EFPs, SRPs, and LOAs: Tools used in our long journey to non-traditional, effective (co-?)management solutions to reduce impacts on the seafloor

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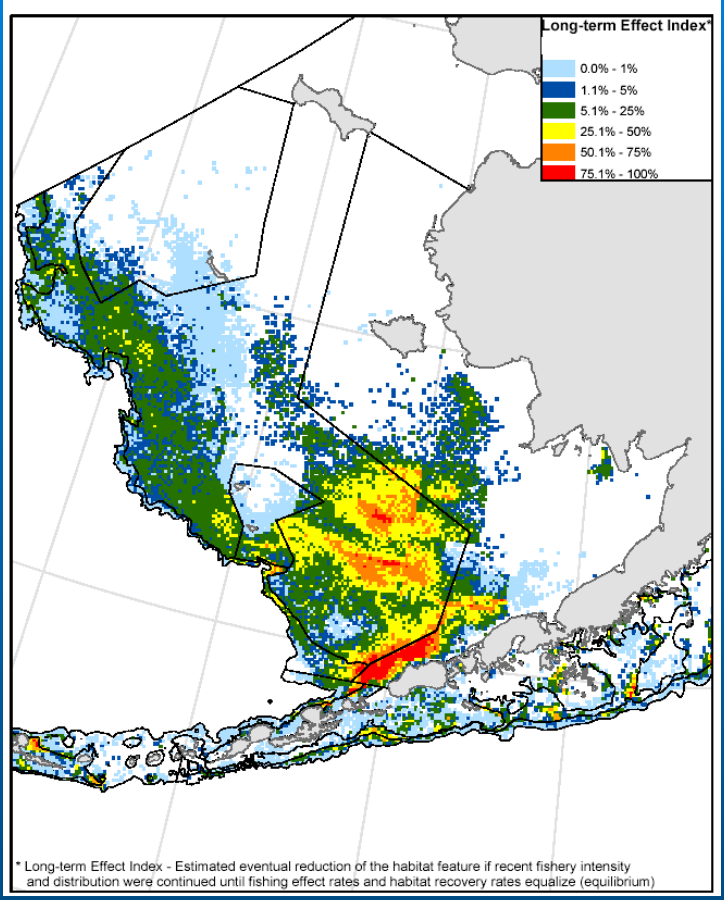
“EFP” stands for Extra Fish Please, correct?

If not, then why would industry ever want to apply for an EFP?

Our EFP story starts with EFH (Essential Fish Habitat…..)



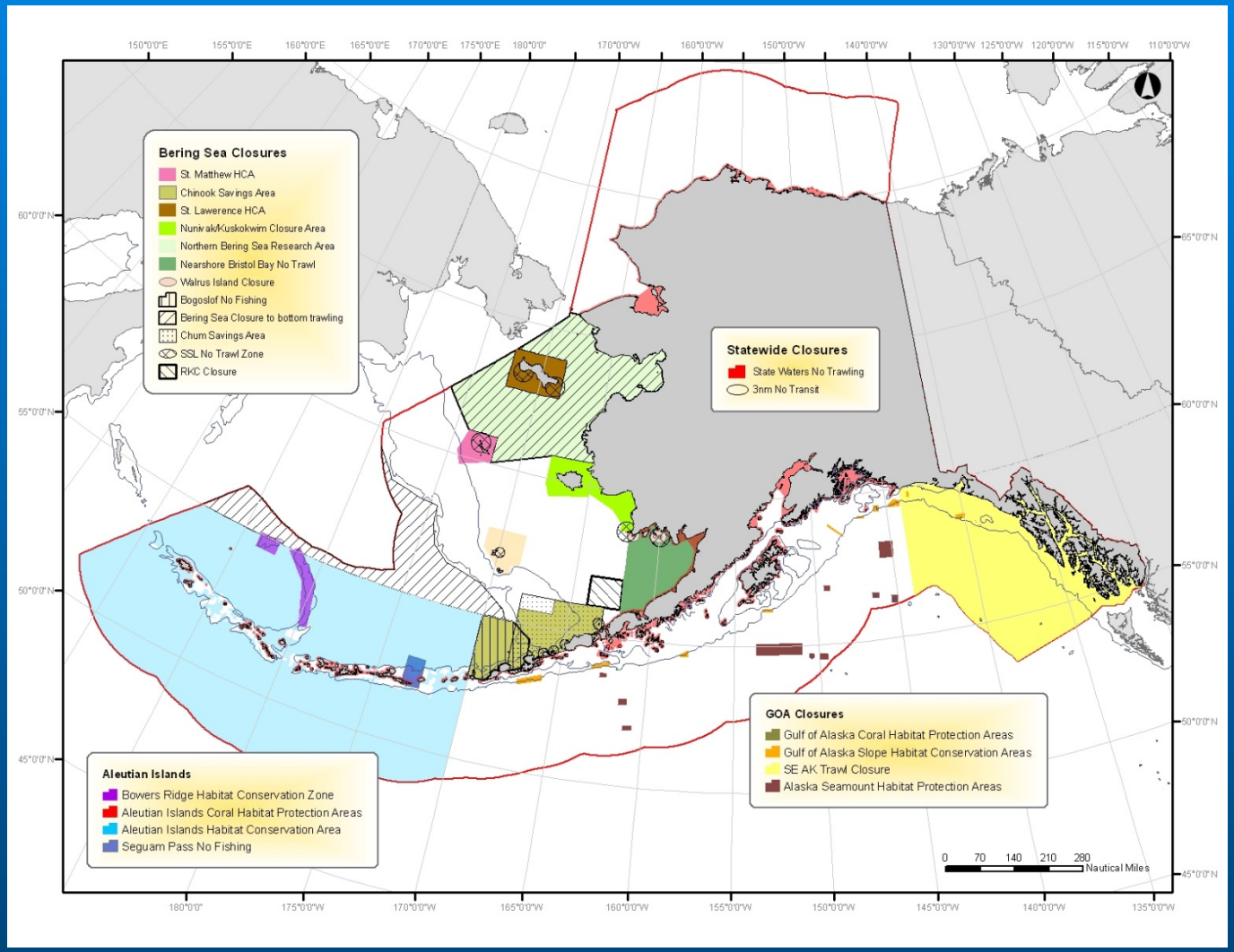
2005 EFH EIS: LEI model shows combined effects of flatfish fishing on Bering Sea seafloor habitat relatively large

