SWAN Nearshore Monitoring: Testing and Trial Implementation, Katmai NP, 2006

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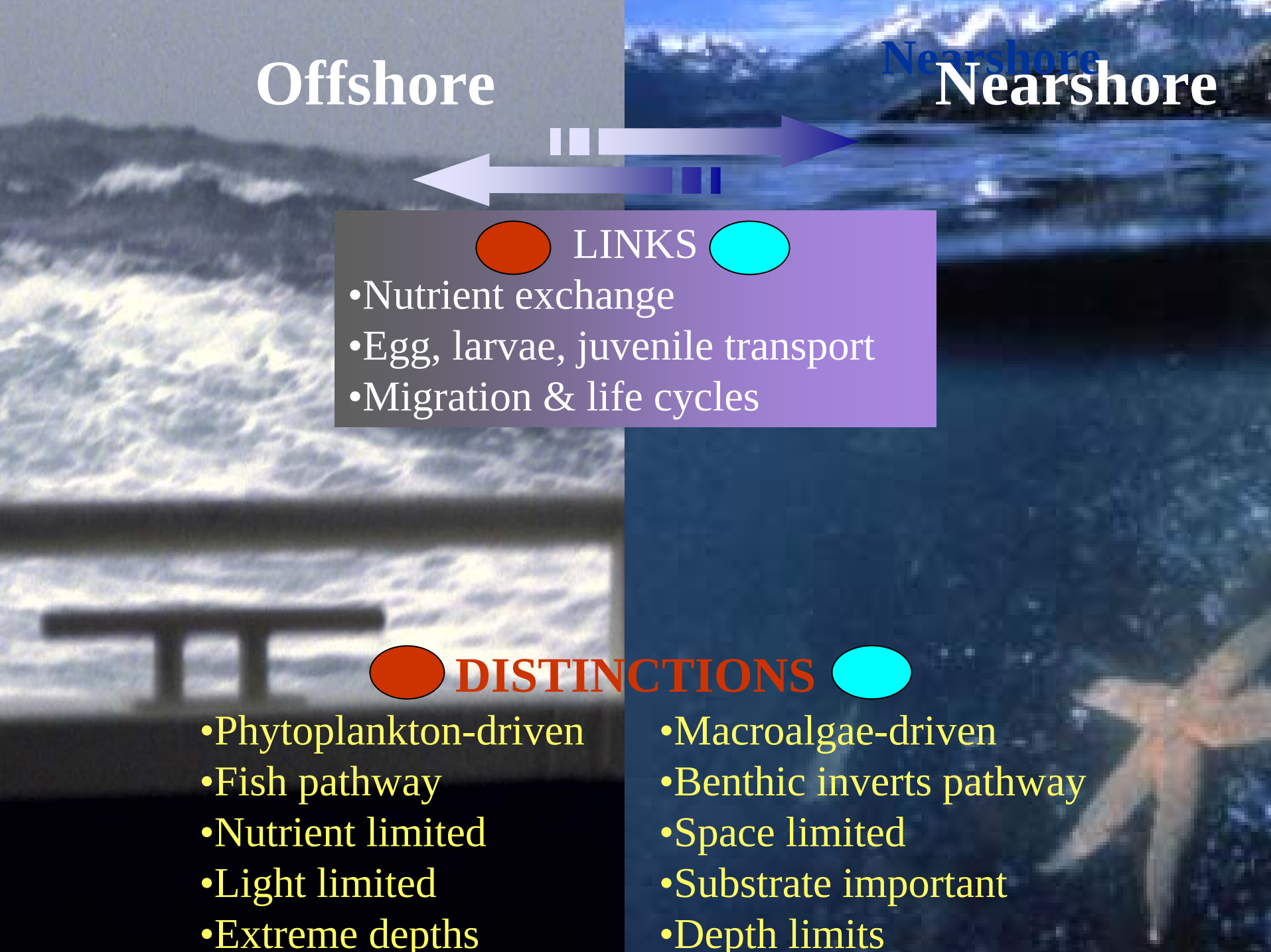
Outline

- What is the "Nearshore" and why monitor it?
- Monitoring objectives
- Nearshore "Vital Signs" & SOP development
- Nearshore monitoring design and protocol
- 2006 trial implementation results



LINKS

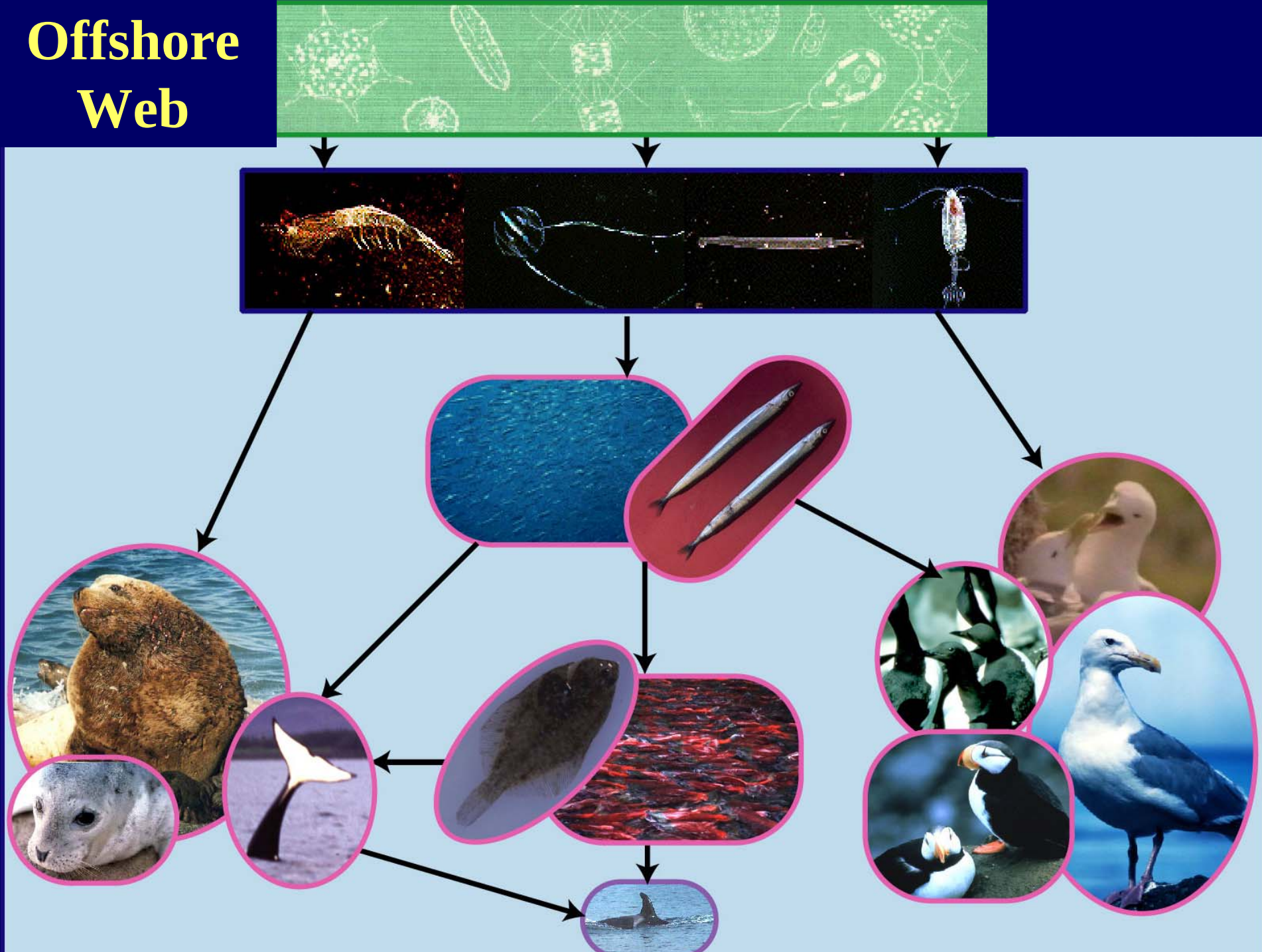
- Nutrient exchange
- Egg, larvae, juvenile transport
- Migration & life cycles

