

*Science, Service, Stewardship*



# Eastern Bering Sea Shelf Bottom Trawl Survey of Groundfish and Invertebrate Resources

**NOAA  
FISHERIES  
SERVICE**



# **Shelf Bottom Trawl Survey History**

1975 - First annual large-scale bottom trawl survey of eastern Bering Sea shelf

1982 - Changed trawl gear: new time-series

1987 - Addition of 20 NW stations

1988-2010 - Continued annual surveys

# **Shelf Bottom Trawl Survey Standards**

Station at center of 20 x 20 nm grid

Fixed stations every year

30 minute tow

3.0 knot towing speed

Trawl winch brakes set during tow

178 00E 180 00W 178 00W 176 00W 174 00W 172 00W 170 00W 168 00W 166 00W 164 00W 162 00W 160 00W 158 00W 156 00W

64 00N

64 00N

AA 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 1 2 3 4

ZZ

Y

X

W

V

U

T

S

R

Q

P

O

N

M

L

St. Lawrence I.

St. Matthew I.

Nunivak I.

ALASKA

5 6 7

8

9

10

11

12

13

14

15

16

K

J

I

H

G

F

E

D

C

B

A

Z

St. Paul I.

St. George I.

Unimak I.

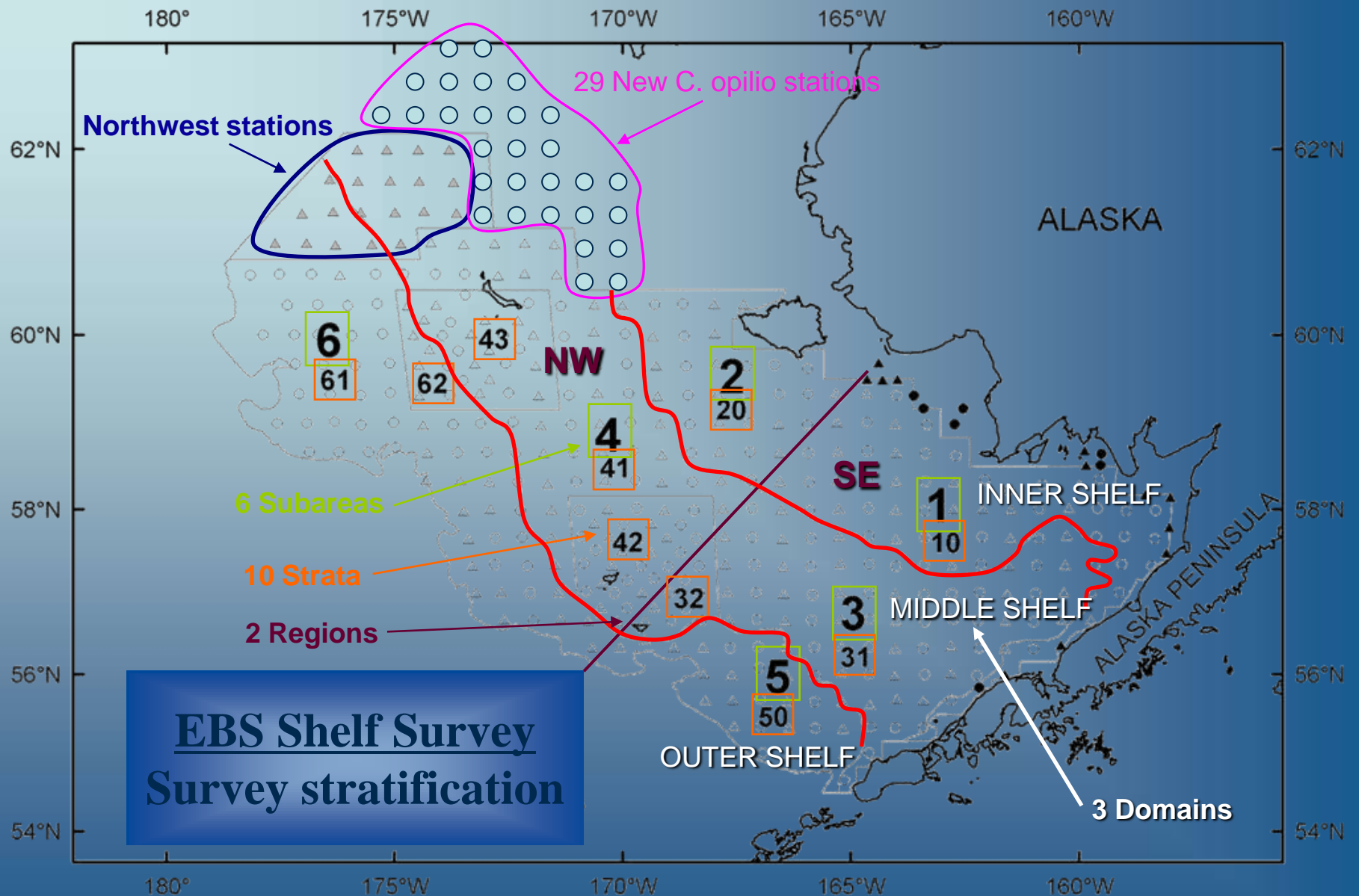
Vessel \_\_\_\_\_

Cruise No. \_\_\_\_\_

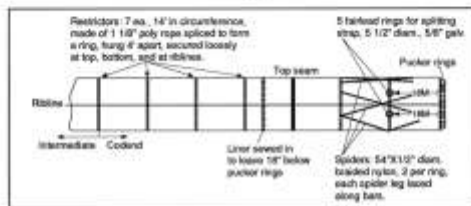
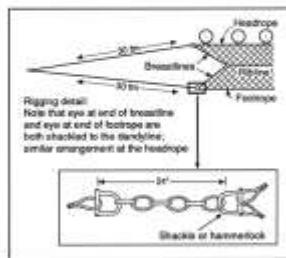
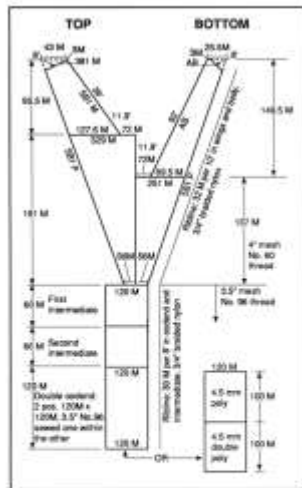
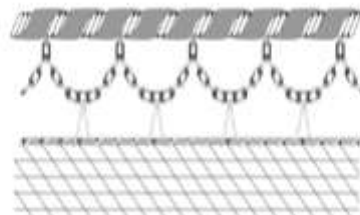
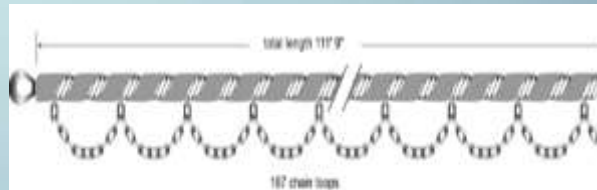
64 00N

