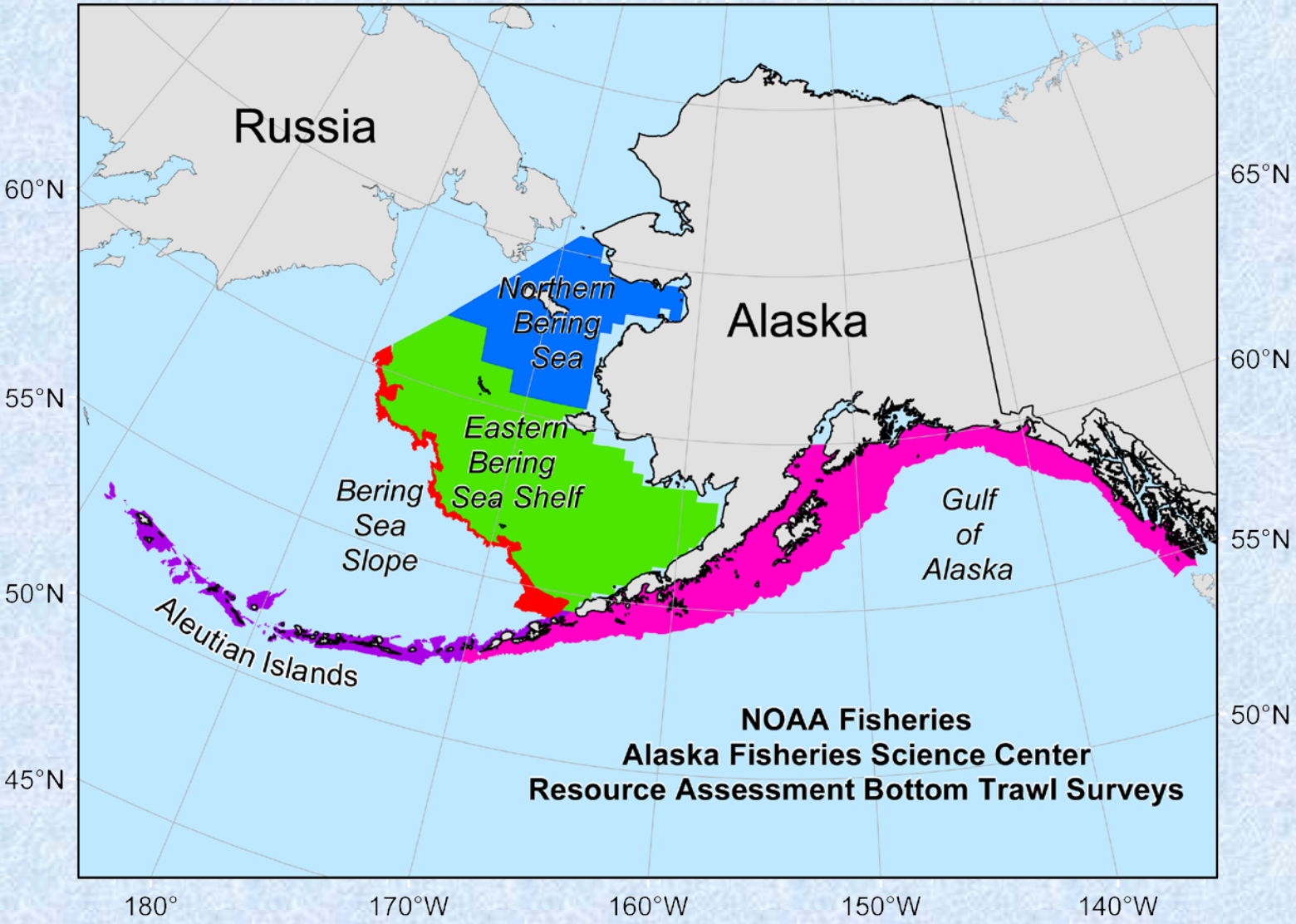
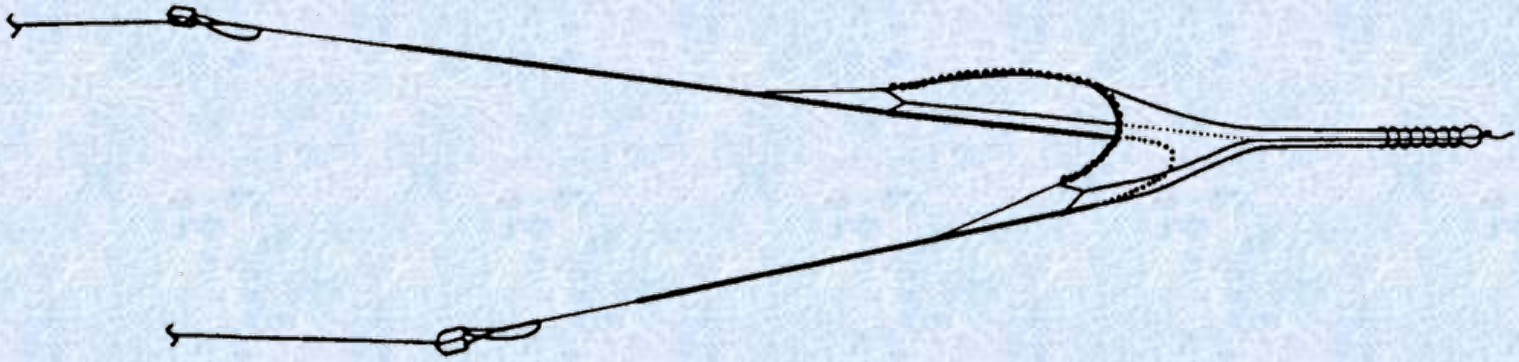
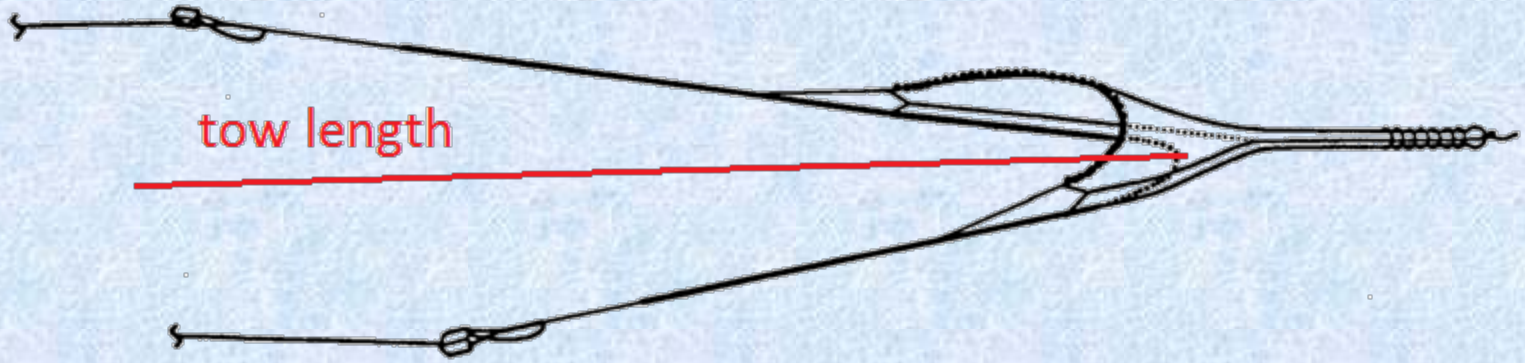
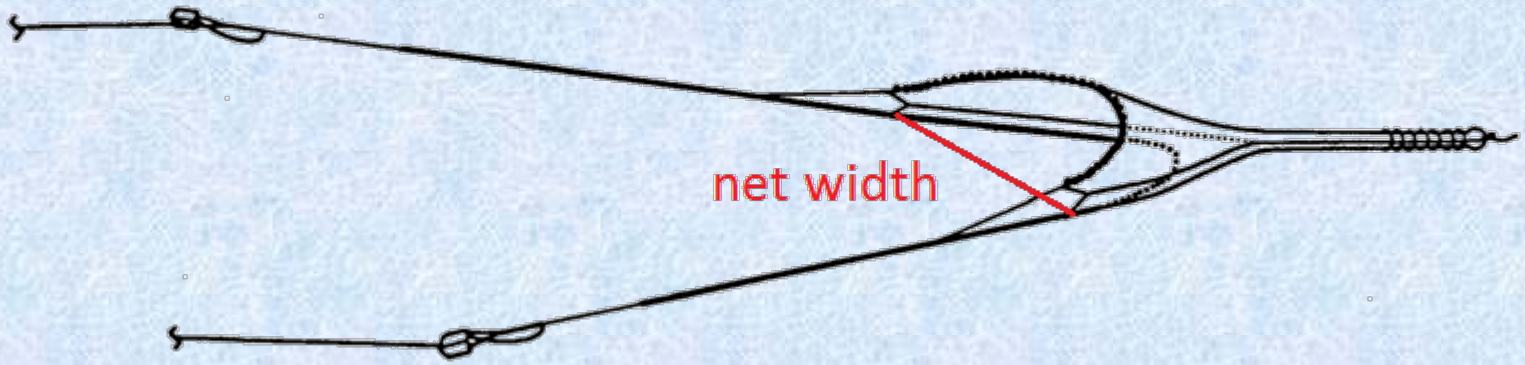
Bottom trawl surveys