DISTINCTIONS

- Phytoplankton-driven
- Fish pathway
- Nutrient limited
- Light limited
- Extreme depths

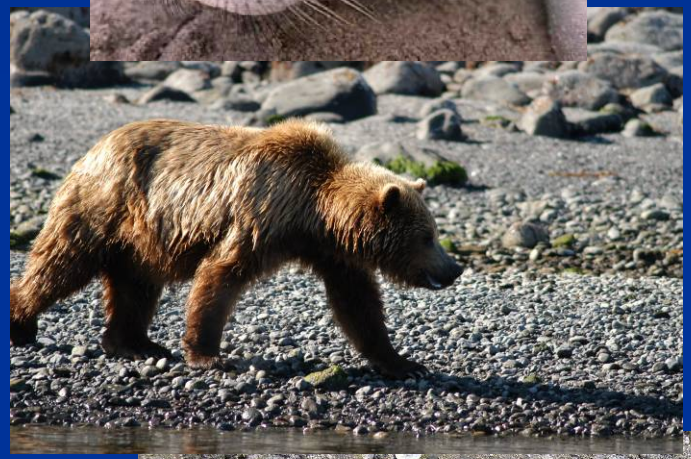
- Macroalgae-driven
- Benthic inverts pathway
- Space limited
- Substrate important
- Depth limits

Offshore Web



Nearshore Species

“Other” Nearshore Species

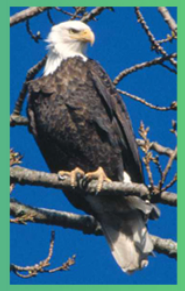


Nearshore Web

Offshore

Linkages

Watersheds



Why the Nearshore?

- Critical habitat (birds, mammals, fishes, kelps, inverts…)
- Nursery habitat (crab, salmon, herring…)
- Feeding habitat (Orca, sea lions, sea birds, fishes…)
- Habitat for commercial resources (herring, salmon, crab…)
- Habitat for valued subsistence resources (seals, clams, mussels…)
- Habitat for important human social activities
- An important triple interface linking the land, air, and sea
- Nearshore is understood and tractable

Monitoring Objectives

- Detecting trends in abundance, density, species composition, sizes, and productivity over time
- Understanding causes for the change or trends detected

Nearshore "Vital Signs"

- Marine Water Chemistry
- Kelps and Sea grasses
- Intertidal Invertebrates
- Marine Birds
- Black Oystercatcher
- Sea Otter

Marine Water Chemistry

- Temperature
- Contaminants

Kelps and Sea Grasses

- Species composition
- Distribution
- Abundance

Intertidal Invertebrates

Rocky and Soft Sediment habitats

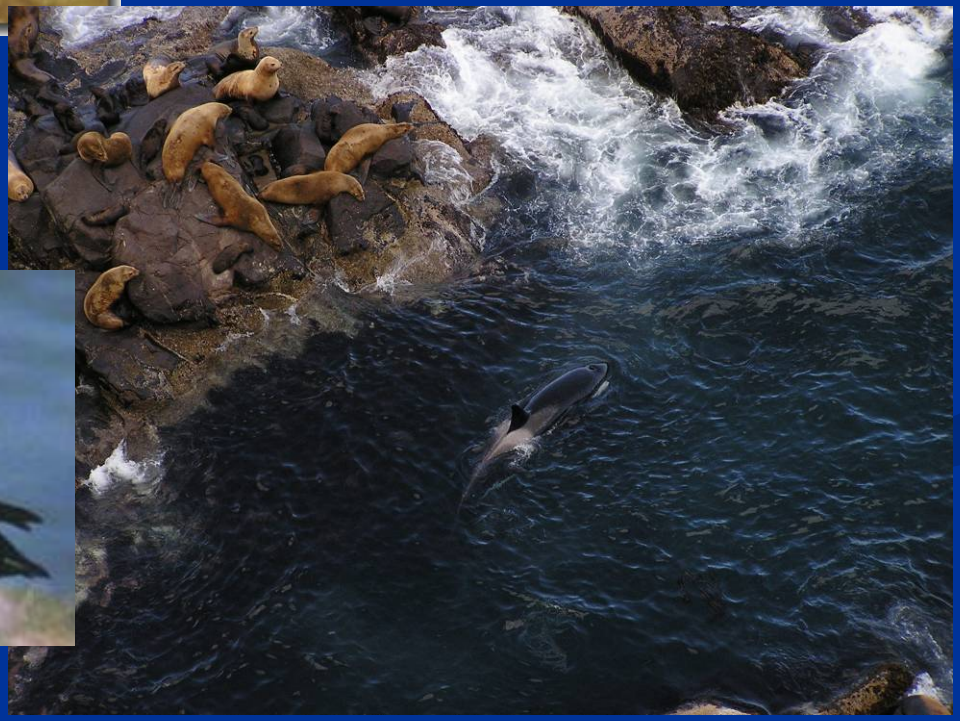
- Species composition
- Abundance/Density
- Sizes
- Trend

Focal Species

- Mussels
- Clams
- Limpets

Marine Birds (and mammals)

