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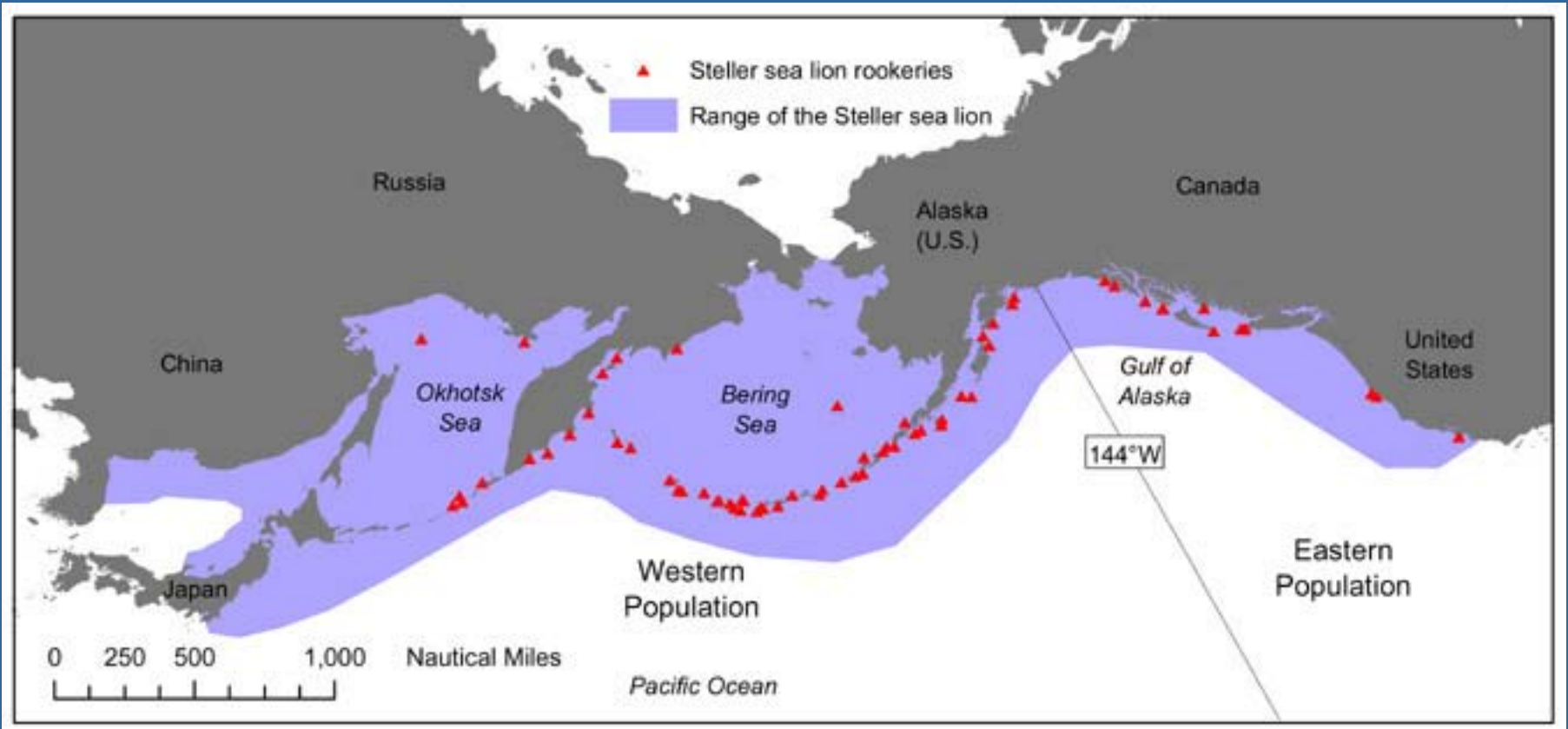
Using walleye pollock acoustic survey data and Steller sea lion foraging information to manage fisheries – sea lion interactions in the Aleutian Islands