64 00N

178 00E 180 00W 178 00W 176 00W 174 00W 172 00W 170 00W 168 00W 166 00W 164 00W 162 00W 160 00W 158 00W 156 00W



## 83-112 Eastern Trawl



Vessel	
Cruise	
Date	
Checked by	
Checked by	
Net I.D. number	

Travel Door #	
6 x 8 1/2 door	
1800 lbs	
post	stud

Stacking/Tiering	
1/4" max x 60	

Scannar / Nictin wire stop location	
Upper tride t2 from nico press	

1

6

Floods		
$1' \times 17'$ to wing	$16' \times 7'$ to	
port	starb	Dr

Trailway Attraction	
15' trail station setback on hole	
goal	std

Door Leg Extension	
1/2" wide x 40"	
part	qty

$\frac{1}{2} \times 1.80$	
part	total

Upper Group	
port	

est Line

Footnote 111  
to specifications

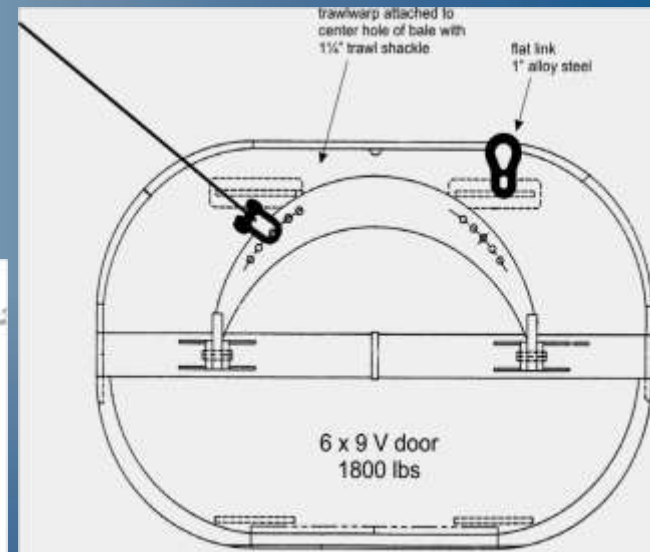
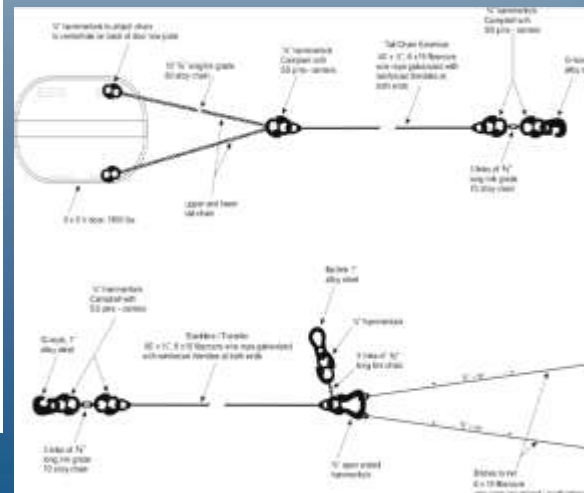
Figure 1 illustrates the experimental design. It shows two main stages, Stage 1 and Stage 2, each with a Pre-test and a Post-test. A Control group is also shown with Pre-test and Post-test measurements. Arrows indicate the progression of the experiment from Stage 1 to Stage 2.

		Coverage 95% LL, C=0.05	
		Upper	Lower
part	10'	10'	10'