- Species composition
- Distribution
- Density
- Trend



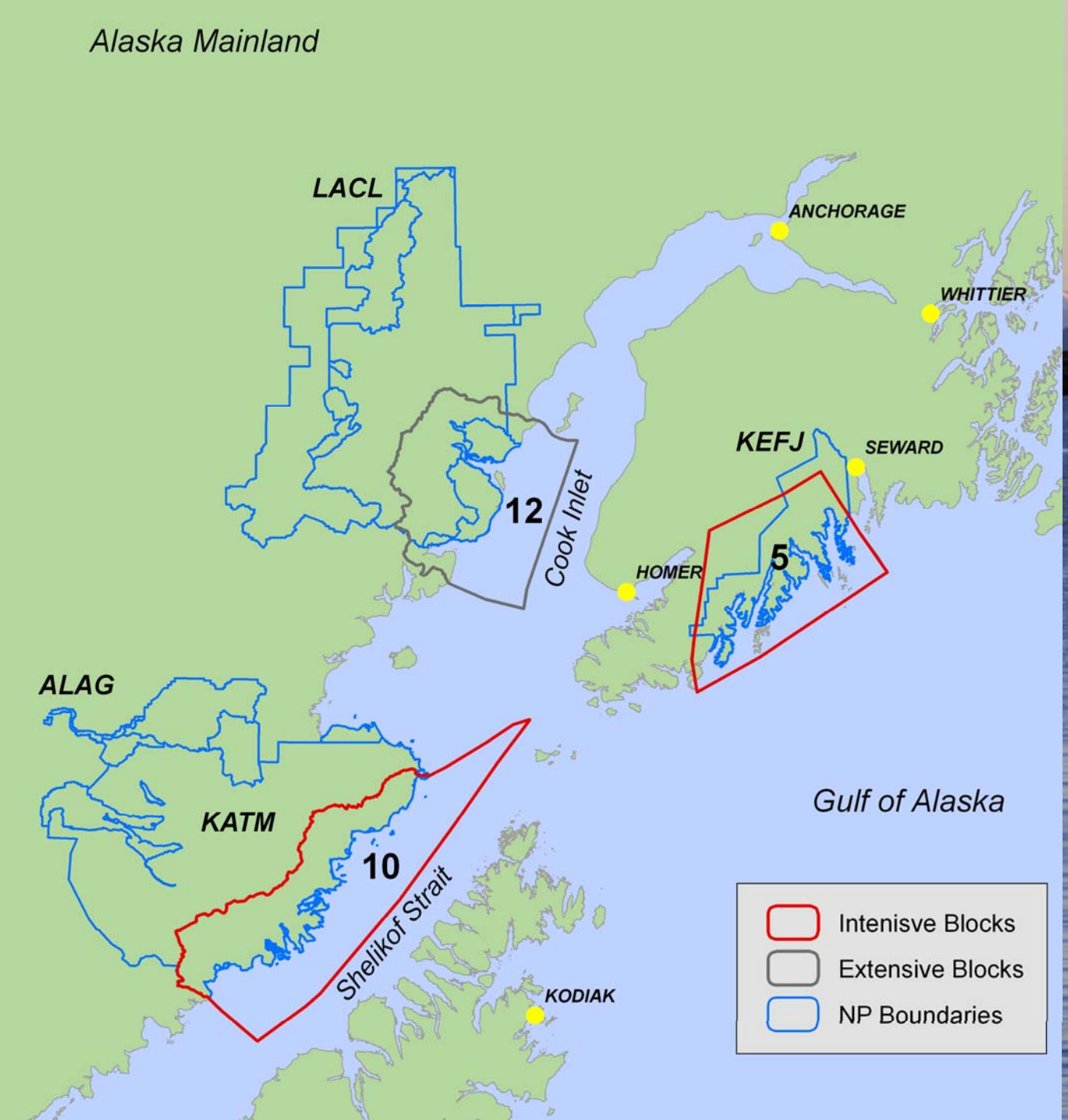
Black Oystercatchers

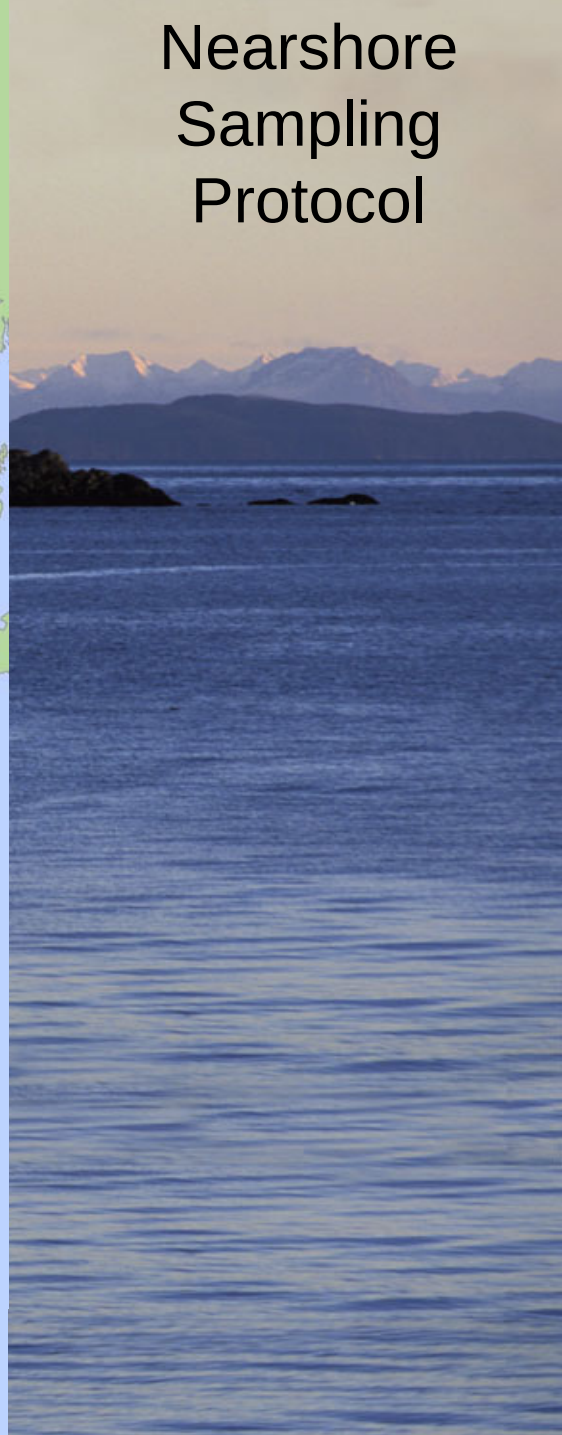
- Density/Abundance (adults and nest)
- Nest occupancy and productivity
- Diet (chick provisioning)

