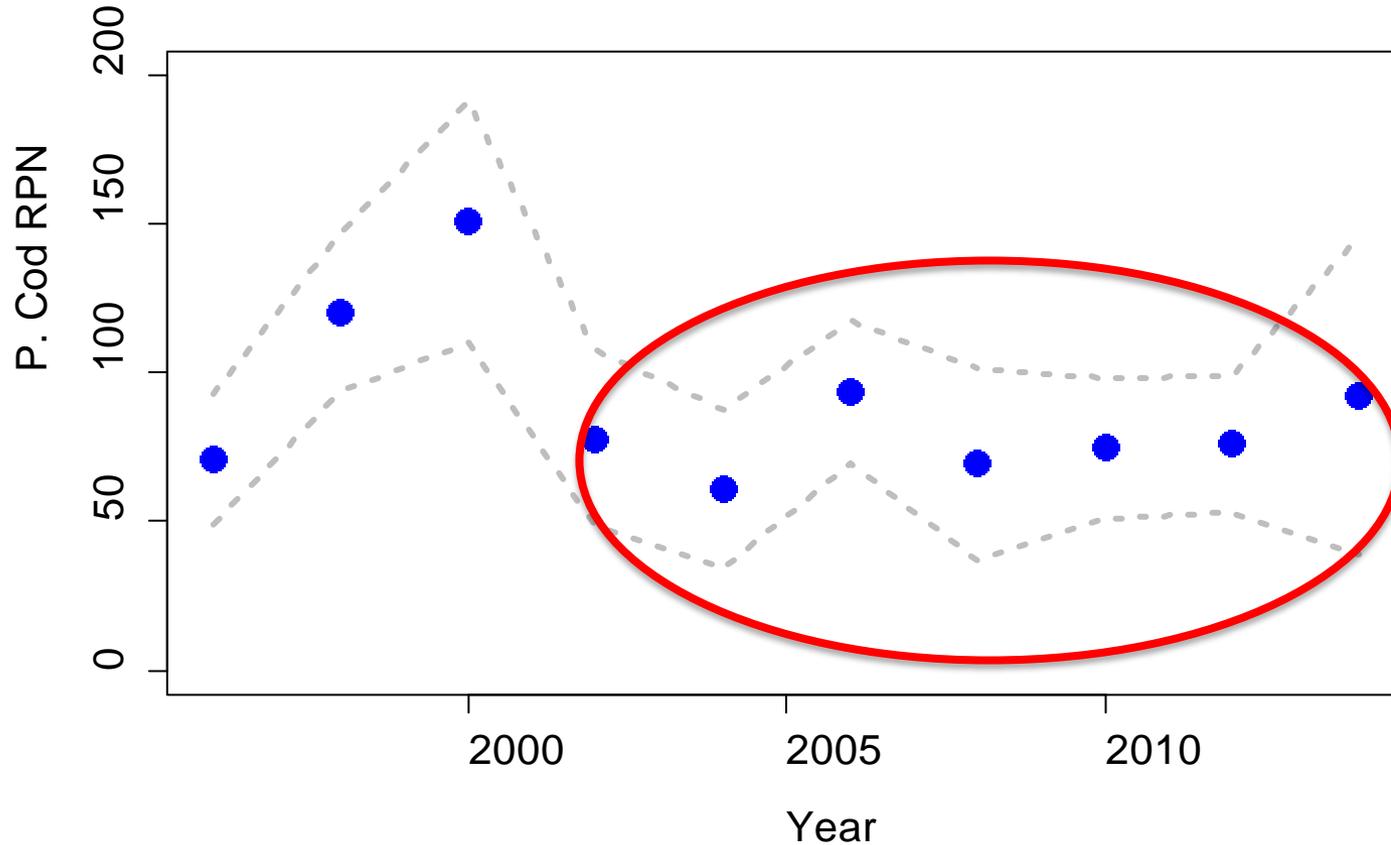


Annual longline catches of P. Cod by station