Getters Released	
	8
port	5

Line	point
End	

Codend
Liner
Splitting sheet

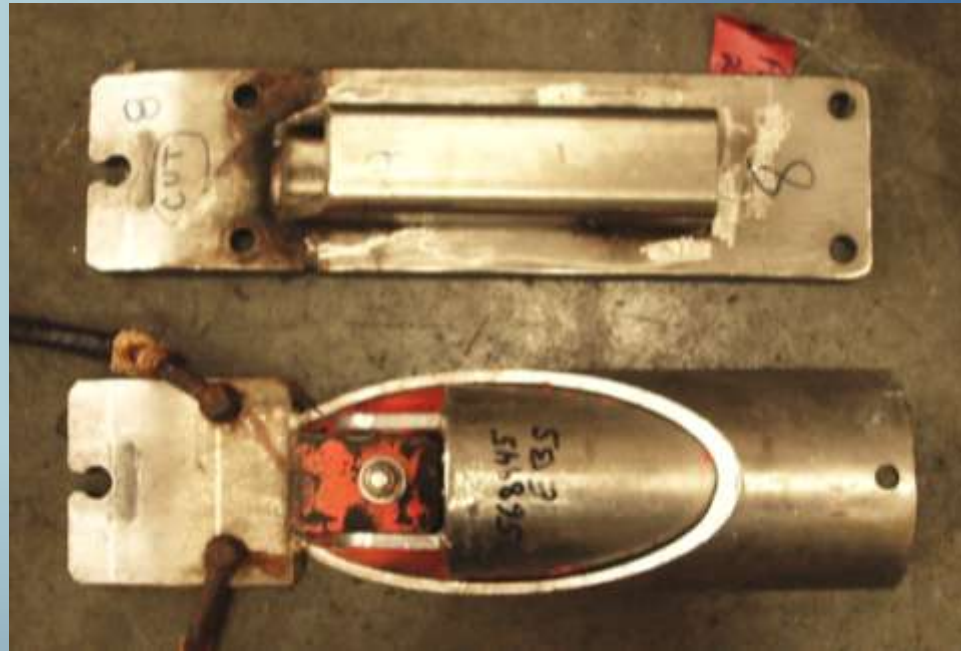




EBS Shelf Survey  
83-112 Eastern Trawl

# EBS Shelf Survey 83-112 Eastern Trawl





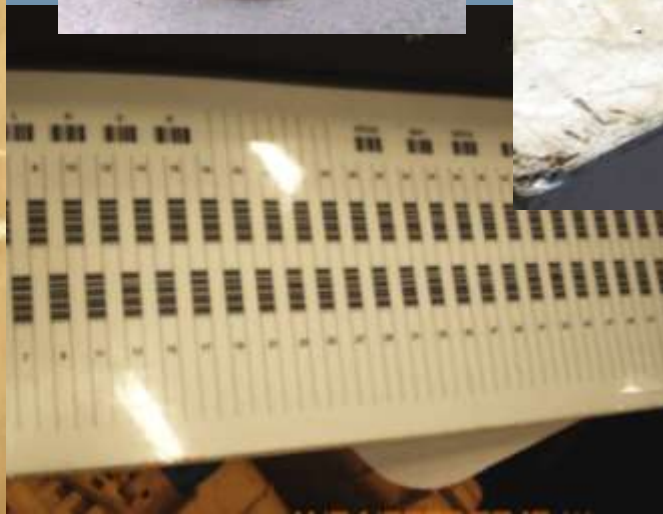
EBS Shelf Survey  
Net Mensuration Gear



## EBS Shelf Survey Net Mensuration Attachments



EBS Shelf Survey  
Scales &  
Length Data Recorder





## EBS Shelf Survey

### Catch Processing

[illegible]



**Feeding Ecology  
(1982-present)  
Predator-prey  
interactions**

**EBS Shelf Survey  
Other Groups**

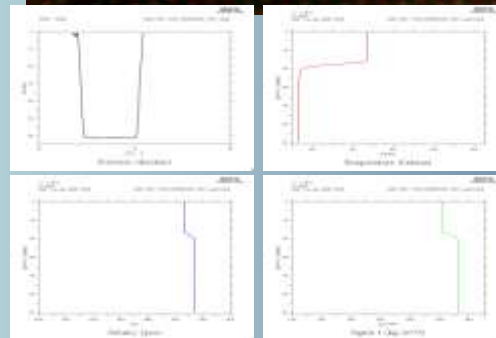
**Pathology Laboratory  
(1983-present)  
Disease & parasite monitoring**