Sea Otter

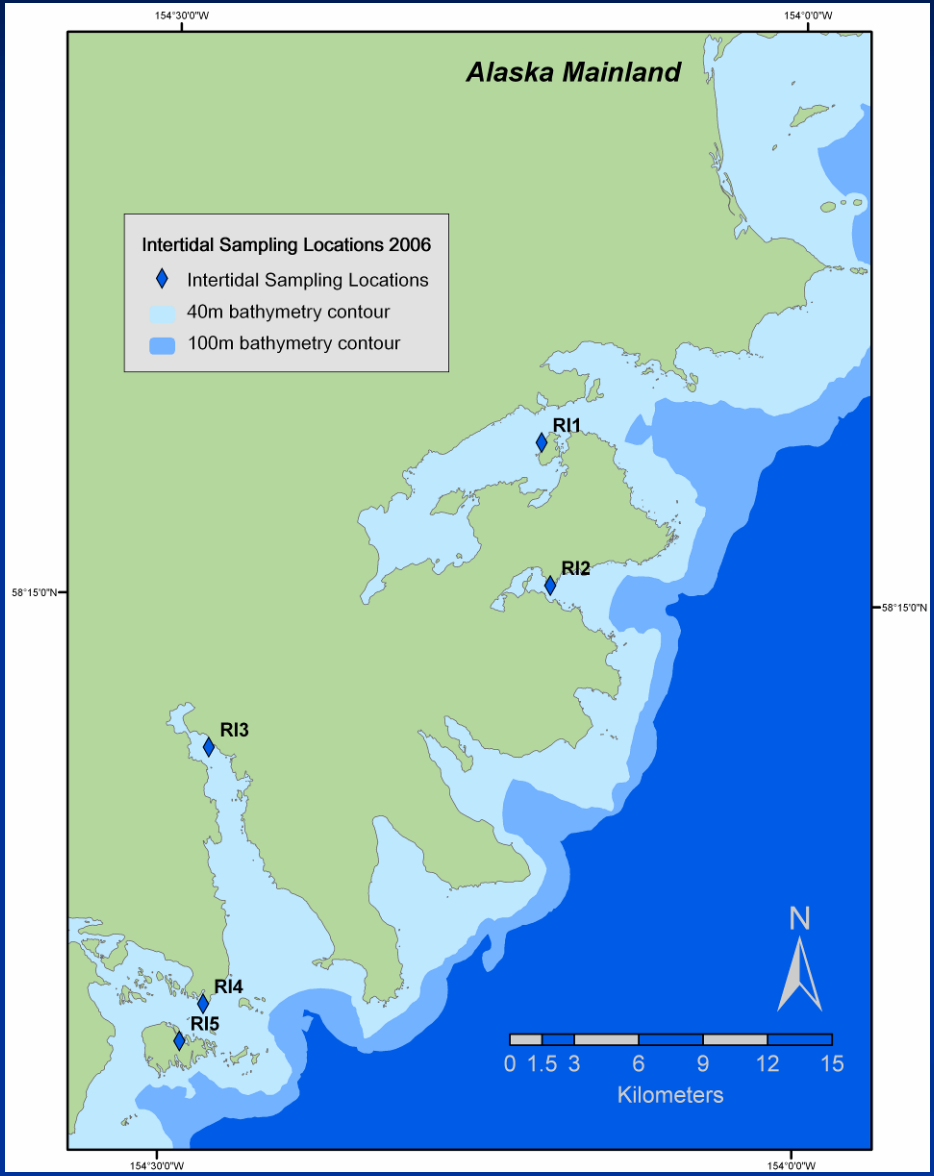
- Density/Abundance
- Mortality
- Diet

Nearshore Sampling Protocol

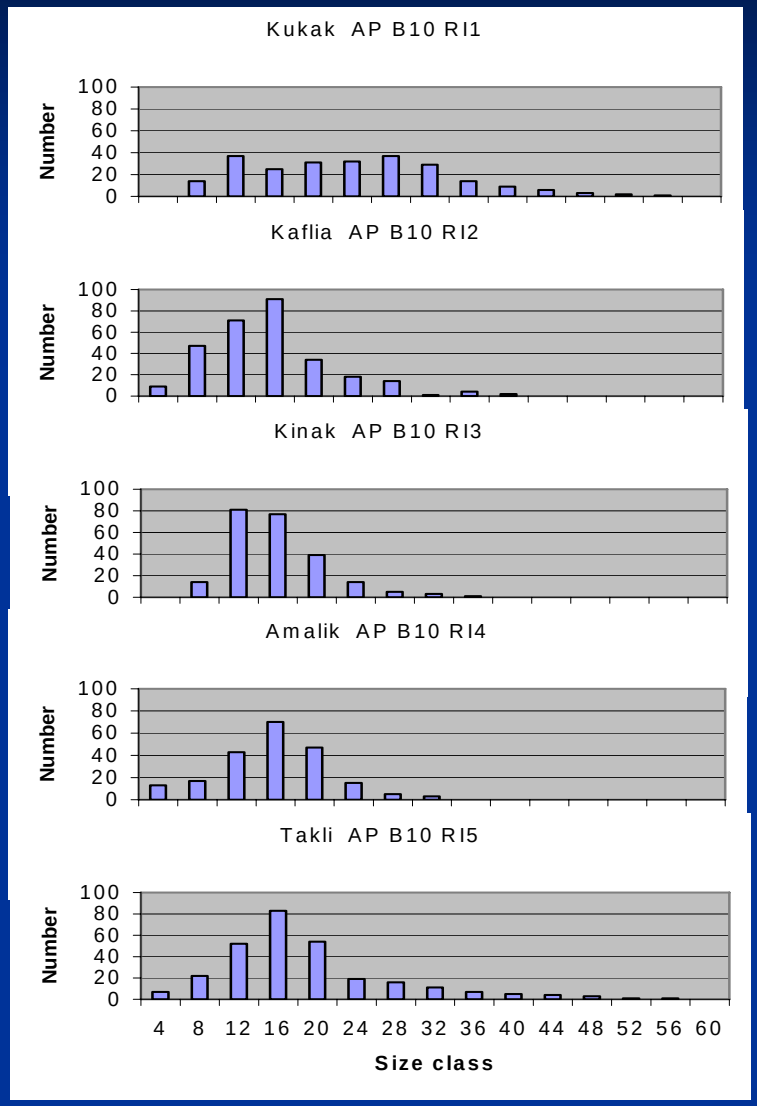