Elizabeth Logerwell, Steven Barbeaux and
Lowell Fritz

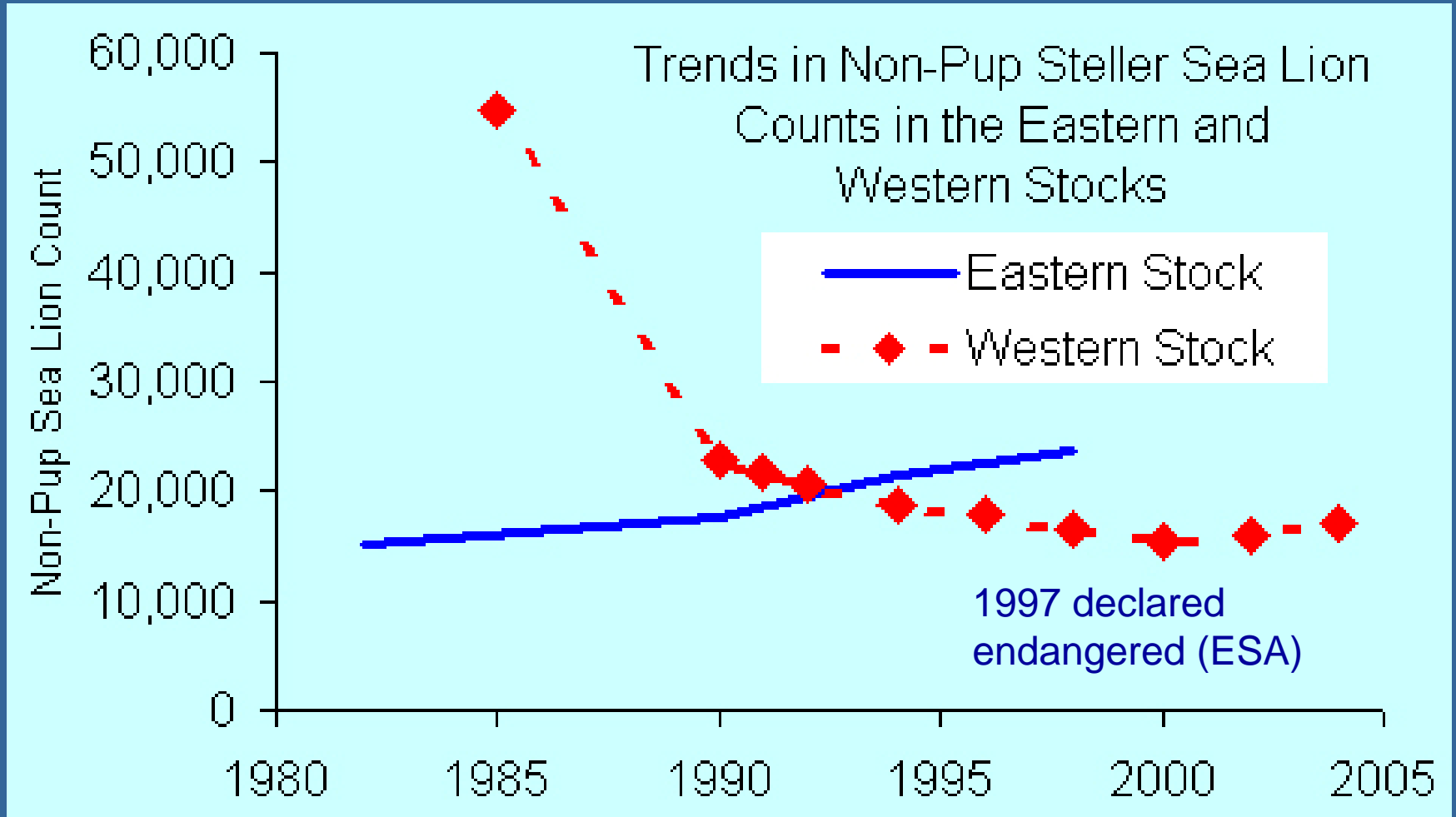
PICES Annual Meeting, Hiroshima
October 18, 2012