**International Pacific  
Halibut Commission  
(1998-present)  
Age structures**

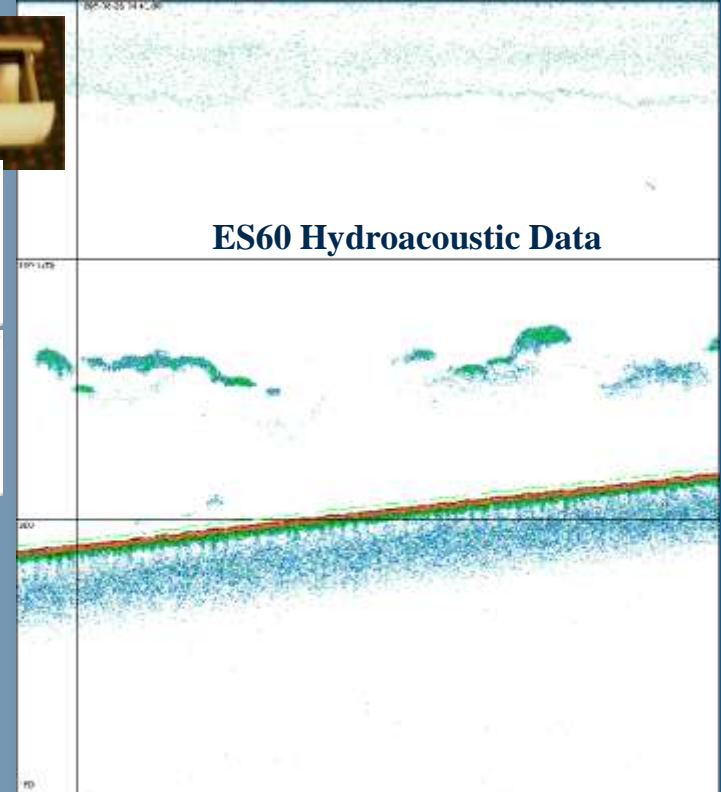


Plankton Bongo Tows



CTD oceanographic data

## EBS Shelf Survey Recent Ancillary Research Projects



ES60 Hydroacoustic Data

Alaska Skate Tagging

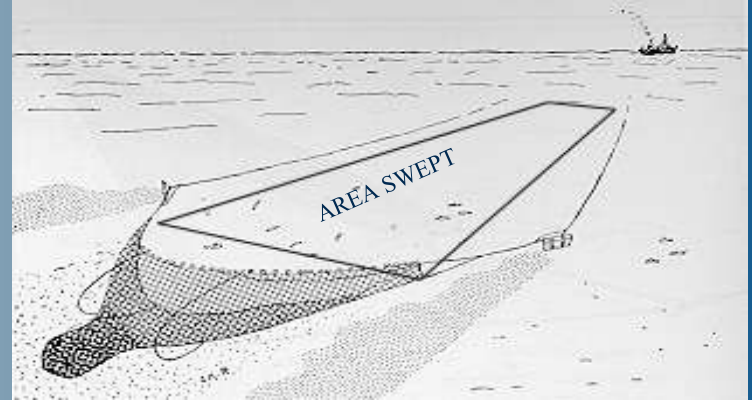


Light Irradiance

# Catch Per Unit Effort:

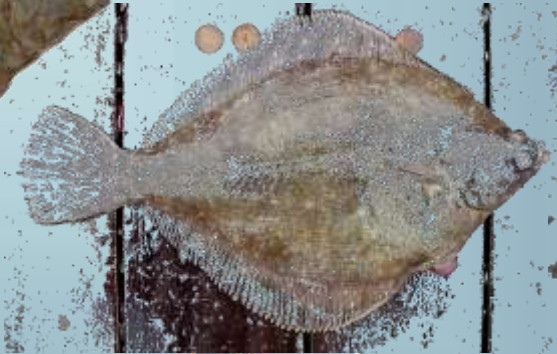
$$\text{Catch Per Unit Effort (CPUE)} = \frac{\text{Catch (weight or numbers)}}{(\text{Net Width}) (\text{Distance Fished})}$$

“area swept”