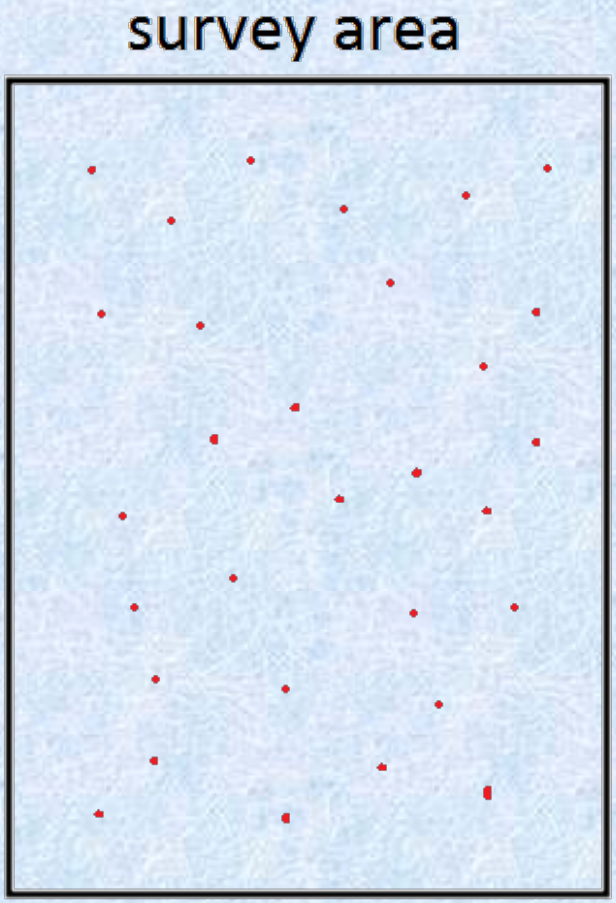

Russia
Alaska
Northern Bering Sea
Eastern Bering Sea Shelf
Bering Sea Slope
Gulf of Alaska
Aleutian Islands
NOAA Fisheries
Alaska Fisheries Science Center
Resource Assessment Bottom Trawl Surveys
65°N
60°N
55°N
50°N
45°N
180°
170°W
160°W
150°W
140°W




tow length


net width

$$D = \frac{weight}{swept\ area}$$



$$B_s = \overline{D} * survey\ area$$

$$B_t = qB_{s,t}$$

q = catchability

$$B_t = \frac{1}{AE} B_{s,t}$$

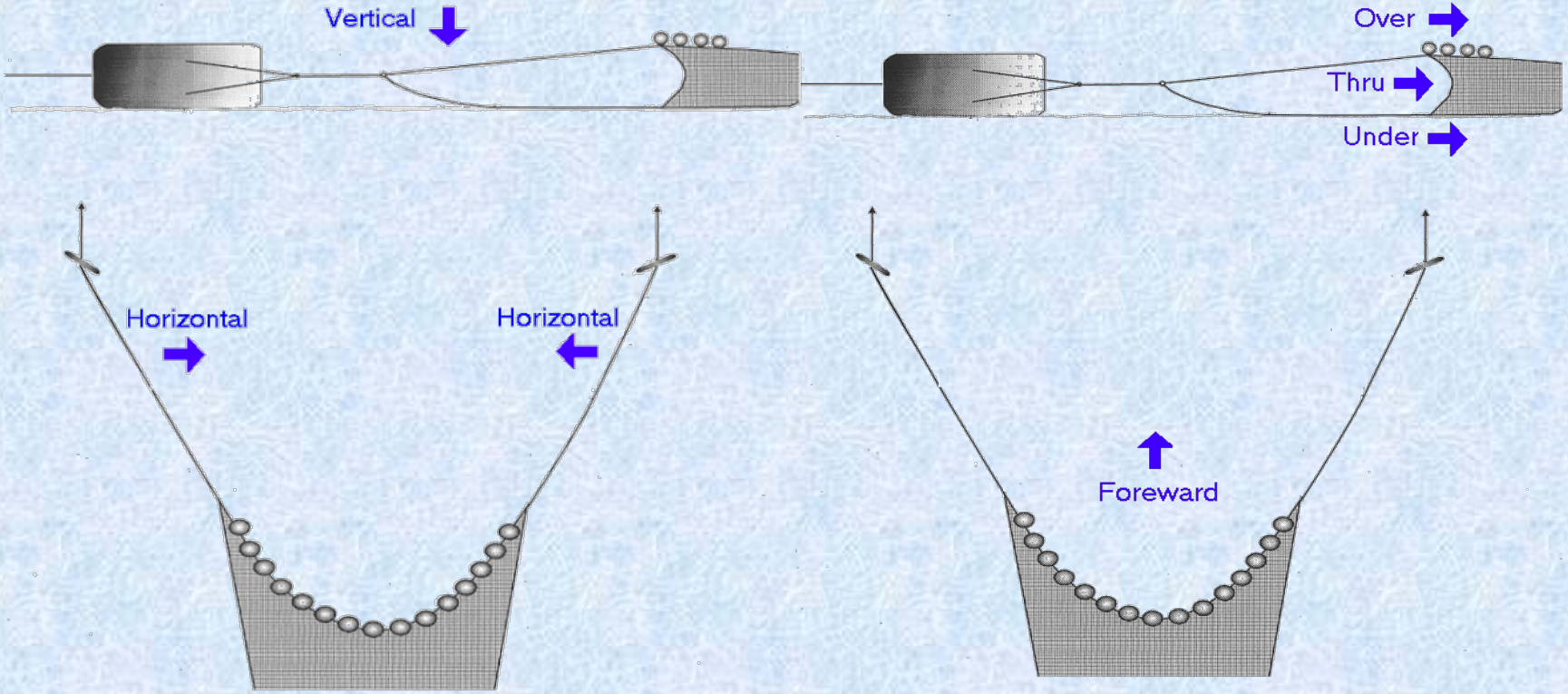
E = efficiency

A= availability

Efficiency

Herding

Escapement



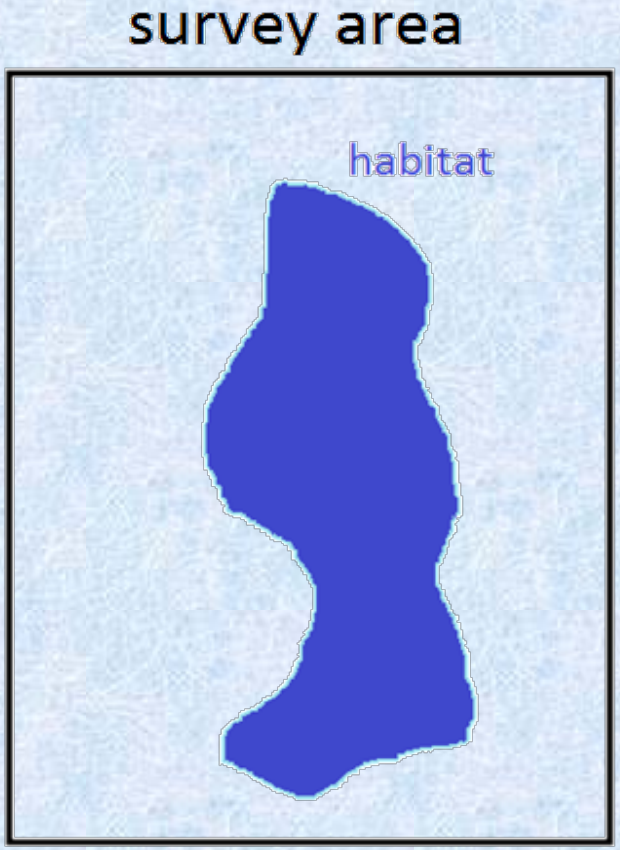
NOAA Protocols for Groundfish Bottom Trawl Surveys of the Nation's Fishery Resources