Steller sea lion (*Eumetopias jubatus*)





Decline of the western stock of Steller sea lions



Hypotheses to explain the decline

- Intentional and unintentional “takes”
- Climate change
- Disease, pathogens and toxins
- Predators
- Competition with groundfish fisheries

National Research Council, 2003. “Decline of the Steller Sea Lion in Alaskan Waters”

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Groundfish species

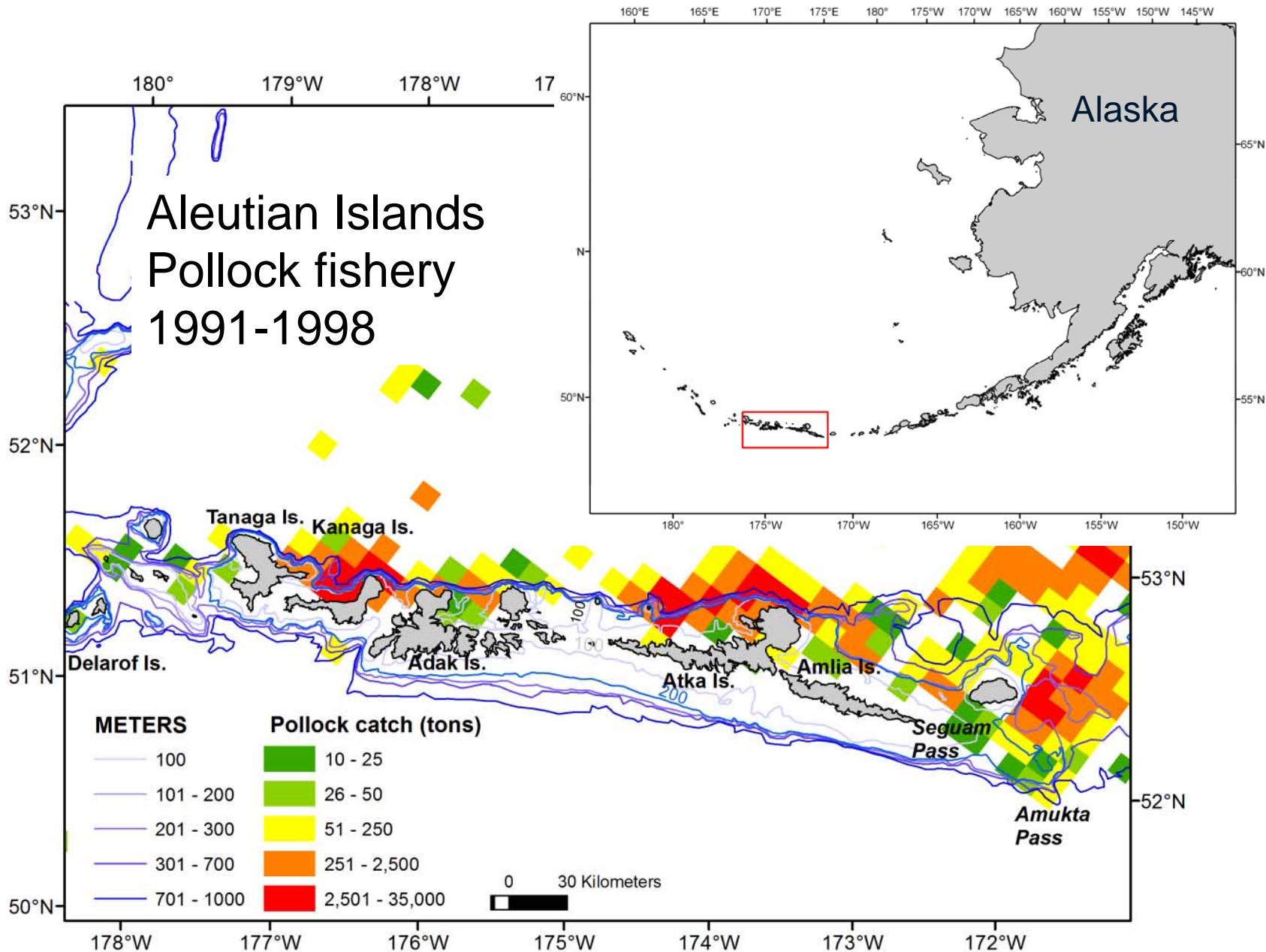
- Walleye pollock (*Theragra chalcogramma*)
- Pacific cod (*Gadus macrocephalus*)
- Atka mackerel (*Pleurogrammus monopterygius*)