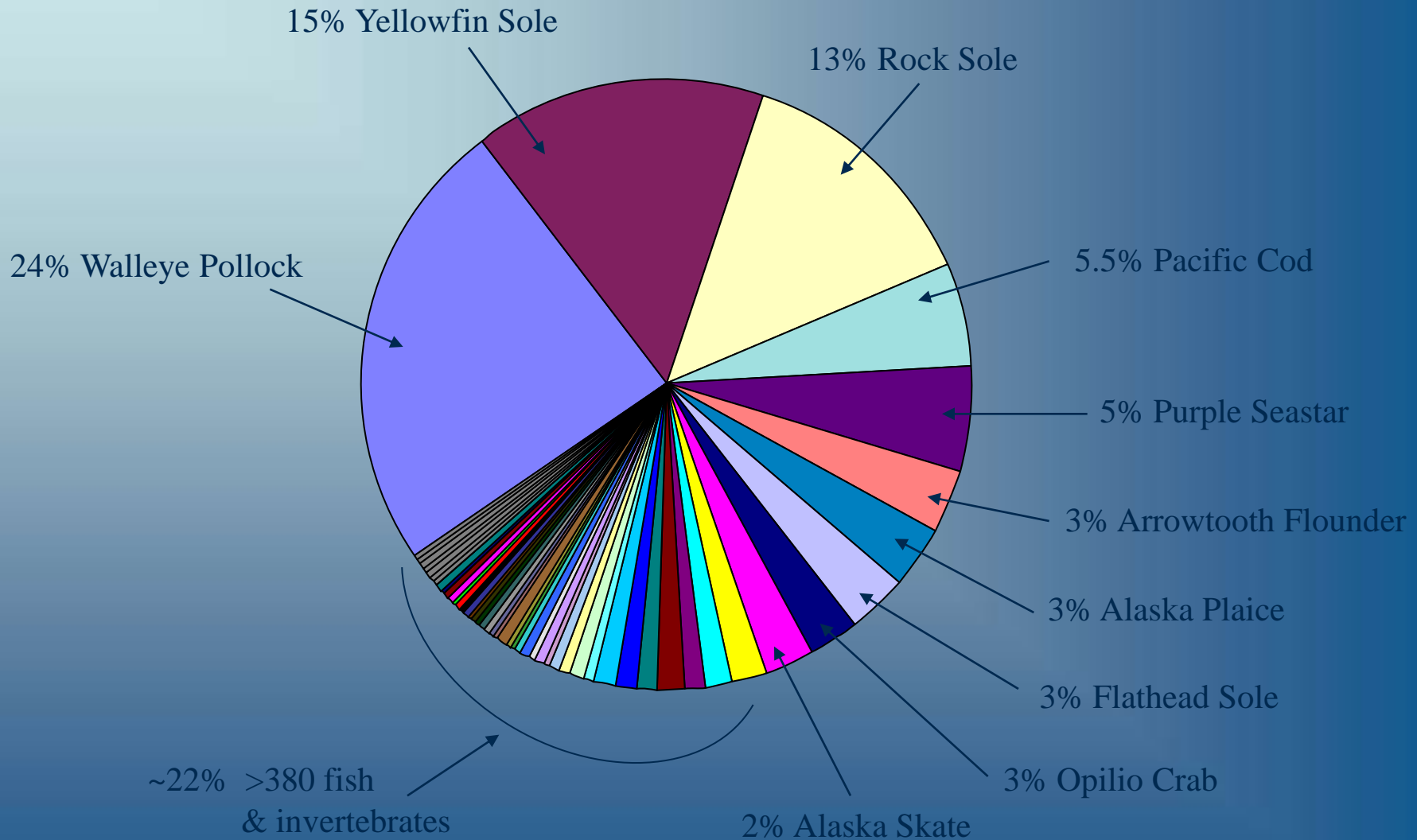
- Net height & width determined by net mensuration data
- Area swept (ha) computed by distance towed multiplied by mean net width
- Mean catch per unit effort (CPUE) values for each species are calculated in kg/hectare for each of the 10 strata
- CPUE calculated for individual subareas and for overall survey
- Biomass and population estimates are derived for each stratum by multiplying the stratum mean CPUE by total stratum area
- Stratum totals are added together to produce estimates for each subarea and for total survey area