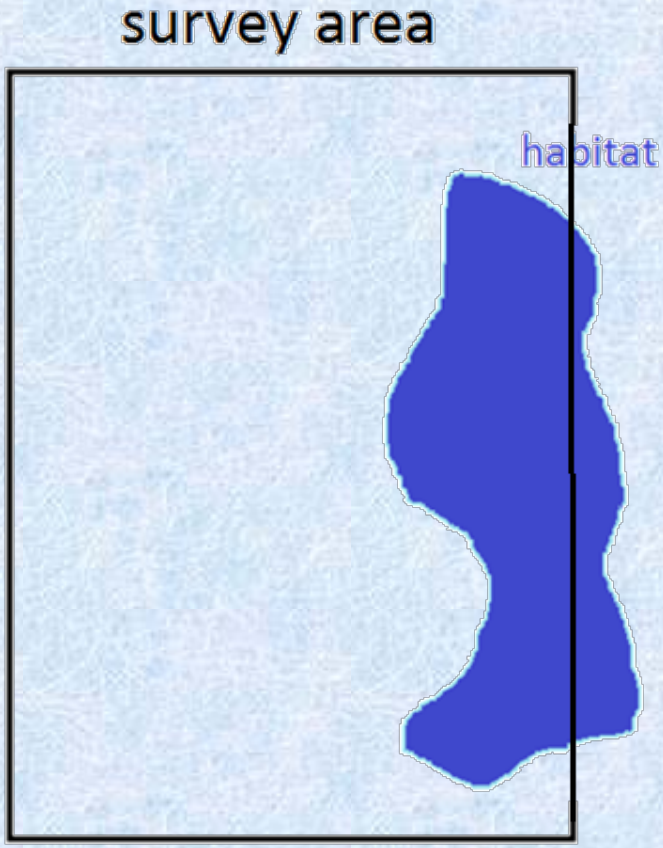
March 16, 2003

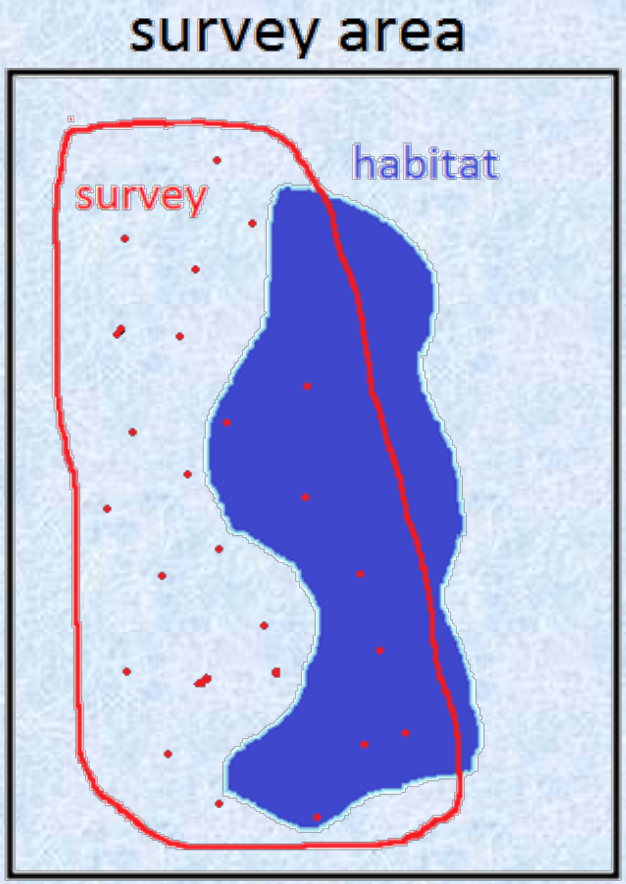
Compiled under the Direction of:

Gary Stauffer
Leader of Trawl Survey Protocol Development
Alaska Fisheries Science Center
National Marine Fisheries Service
National Oceanic and AtmosphericAdministration
U.S. Department of Commerce

Availability




survey area
habitat


survey area
habitat
survey

Experimental estimation of q

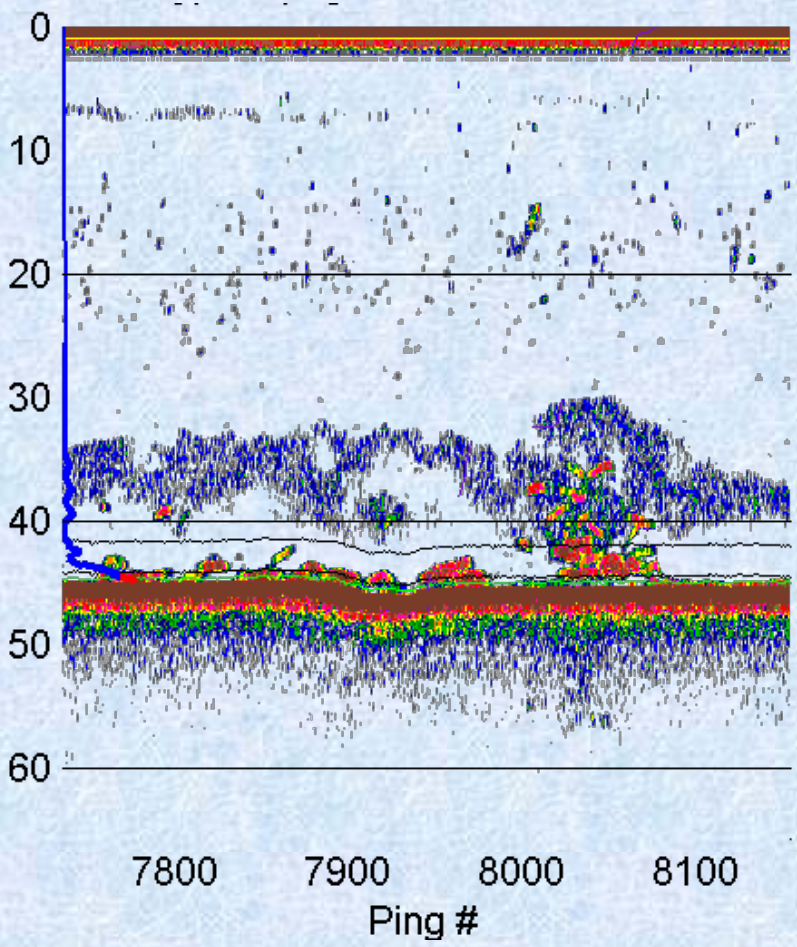
- Separate experiments for herding and escapement, then join in a model
- Side by side comparison with a totally efficient gear

Survey methodology: common features

- Use of chartered commercial trawlers

Survey methodology: common features

- Collection of calibrated acoustic data



Survey methodology: common features

- Collection of otoliths and food habits

Survey methodology: common features

- Collection of environmental data
  - Temperature, light, depth
  - EBS CTD
  - EBS slope and Gulf of Alaska CTD, Ph, turbidity,O_2