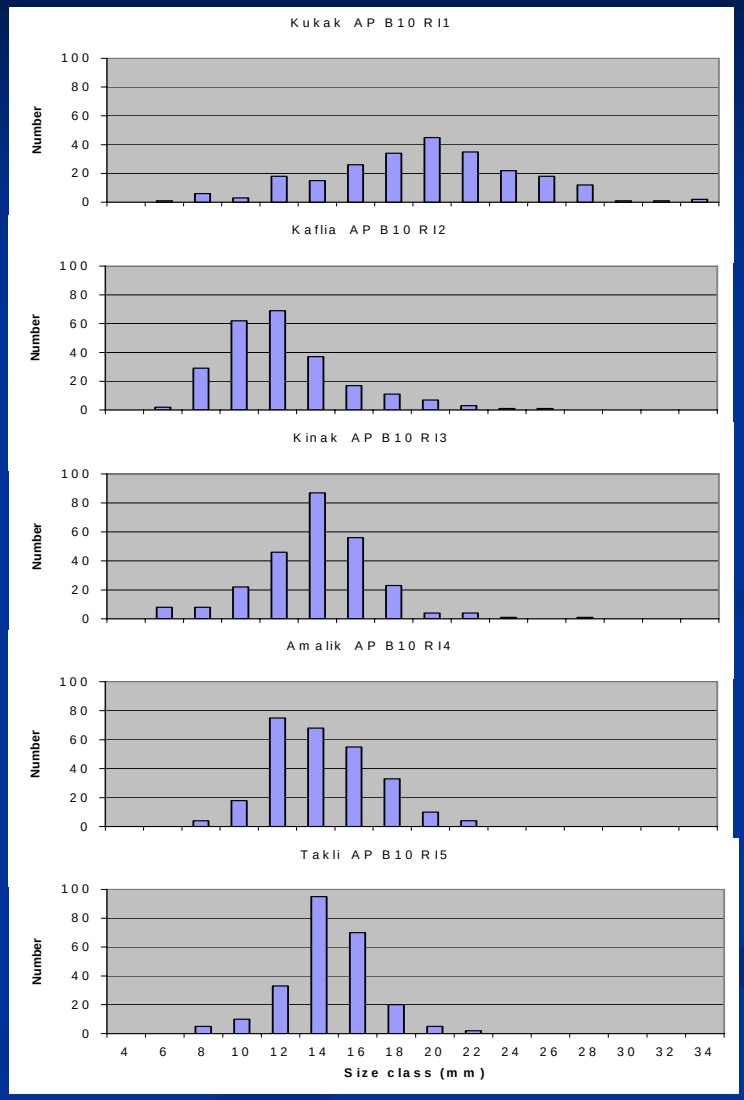
Intertidal Invertebrates



Intertidal Invertebrates

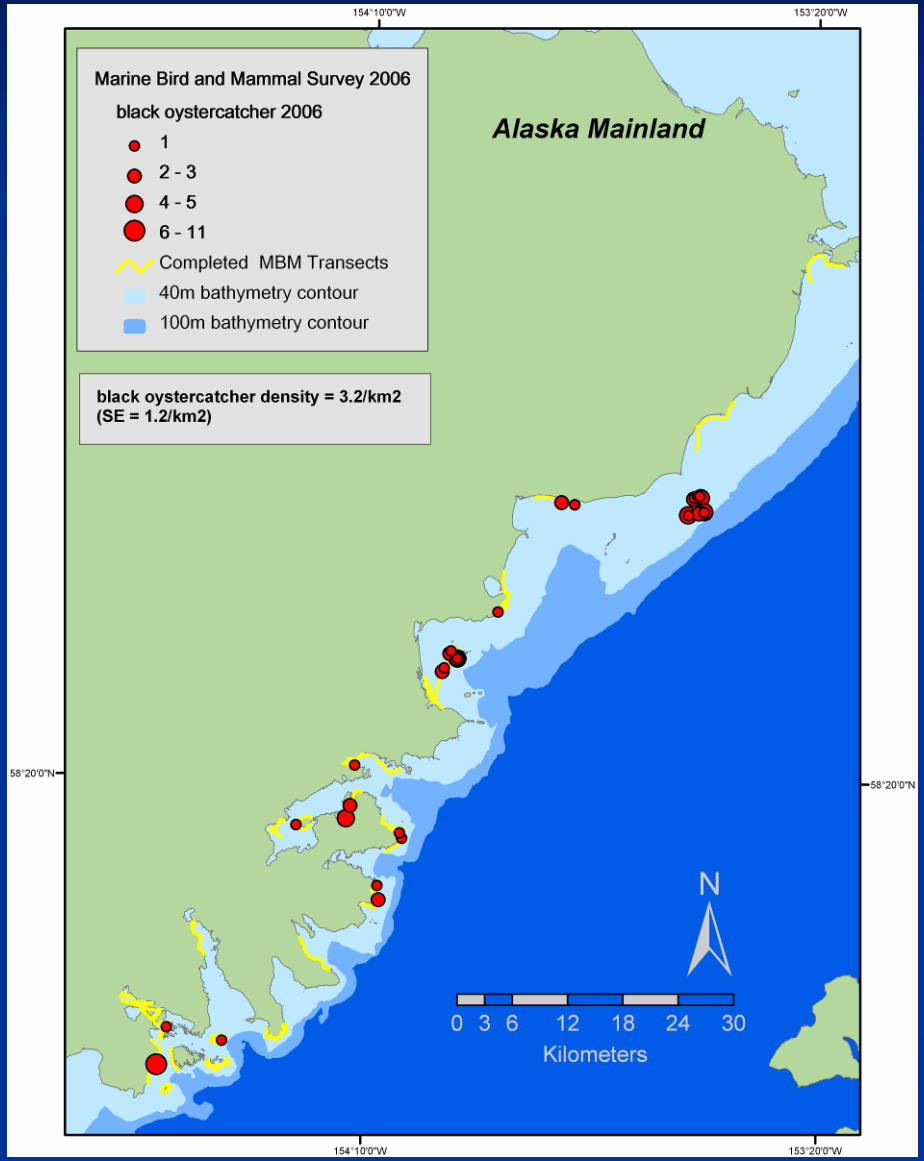


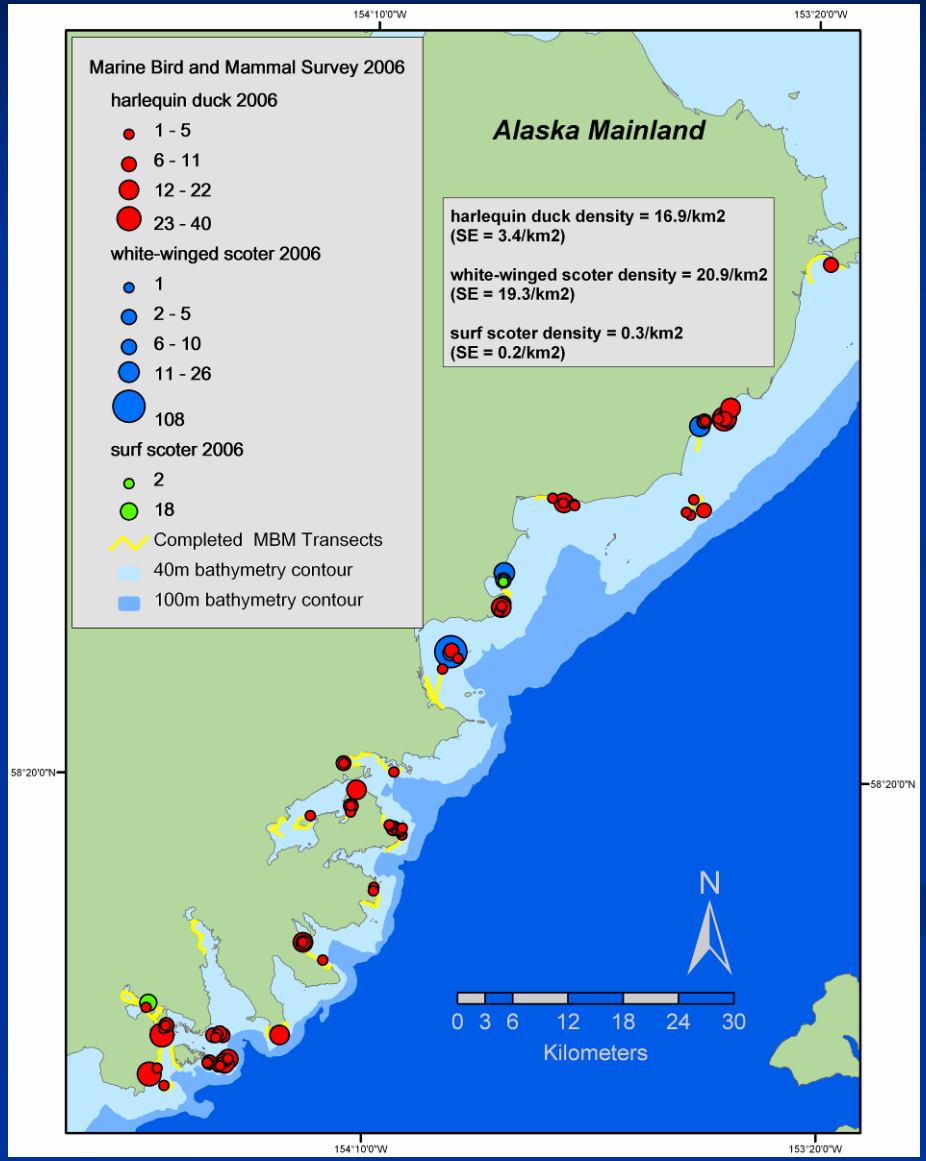