# EBS Shelf Survey Major Species



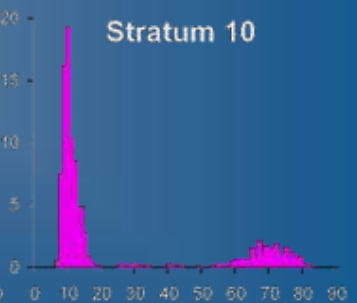
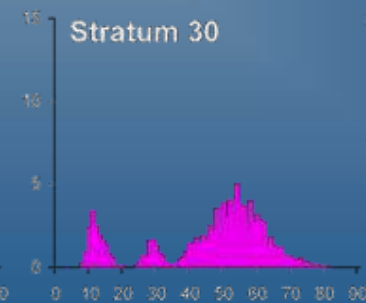
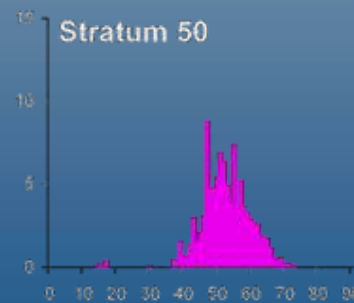
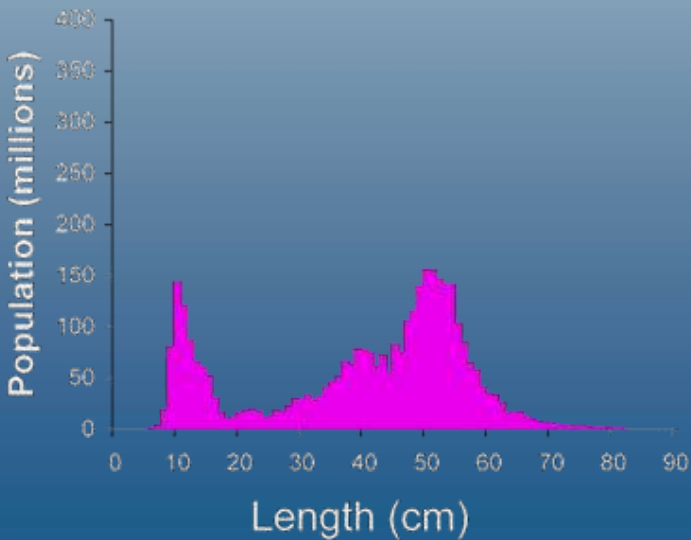
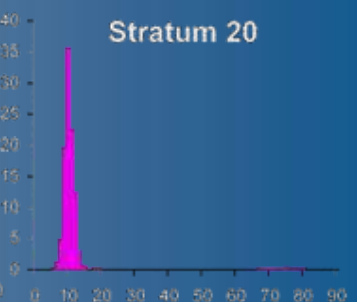
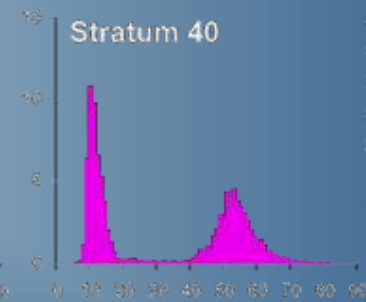
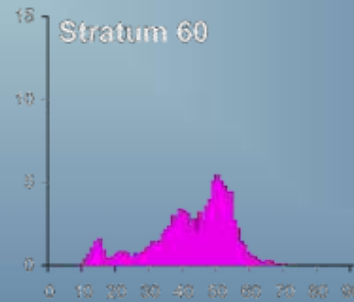
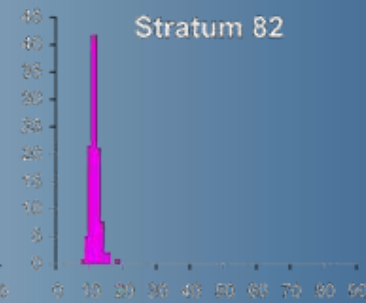
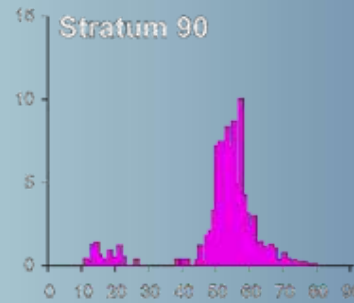
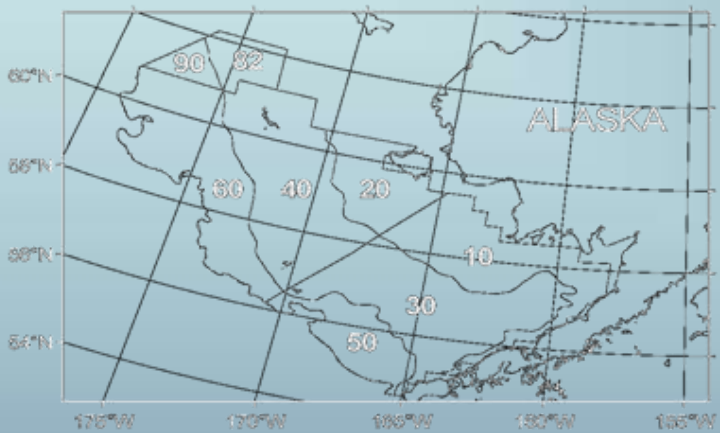
# EBS Shelf Survey