Survey methodology: common features

- Collection of catch data

Survey methodology: common features

- Collection of catch data

Survey methodology: common features

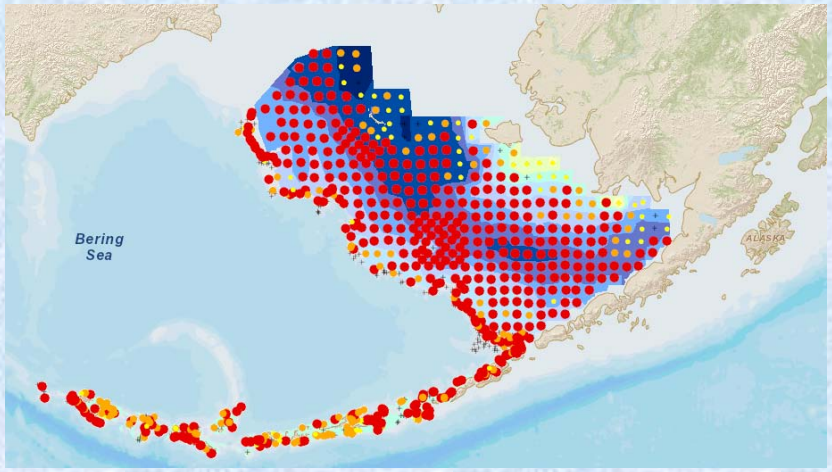
- Collection of catch data

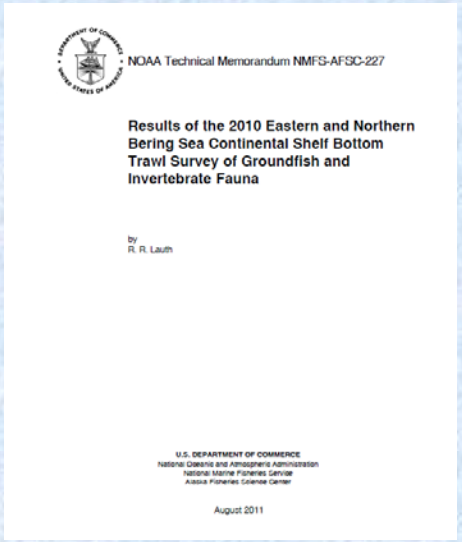
Survey methodology: common features

- Data quality and management
  - Data entry and initial error checking
  - Secondary error checking (GIDES) as the biological data is combined with performance and environmental data as it enters into the final Oracle database
  - Run biomass programs to produce biomass and length compositions
  - Run age integration programs

Survey methodology: common features

- Data dissemination
  - All stock assessment authors via Oracle tables or special request
  - Outside researchers by special request
  - General public via AFSC web page or data report.




NOAA Technical Memorandum NMFS-AFSC-227

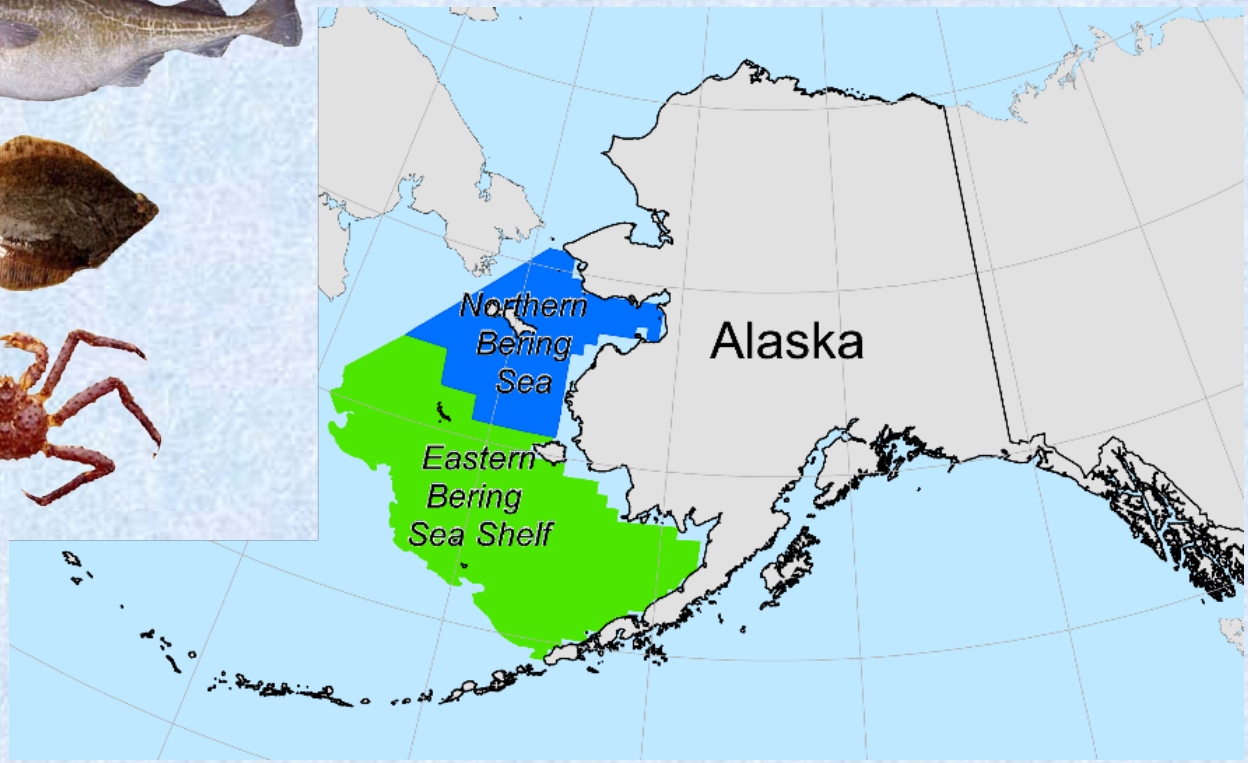
Results of the 2010 Eastern and Northern Bering Sea Continental Shelf Bottom Trawl Survey of Groundfish and Invertebrate Fauna

by
R. R. Lauth

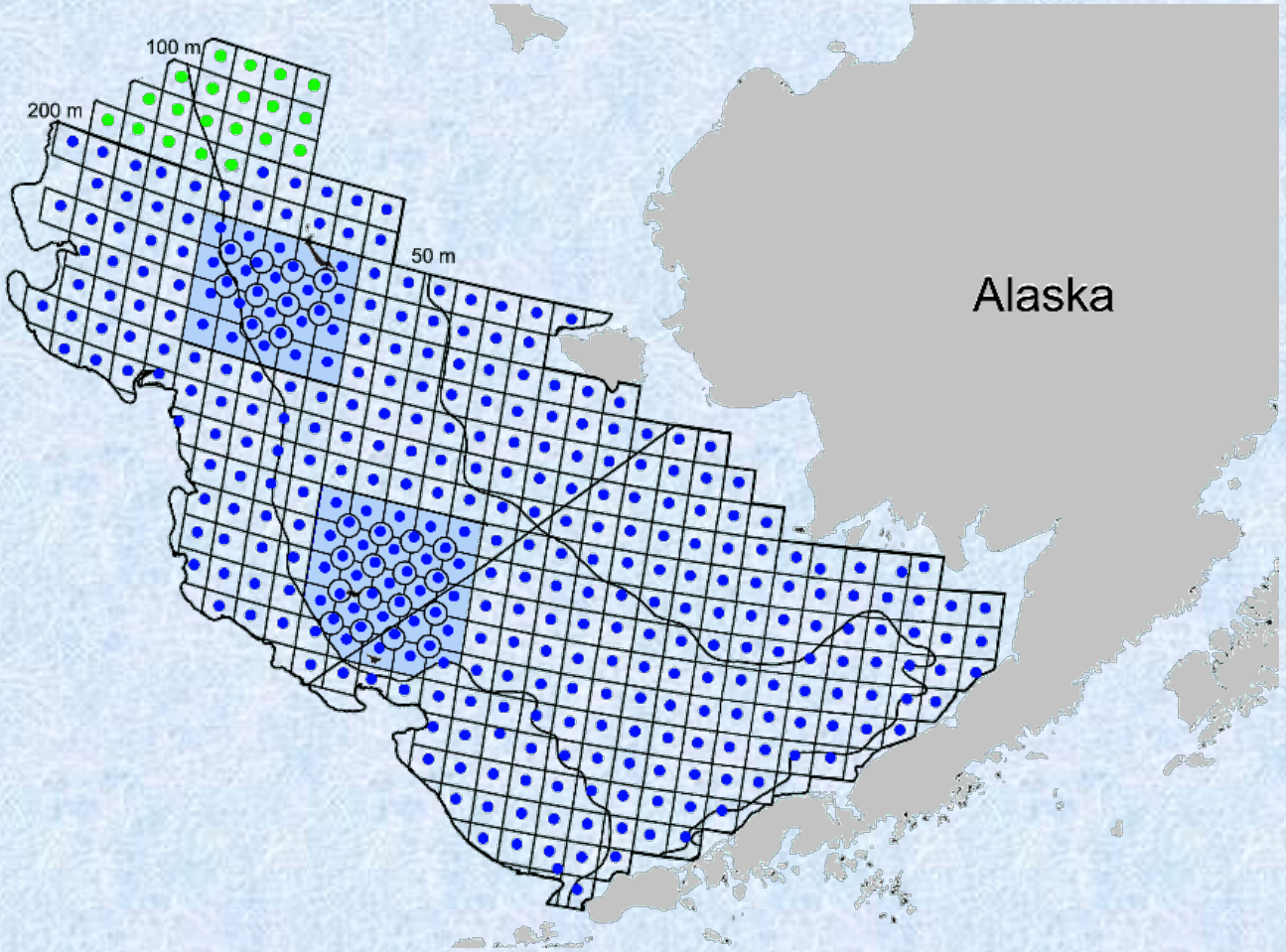
U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Alaska Fisheries Science Center