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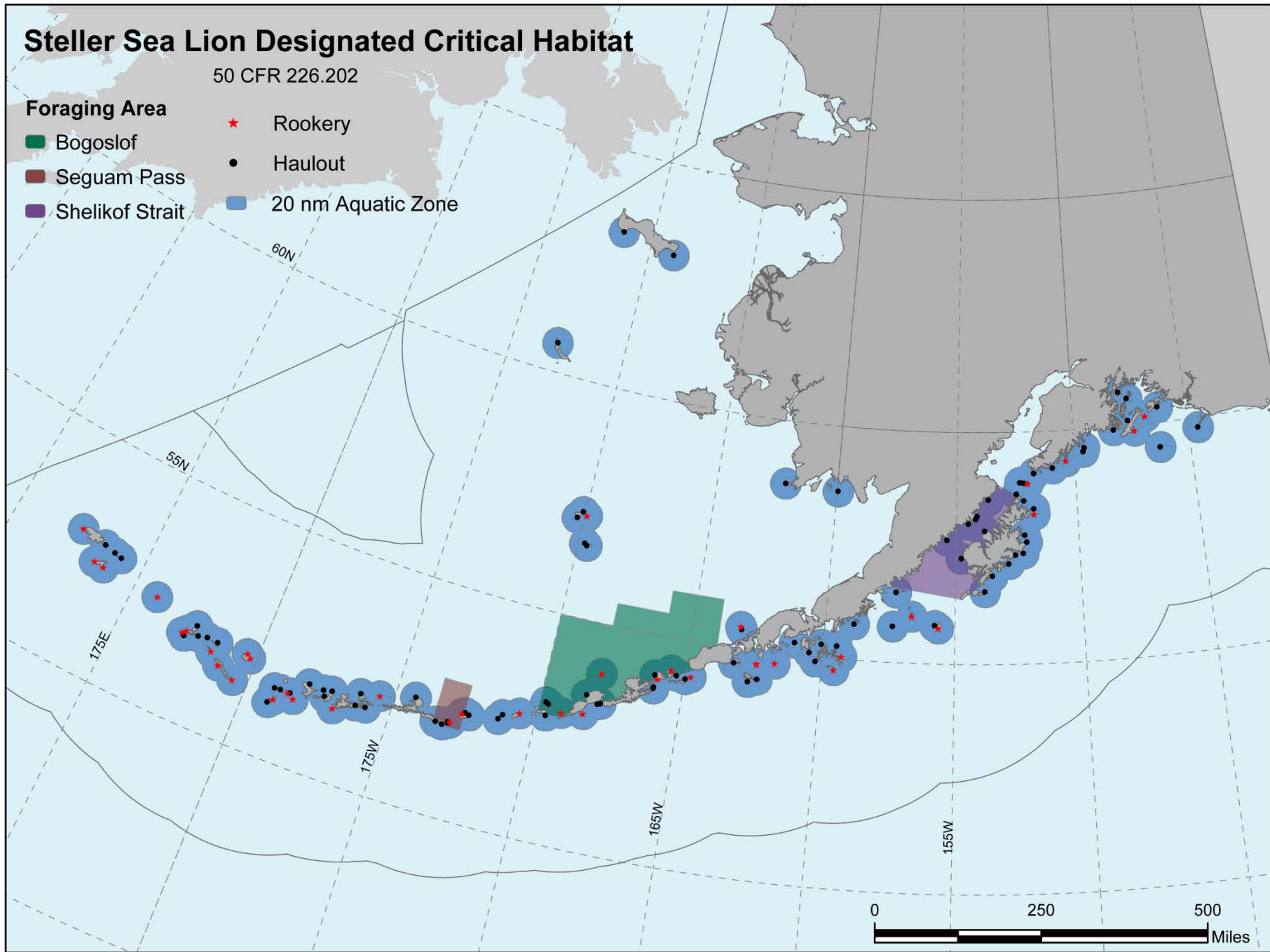
Steller Sea Lion Designated Critical Habitat