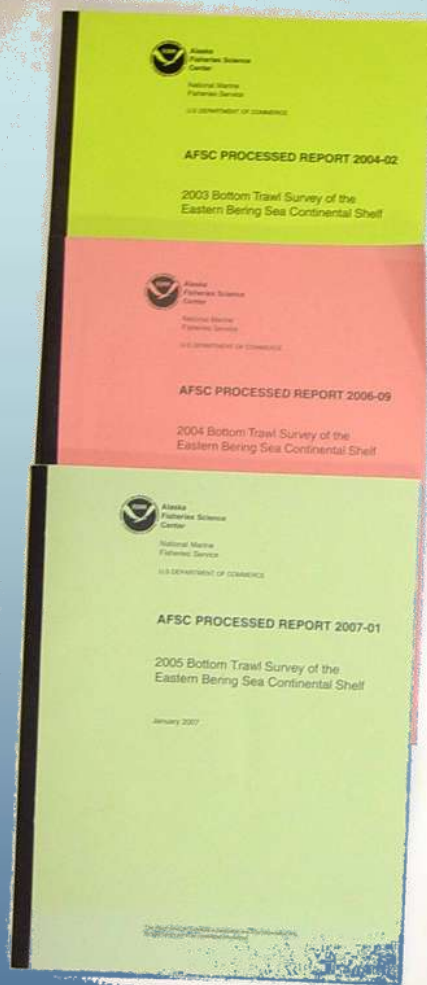
## Species Composition



# EBS Shelf Survey

## Excerpt From Data Report





<http://www.afsc.noaa.gov/Publications/>

**Processed Reports 1982-2005**  
**Technical Memorandum 2006-present**

**EBS Shelf Survey**  
**Series of Data Reports**