Mytilus trossulus



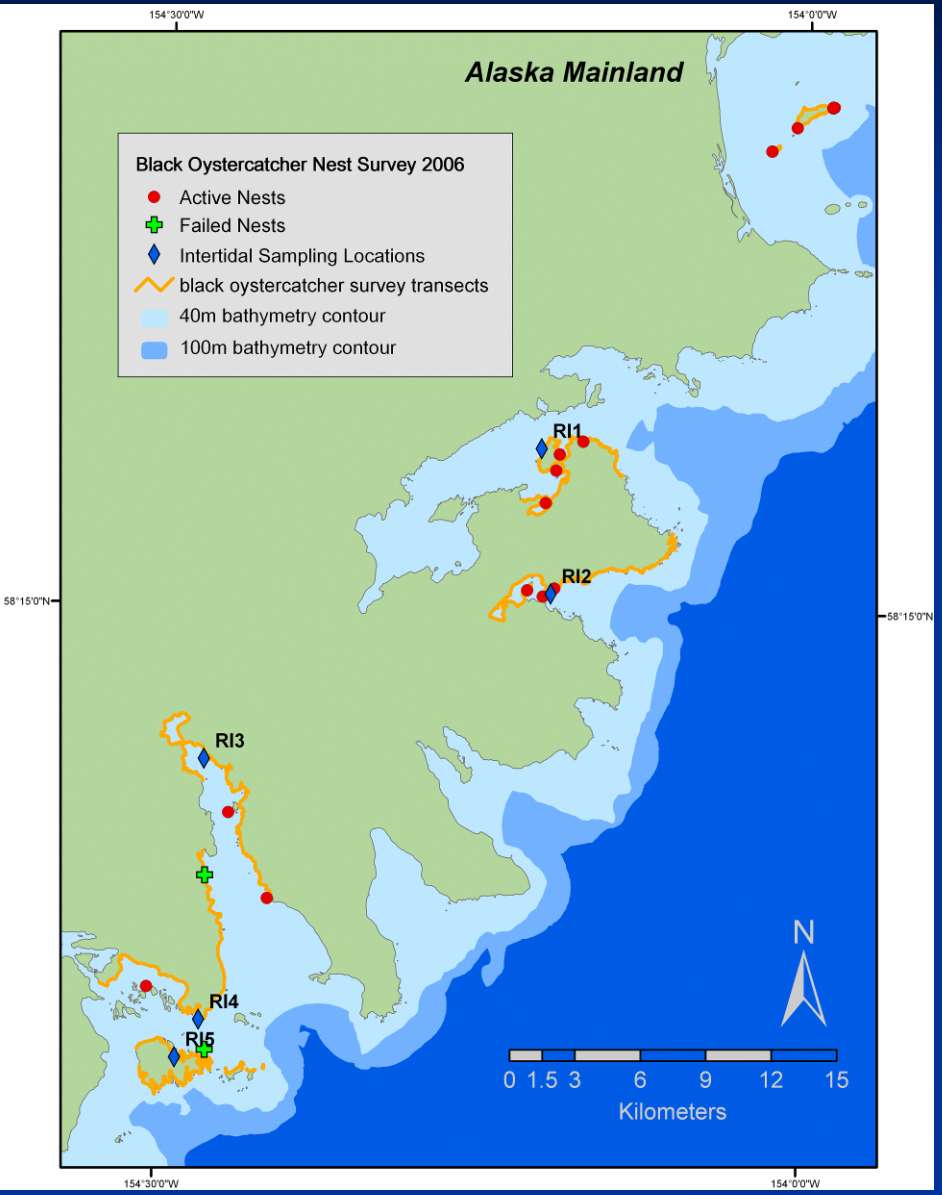
Tectura persona

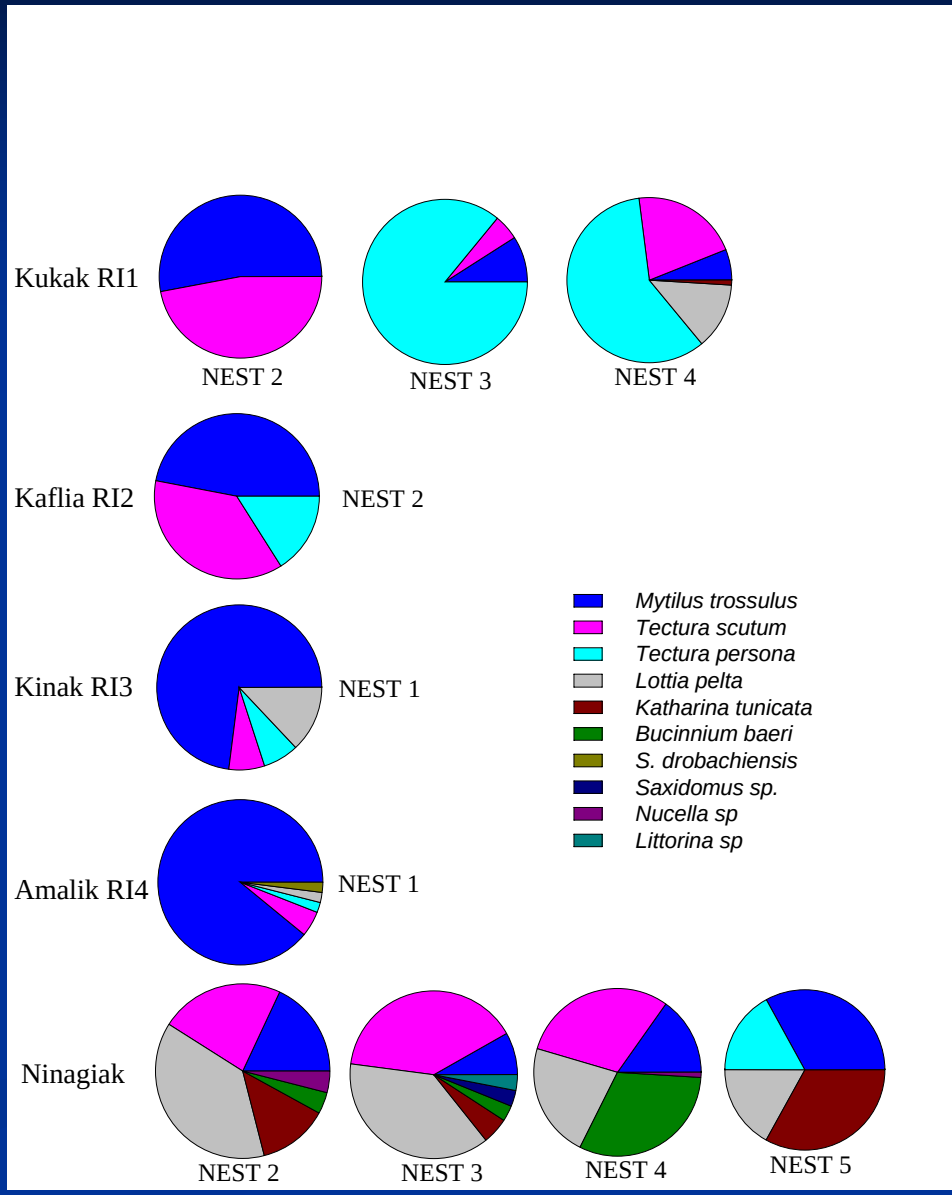
Marine Birds





Black Oystercatcher