August 2011

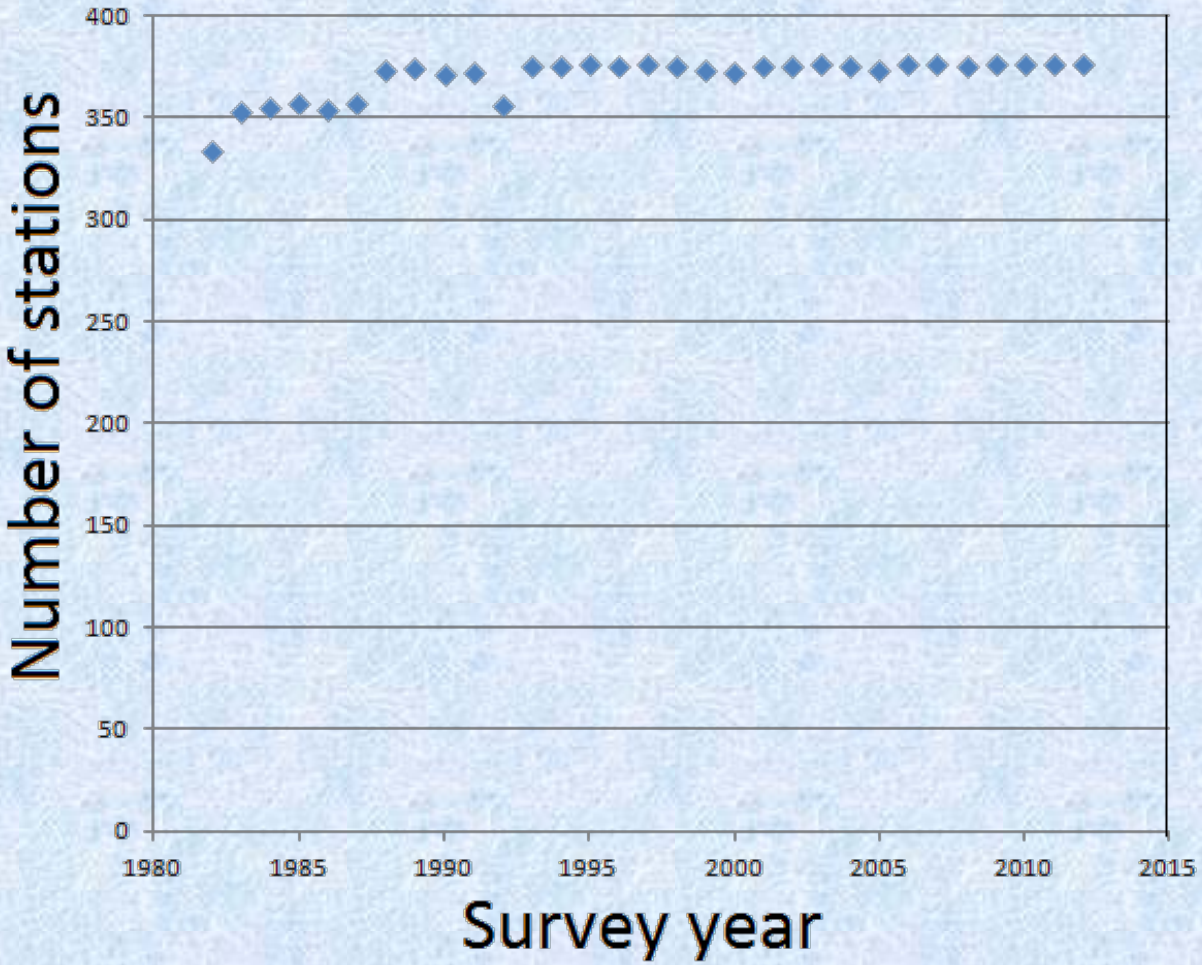
Bering Sea shelf



Sampling station pattern



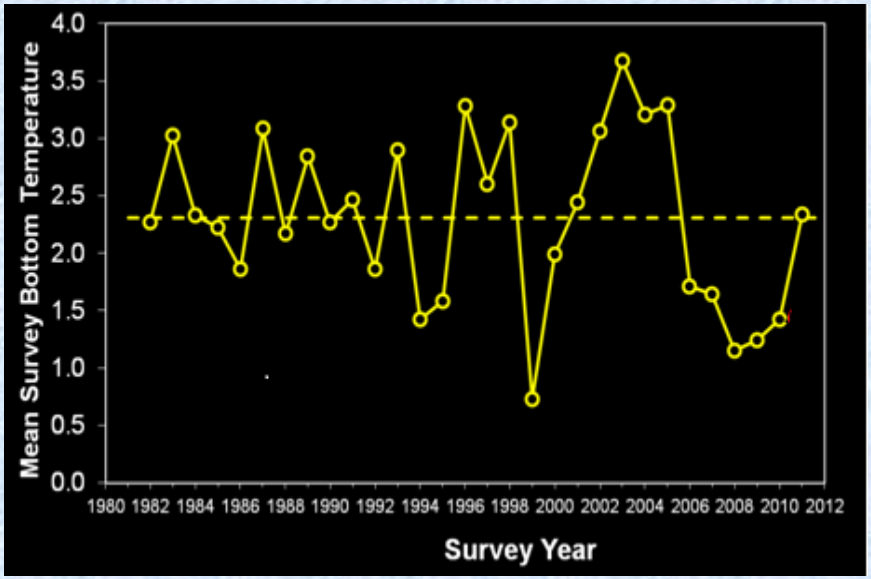
History of EBS shelf survey

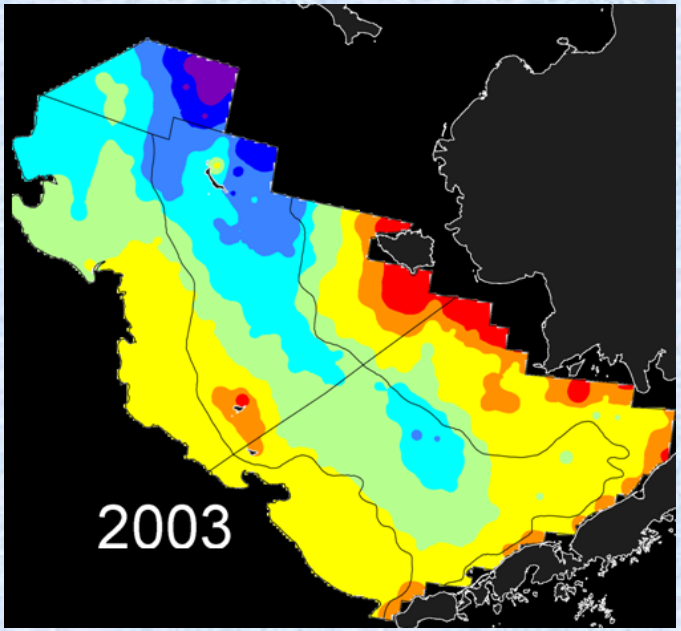


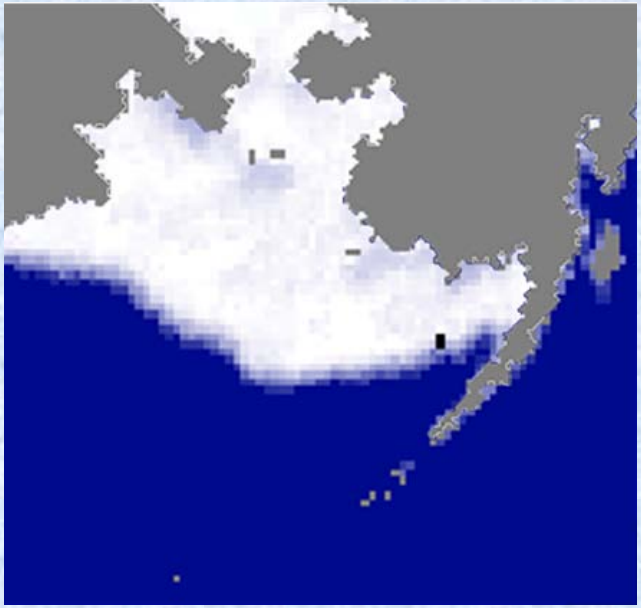
Special features

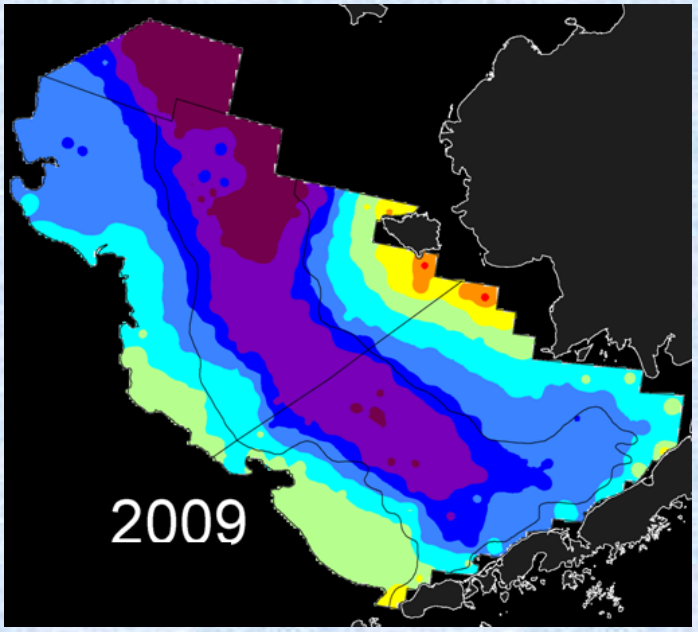
- Acoustic estimation of pollock
- Catchability estimation
- Temperature fluctuations