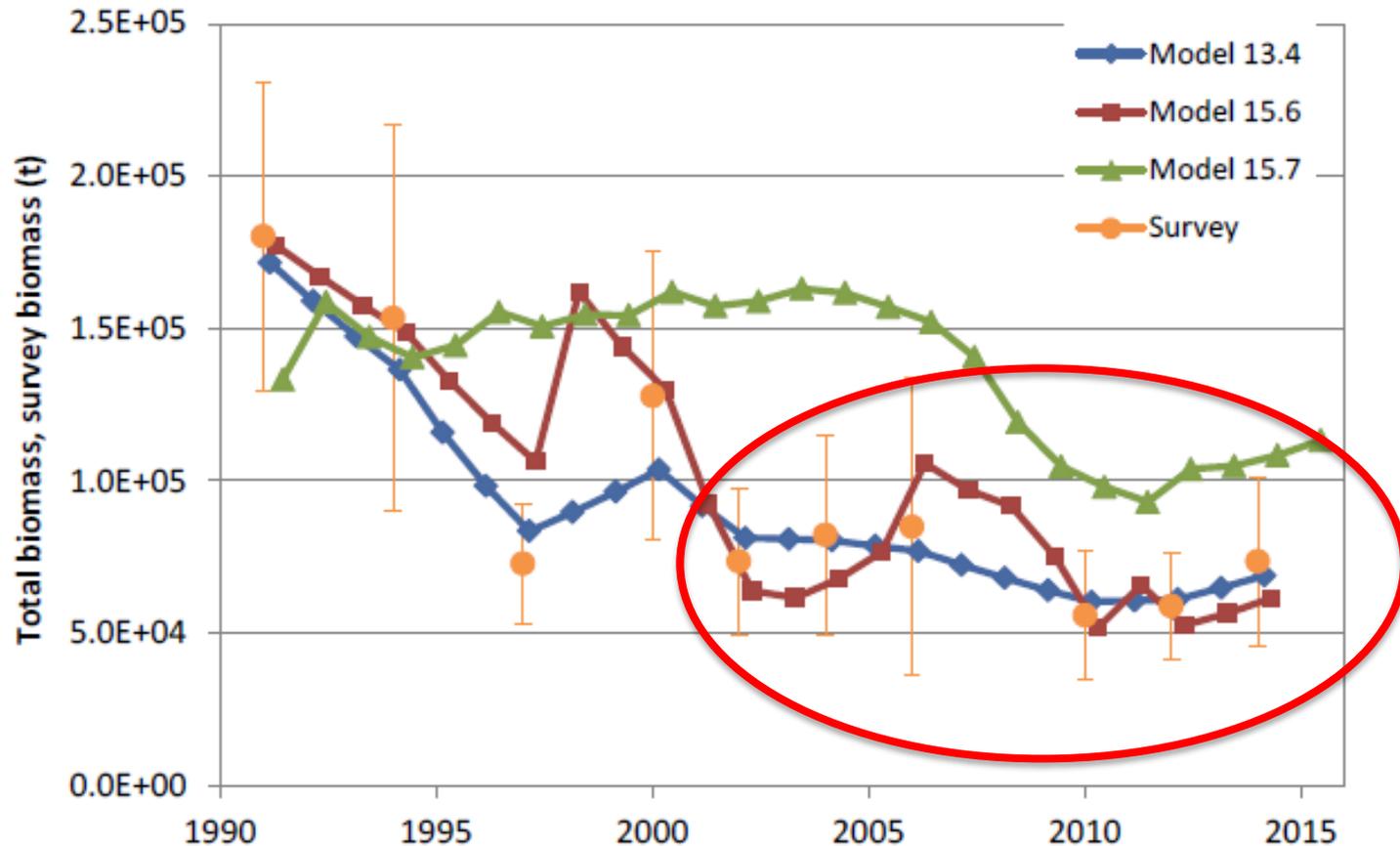
AI Pacific cod, continued

Aleutian Island P. Cod Abund:

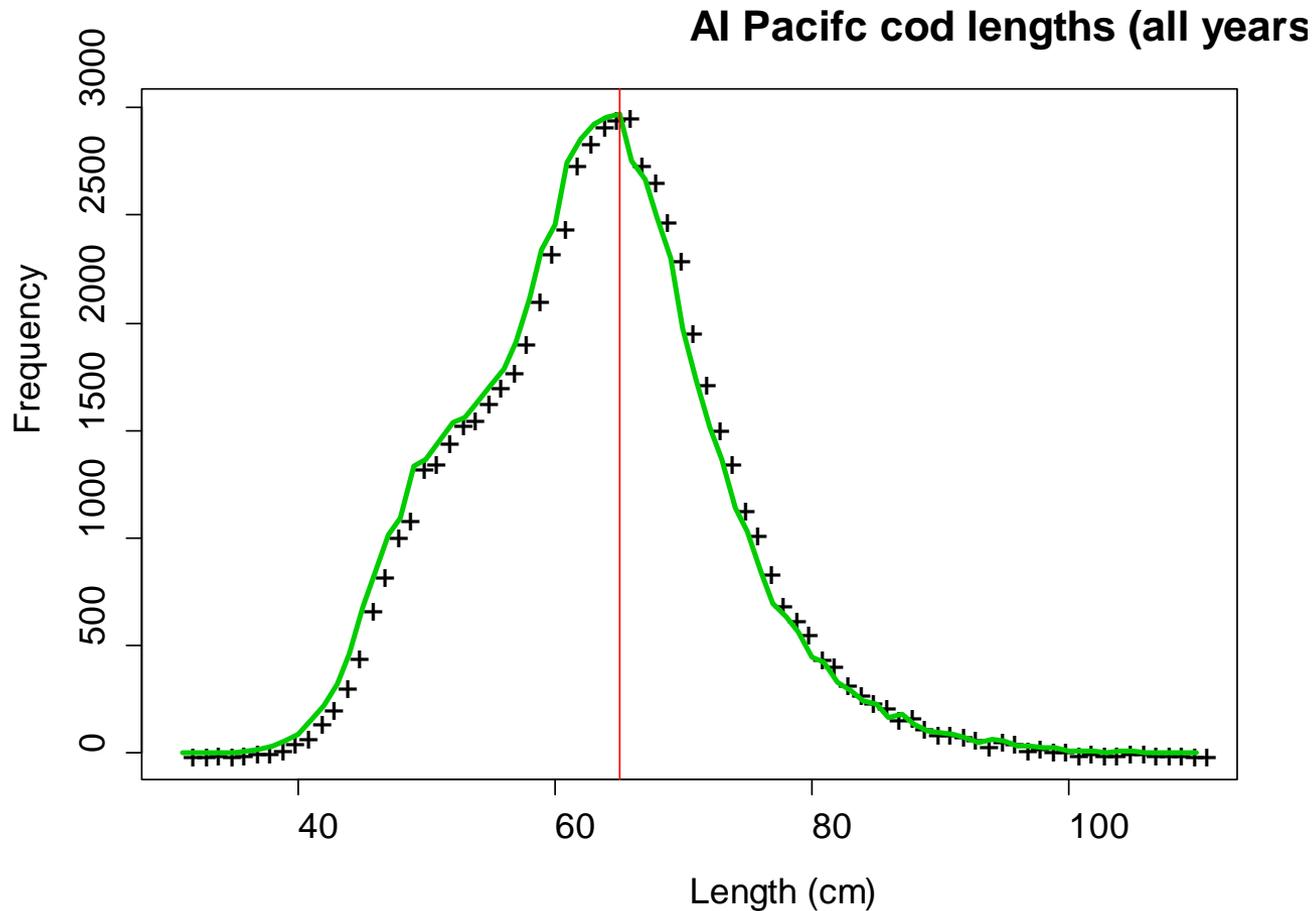


AI Pacific cod, continued

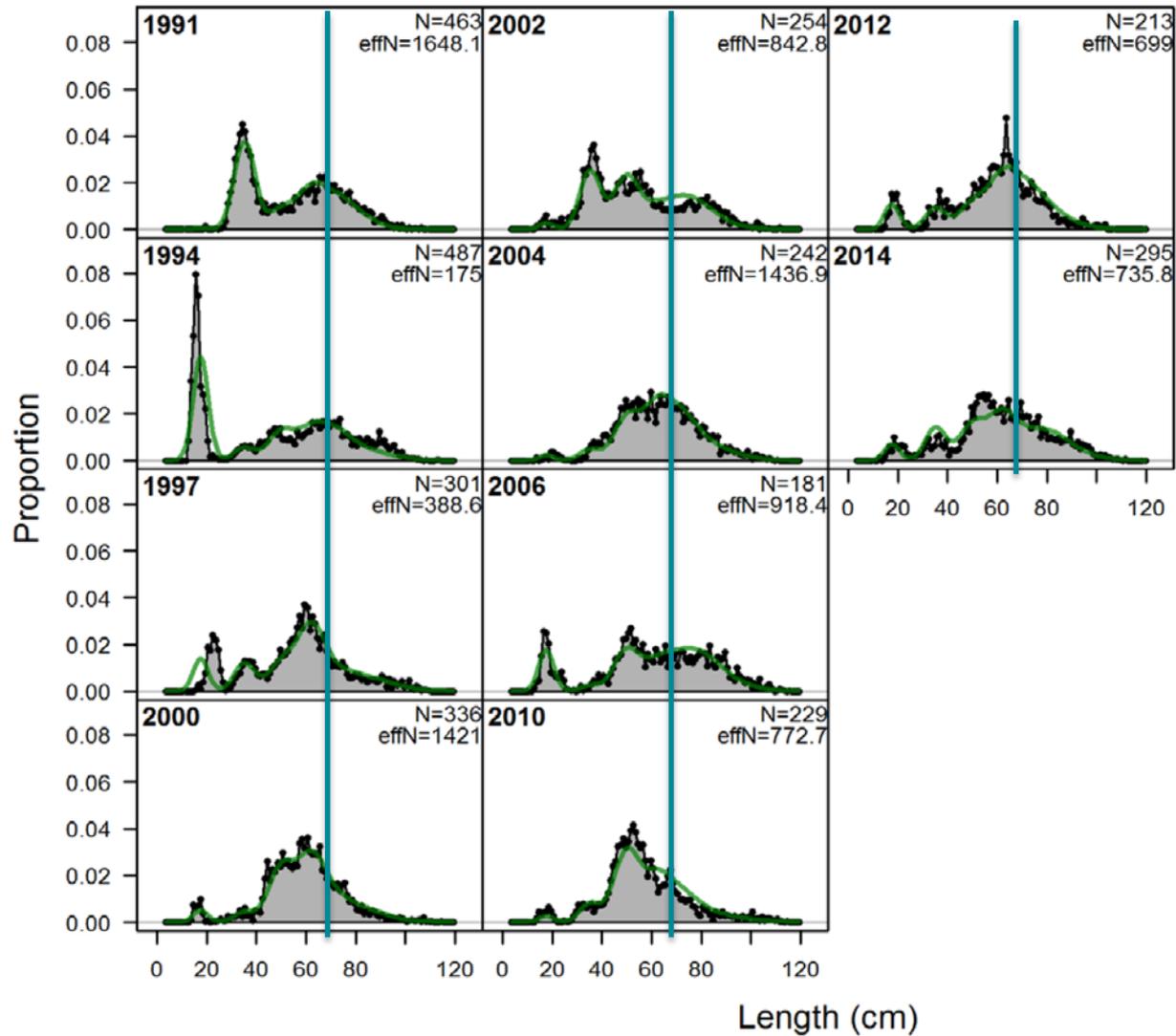
- Survey biomass (Models 13.4 and 15.6), total biomass (Model 15.7)



AI Pacific cod, continued



AI Pacific cod, length comps



Concluding thoughts

- Bering Sea
 - We catch and measure a lot of cod (but no age comps)
 - Abundance seems to capture related trends
 - Maybe capture some larger fish, that shelf survey does not
- Aleutian Islands
 - Catches and measures a lot of cod (but no age comps)
 - Does not survey the Western Aleutian Islands
 - Captures slightly larger fish than the AI trawl survey
- Overall
 - Longline gear can sample a different part of the population (e.g., untrawlable grounds, deep water)
 - Sometimes more indices can add management/model stability?

A large colony of albatrosses is shown on the water. The majority of the birds are dark brown, but several are white-headed albatrosses, which have white heads and necks with dark brown wings and backs. The birds are densely packed, and the water is dark blue. The word "Questions?" is written in yellow text across the center of the image.

Questions?