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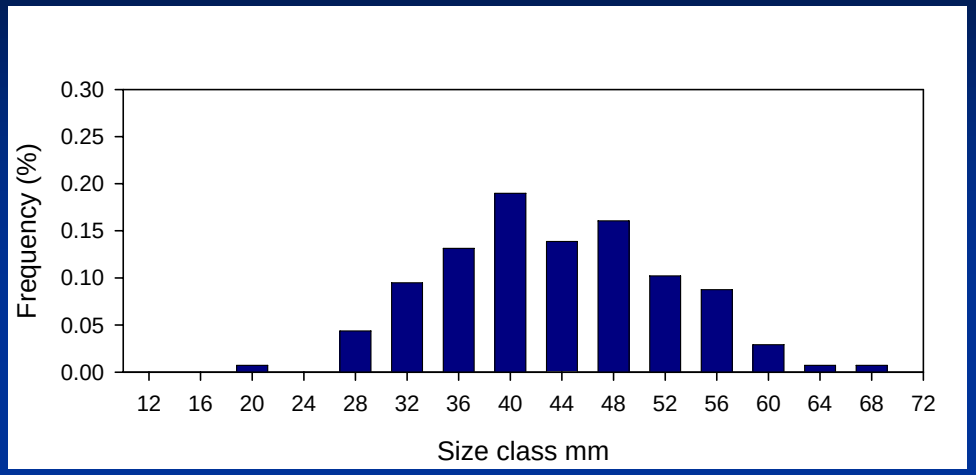
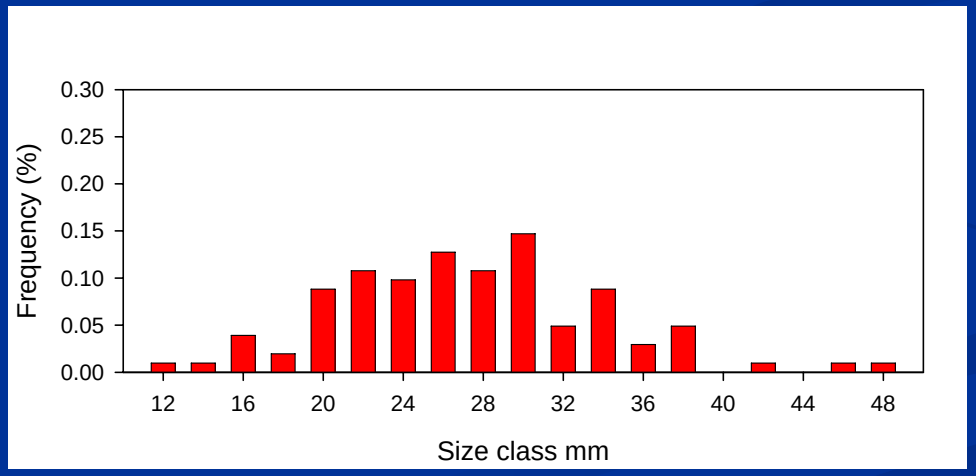
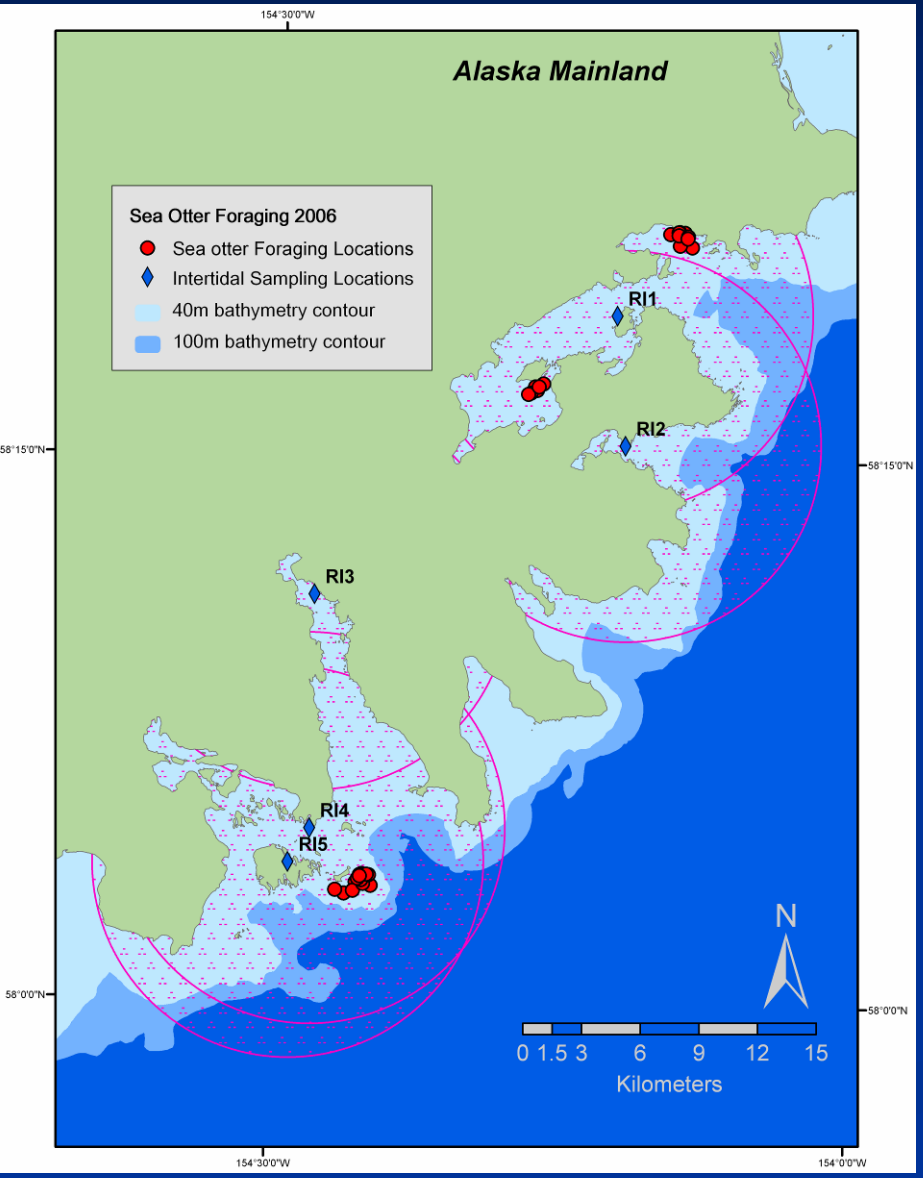