Temperature cycles

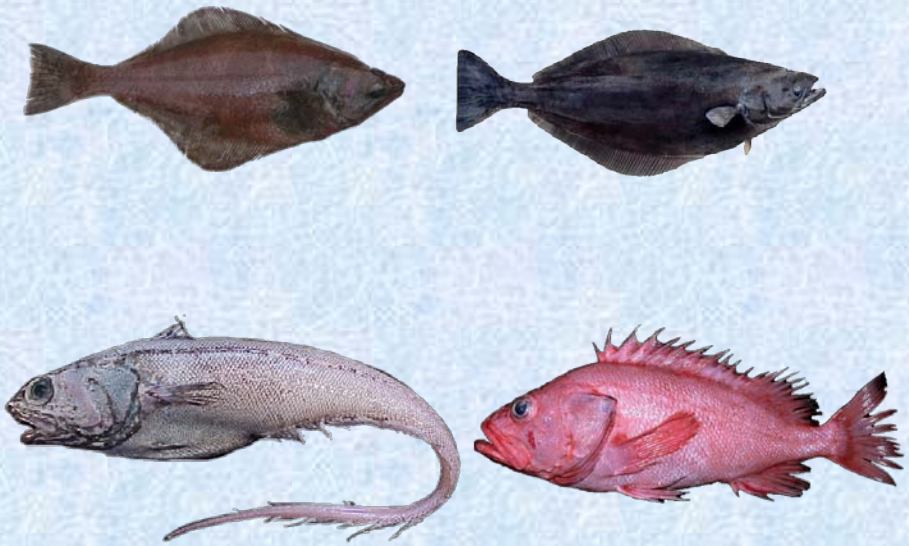




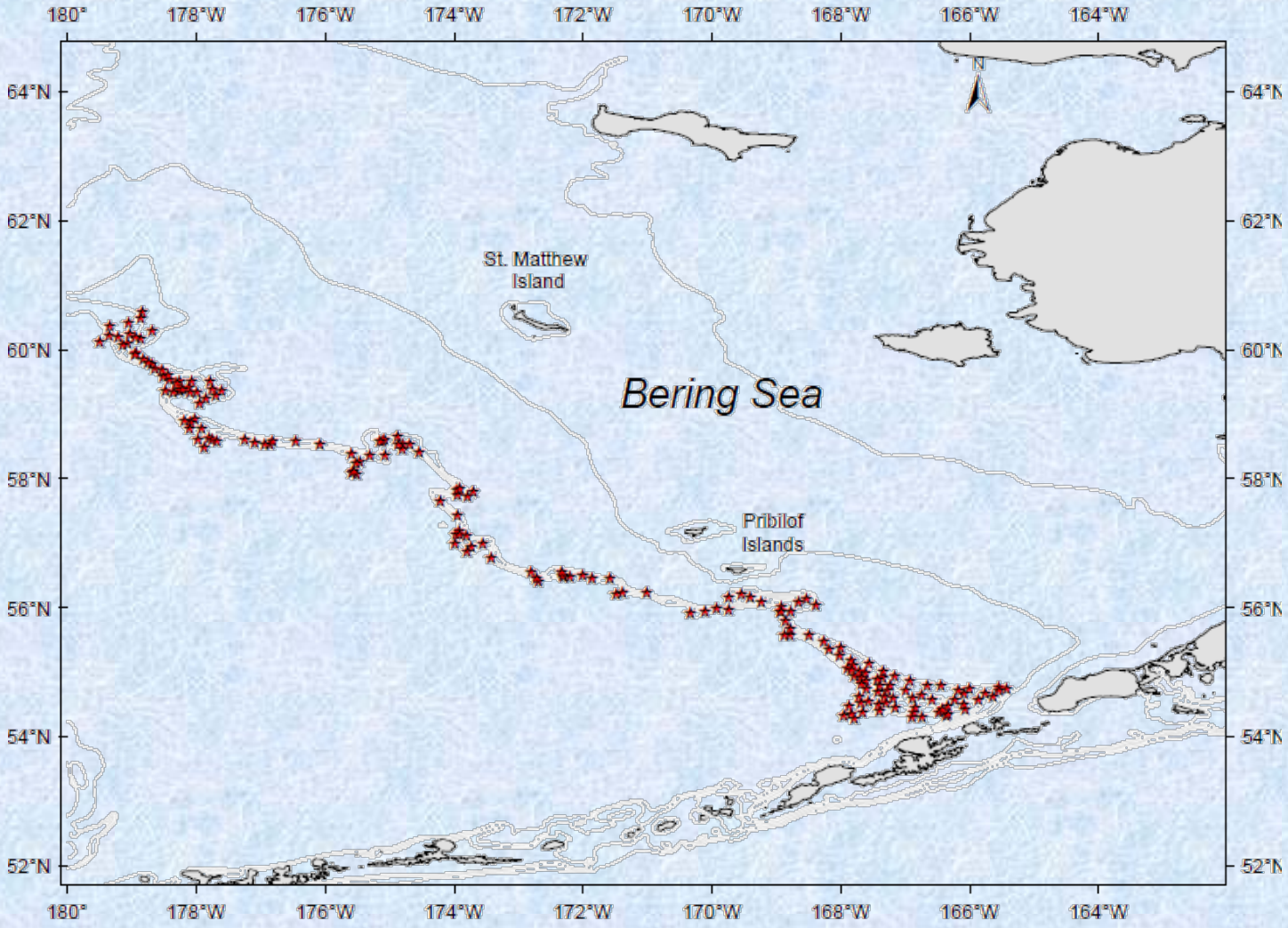




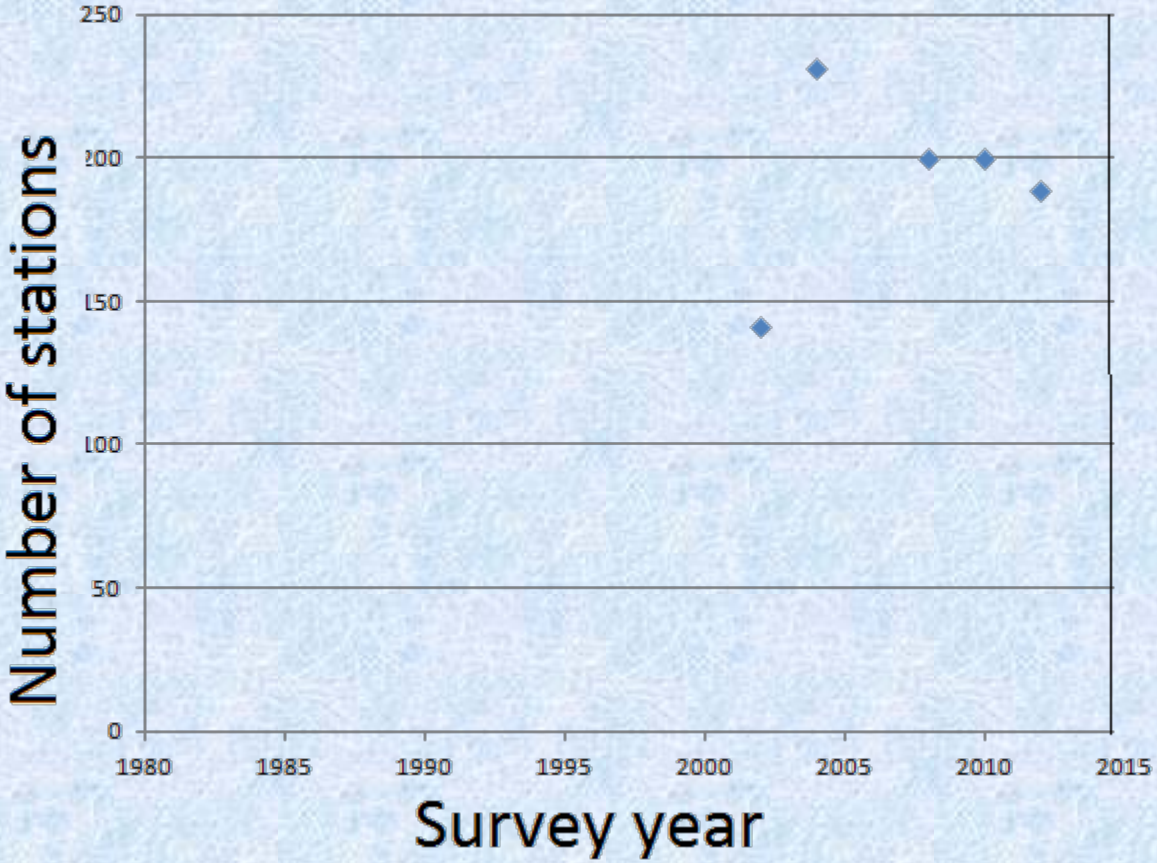
Bering Sea slope



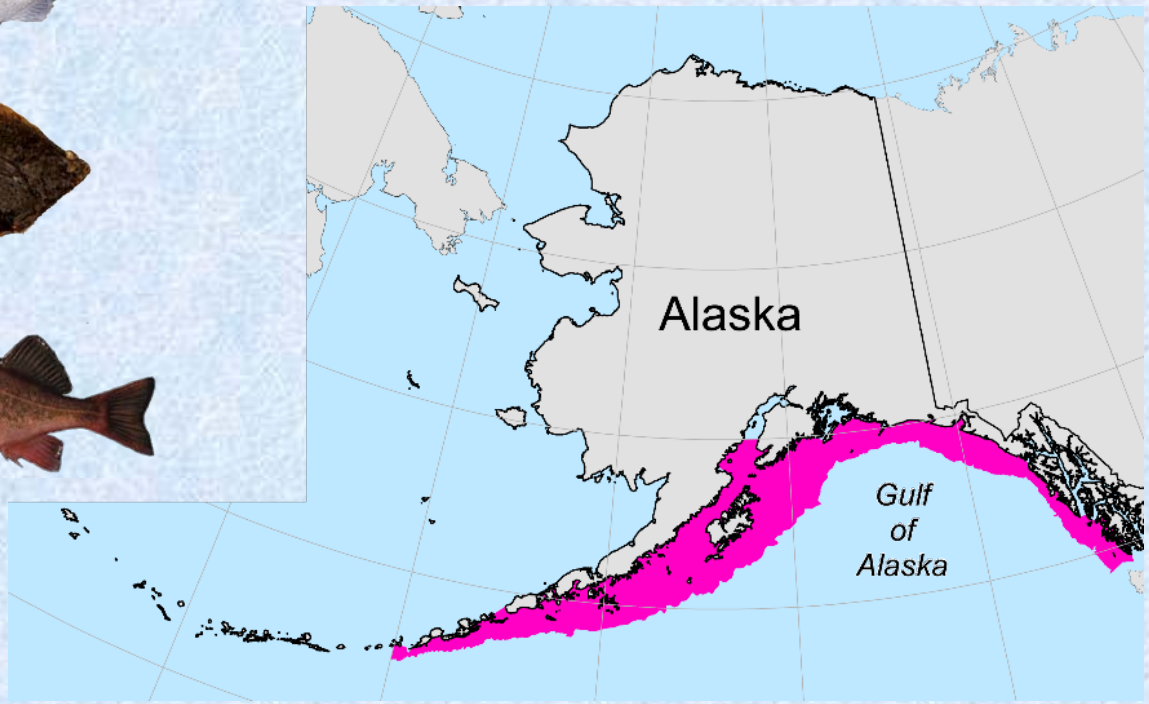
Sampling station pattern



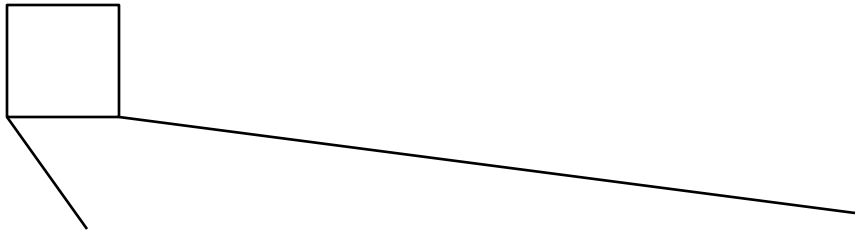
History of the EBS slope survey