50 CFR 226.202

Foraging Area

- Bogoslof
- Seguam Pass
- Shelikof Strait

- ★ Rookery
- Haulout
- 20 nm Aquatic Zone



Pollock fishery in the Aleutian Islands

- 1999 pollock fishery closed in Aleutian Islands
- 2004 pollock fishery opened (for native Alaska community) outside of sea lion critical habitat
- Only 500 tons out of 19,000 tons allocated were harvested because most of the fish were inside sea lion critical habitat

Management questions

- Is it possible to have a fishery in the Aleutian Islands inside sea lion critical habitat that is profitable for industry but avoids negative impacts on sea lions?
- Can fish surveys conducted in cooperation with commercial fishers be used to set catch quotas?

Research hypotheses

- Sea lions are more abundant where pollock are more abundant
- Pollock occur more frequently in sea lion diet near areas where pollock are more abundant

Methods

- March-April 2008
- Pollock abundance
 - Fisheries acoustics (F/V Muir Milach)
 - Calibrated 38kHz echosounder
 - Pelagic trawls to verify acoustic targets



Methods

- Steller sea lion abundance
 - Aerial surveys
 - Sea lions counted on digital images

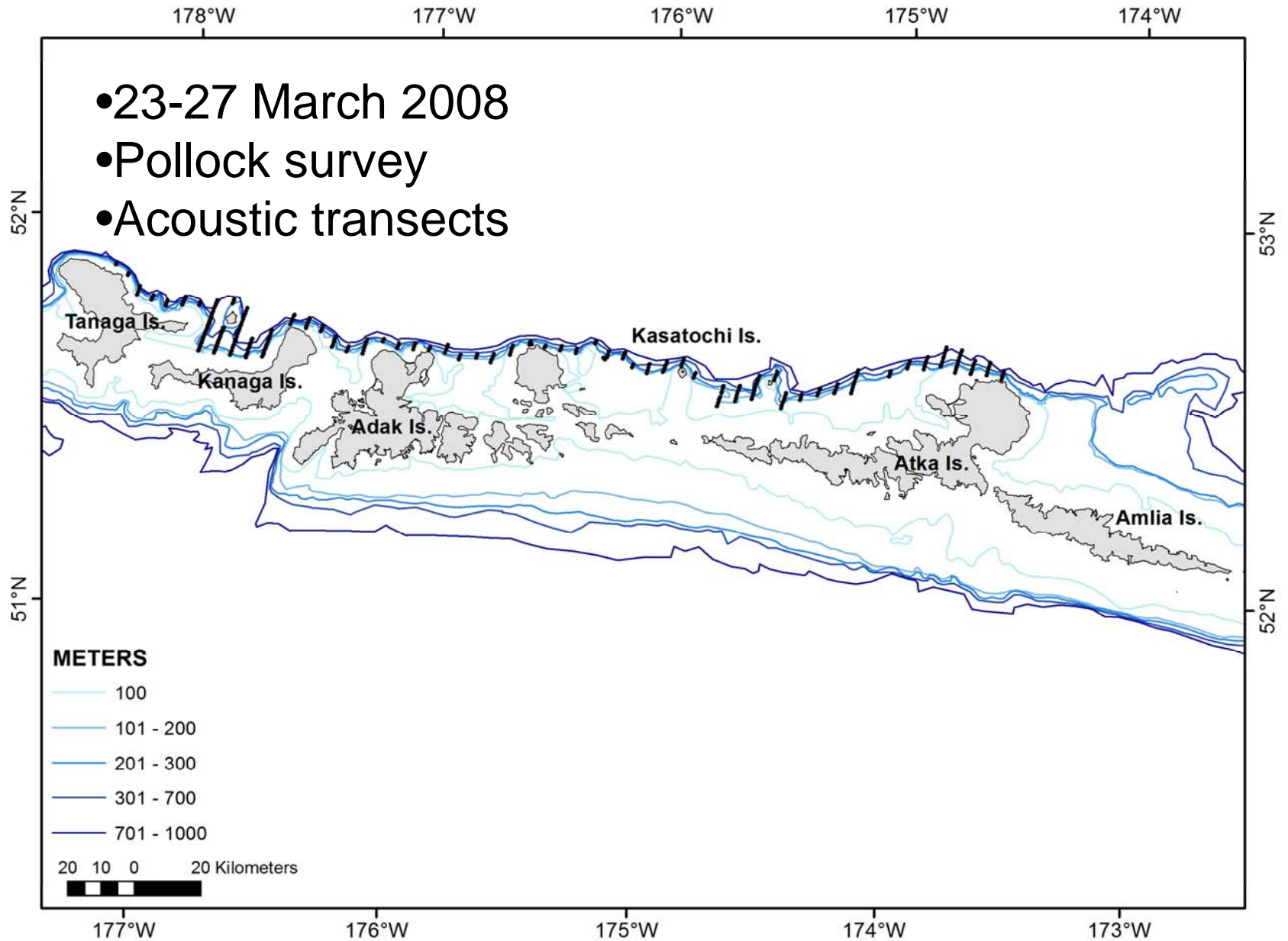


Methods

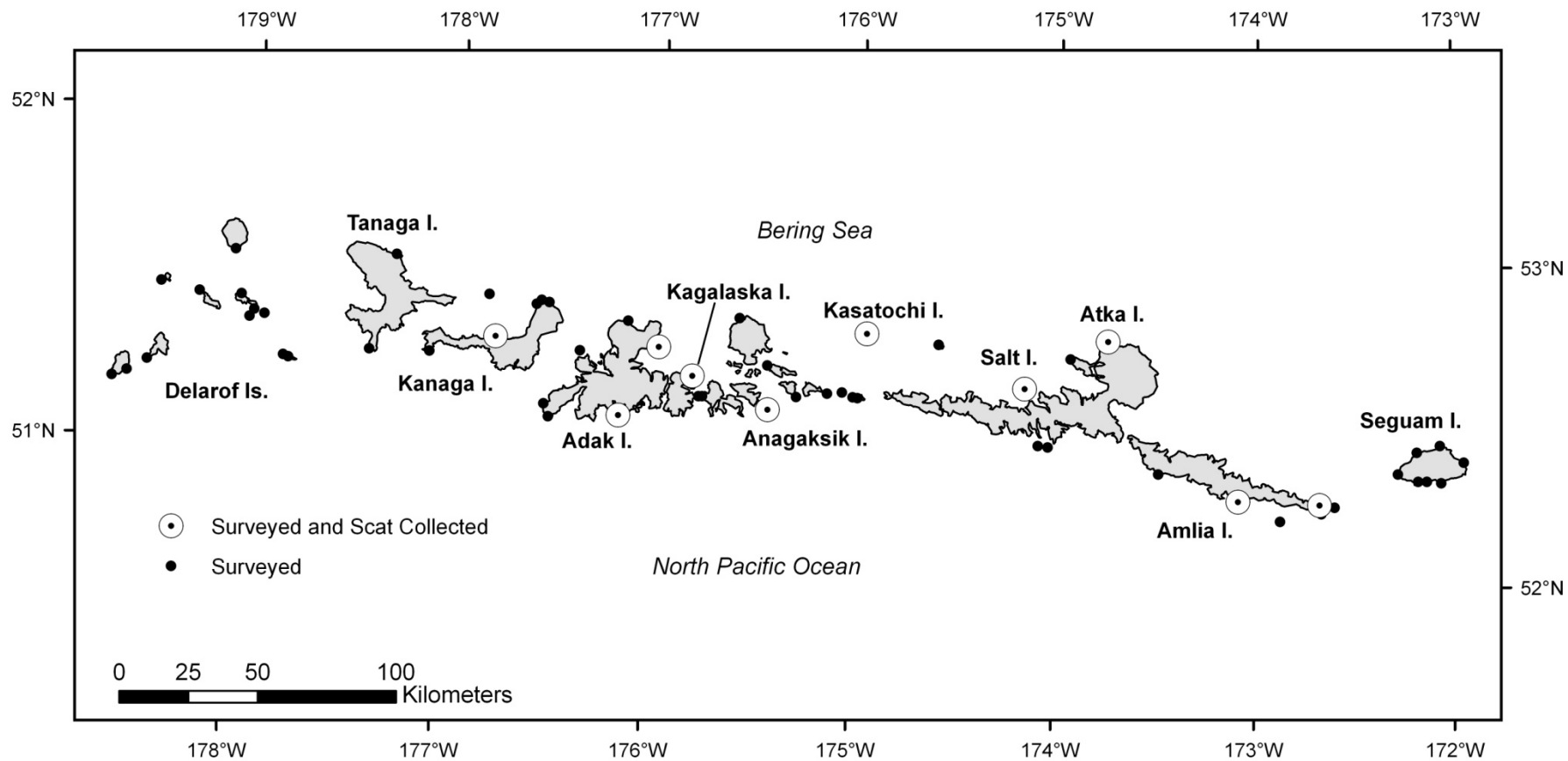
- Steller sea lion diet
 - Scat samples
 - Prey bones to identify species