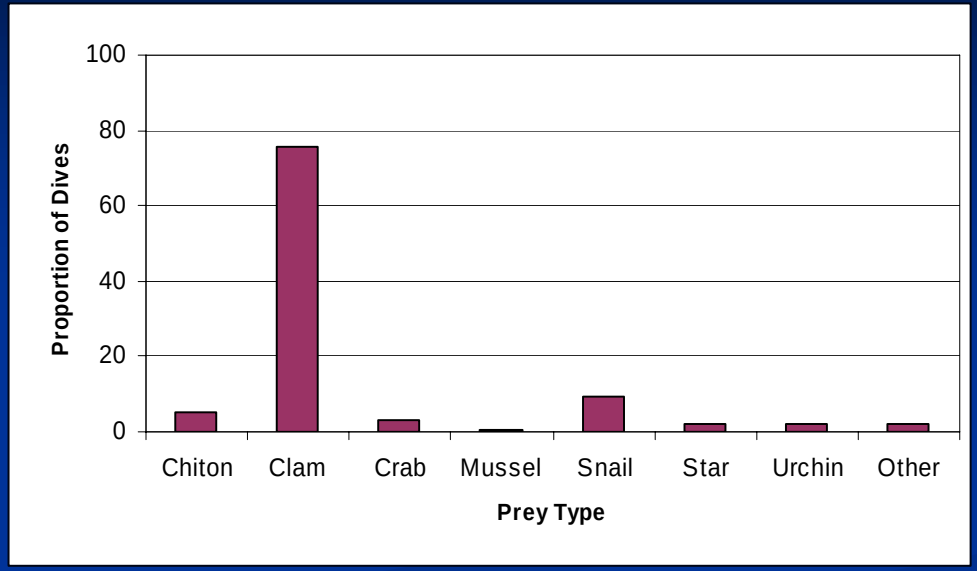
Mytilus trossulus

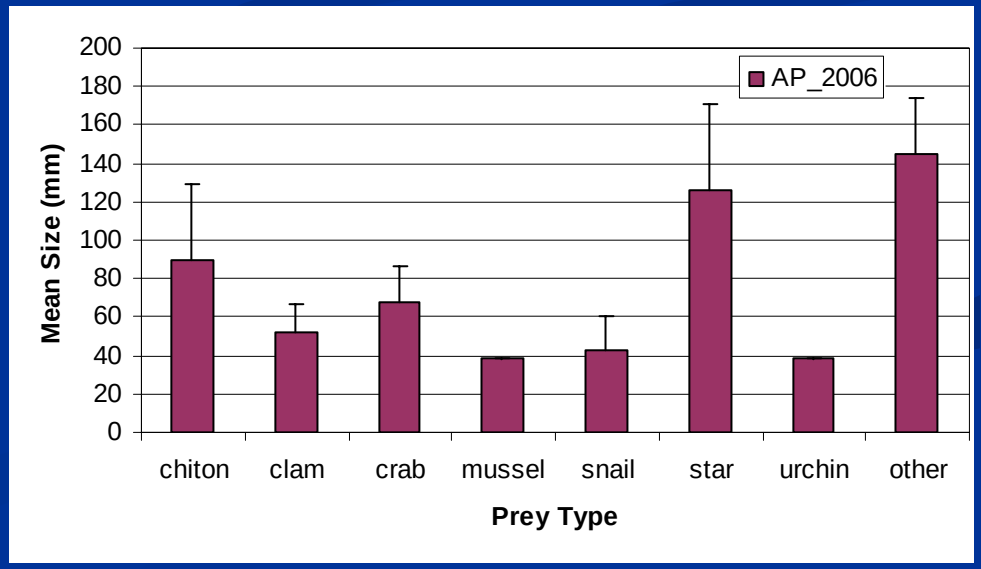


Tectura persona

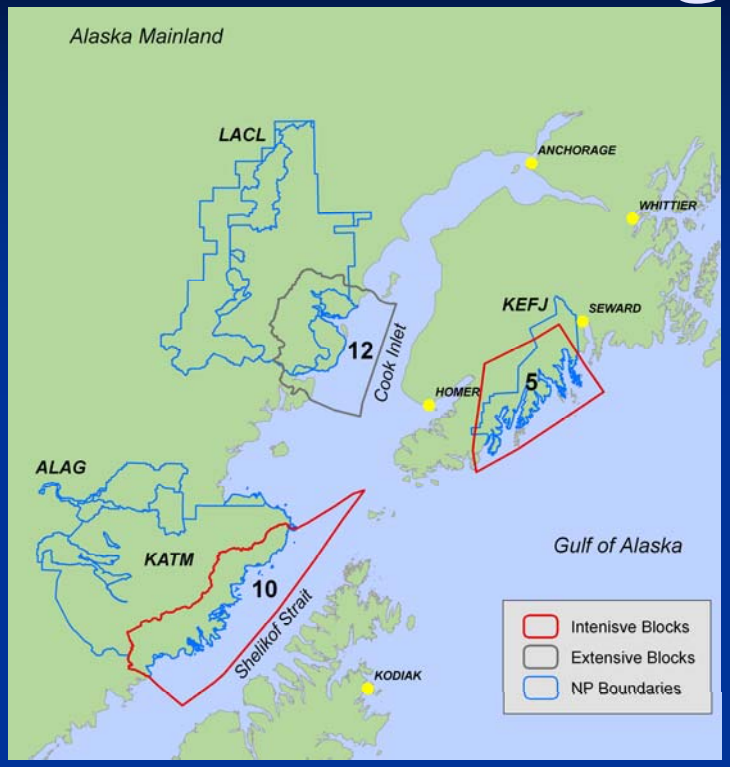
Sea Otter


Alaska Mainland
Sea Otter Foraging 2006
Sea otter Foraging Locations
Intertidal Sampling Locations
40m bathymetry contour
100m bathymetry contour
RI1
RI2
RI3
RI4
RI5
N
0 1.5 3 6 9 12 15
Kilometers
154°30'0"W
154°0'0"W
58°15'0"N
58°0'0"N


Proportion of Dives
100
80
60
40
20
0
Chiton
Clam
Crab
Mussel
Snail
Star
Urchin
Other
Prey Type


AP_2006
Mean Size (mm)
200
180
160
140
120
100
80
60
40
20
0
chiton
clam
crab
mussel
snail
star
urchin
other
Prey Type

Understanding Causes for Change



Design features to enable conservation and management

- Spatial / Temporal Patterns of Change
- Trophic Relations
- Productivity/Growth
- Size and Age structures

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Future Plans

- Complete Protocol Revision
- Continue revision and testing of “Vital Sign” SOPs’
- Complete and test the data management plan
- Trial implementation in Kenai Fjords NP in 2007
- Continue trial implementation in Katmai NPP
- Explore expansion of Nearshore Monitoring to PWS, Kodiak, SE Alaska

Thanks for your attention

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