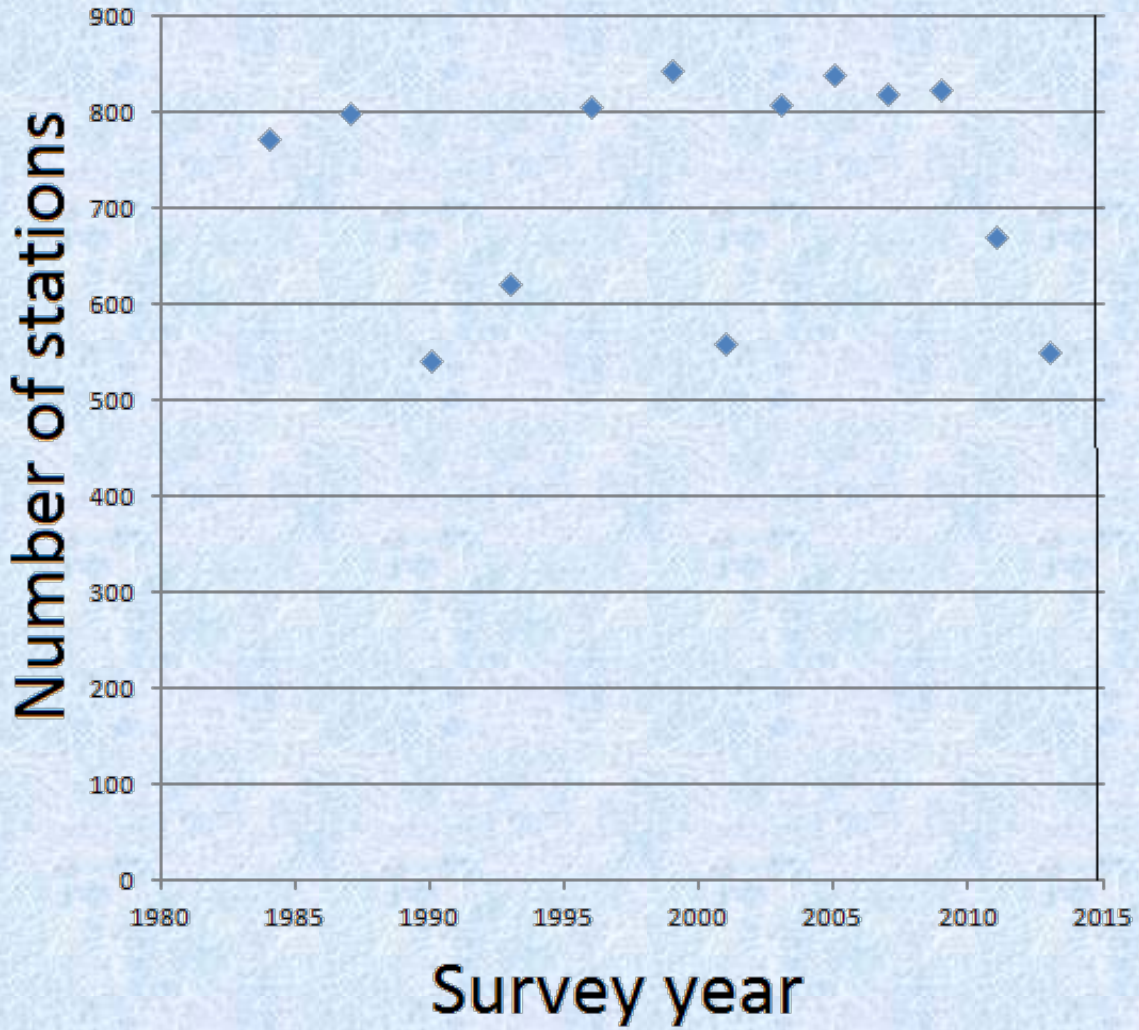
Gulf of Alaska



Sampling station pattern



History of Gulf of Alaska survey



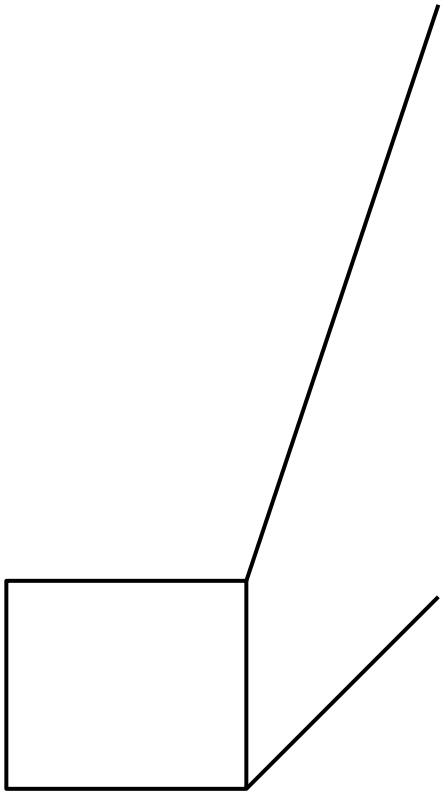
Gulf of Alaska Survey Grid

Special features

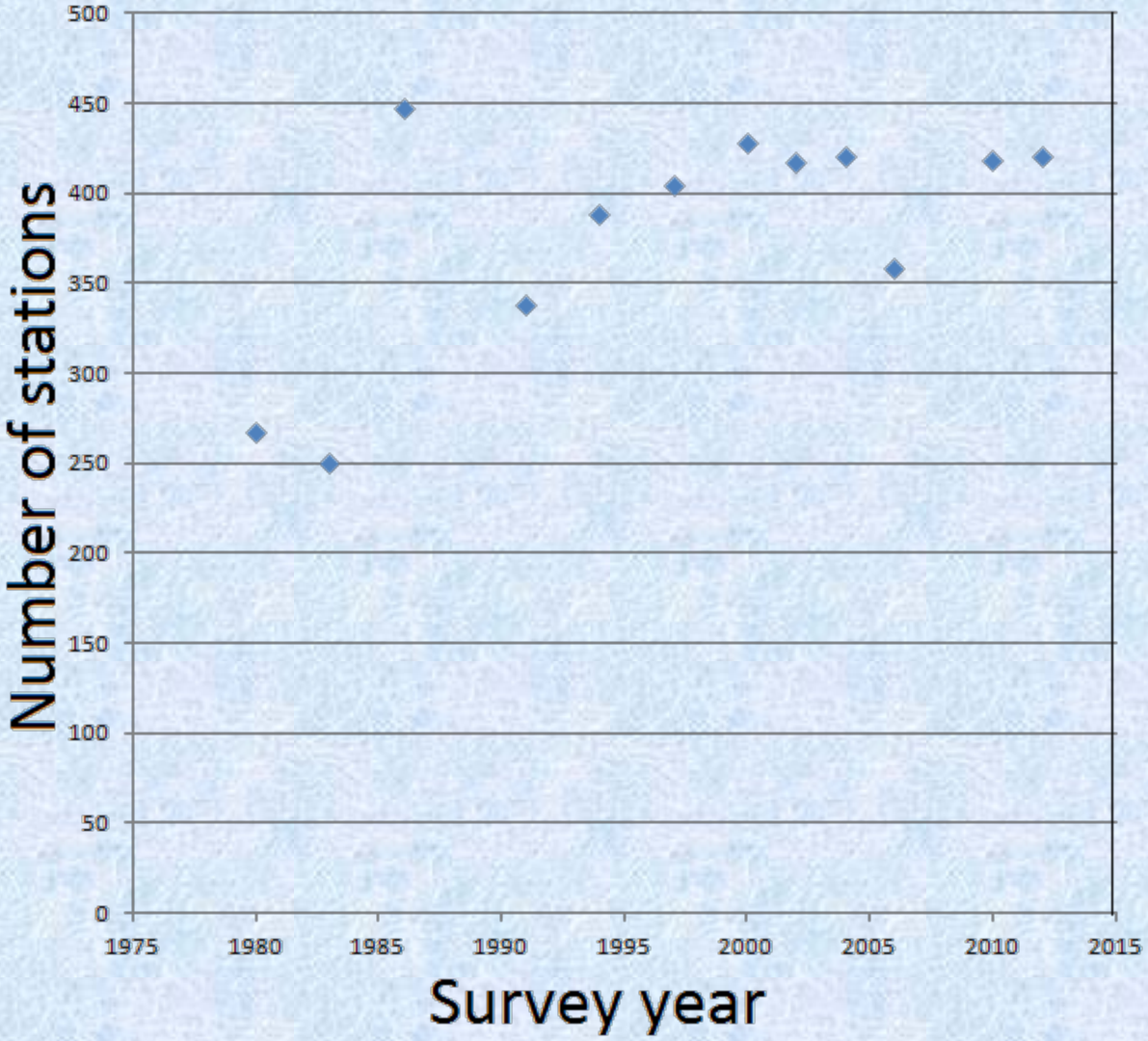
- Untrawlable habitat
  - No good bathymetry maps
  - No method for sampling
  - No ability to estimate catchability
- Change in tow duration from 30 to 15 min

Aleutian Islands

AI 2012 Survey Stations



History of Aleutian Islands survey



Aleutian Islands Survey Grid

Special features

- Same issues as GOA, but worse.

Questions?