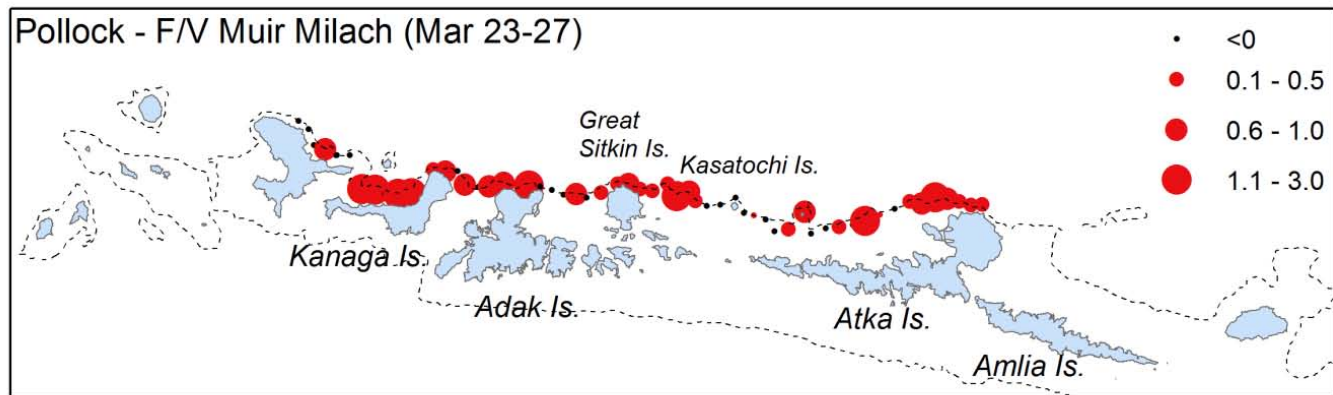
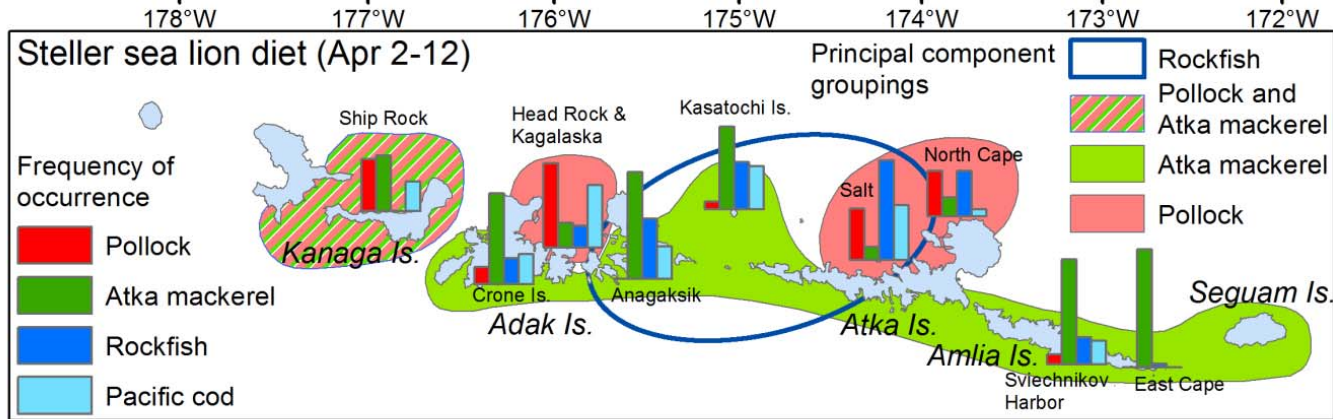
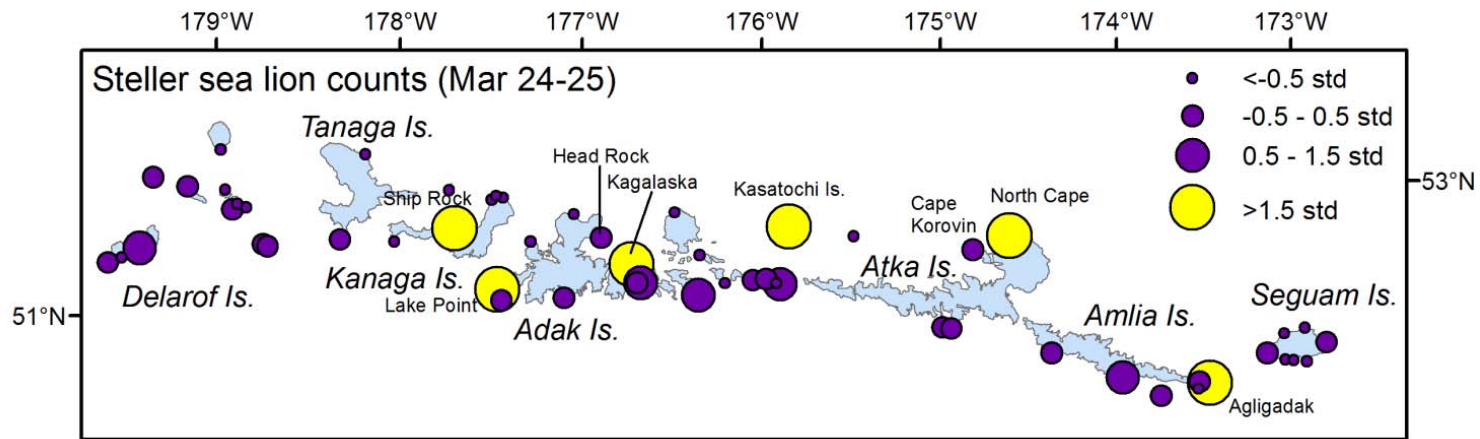


- 23-27 March 2008
- Pollock survey
- Acoustic transects



- Sea lion aerial survey (24-25 March 2008)
- Sea lion diet collections (2-12 April 2008)





Conclusions

- Management questions
 - Cooperative fish surveys can be effective for measuring local abundance of pollock
- Research hypotheses
 - Sea lion abundance *did not* respond to pollock abundance
 - Sea lion diet *did* respond to pollock abundance

Acknowledgements

- North Pacific Research Board



- Captain and crew of *F/V Muir Milach*



Questions?