A little background on Bering Sea flatfish fishery

Given findings from EIS, course of least resistance for NPFMC was: Closing more areas to flatfish trawling

Traditional management measures always easier, faster, to develop and outcome is more certain

But lots of habitat and crab protection closures to flatfish fishery in place already



Flatfish industry requests NPFMC look at a different approach for the Bering Sea (2005)

The concept: Trawls used for BS flatfish

Long sweeps – herding fish to trawl

Sweeps cover 90% of fished area

Most effective to reduce sweep effects, reduce habitat effects where fishing occurs

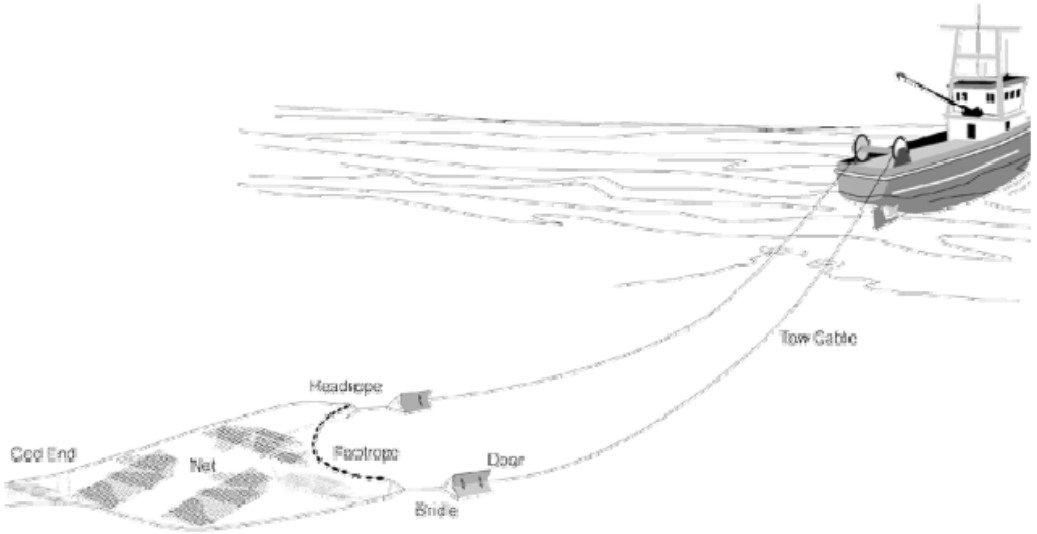
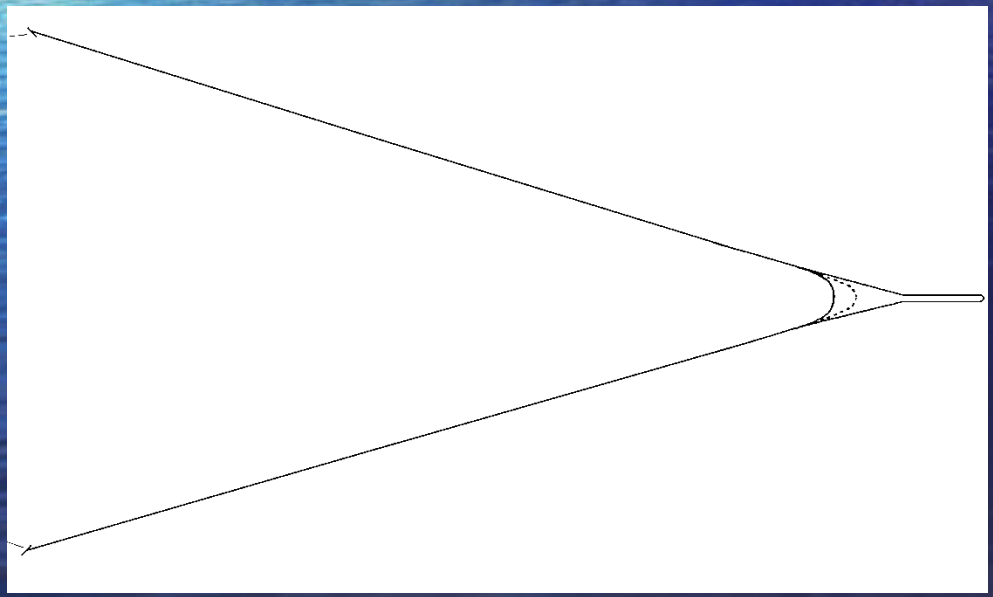
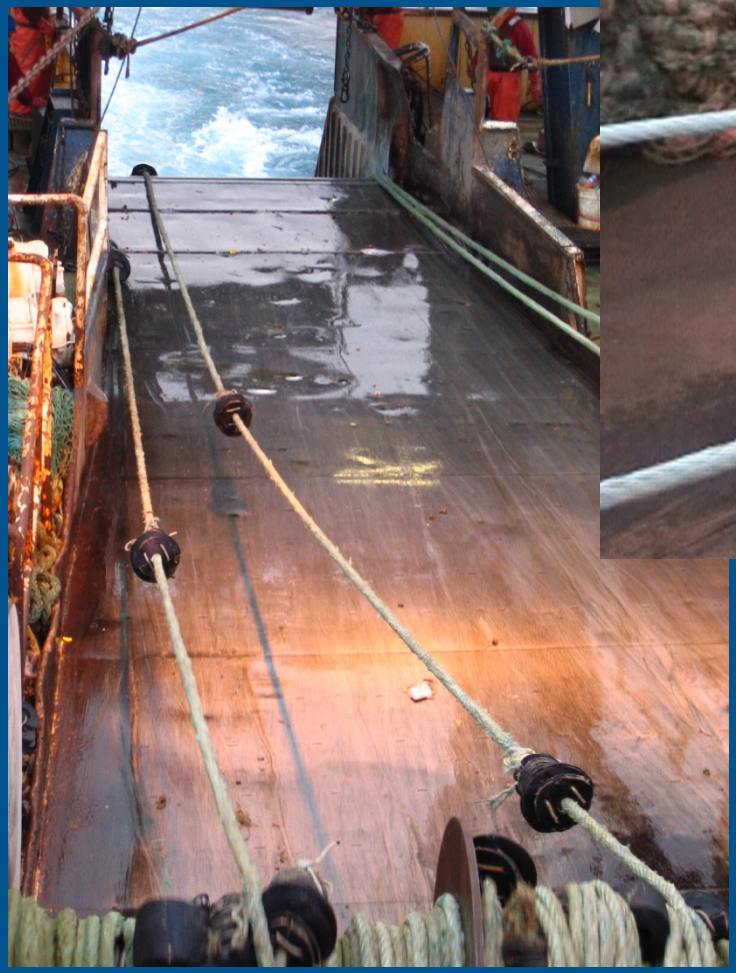


Figure 1.3-1 Depiction of otter trawl gear



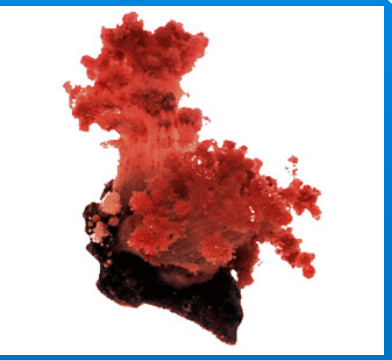
Sweep modifications



Elevating devices widely spaced on sweeps

Keep cable off seafloor and create space below

Living Structure Animals of the Bering Sea shelf



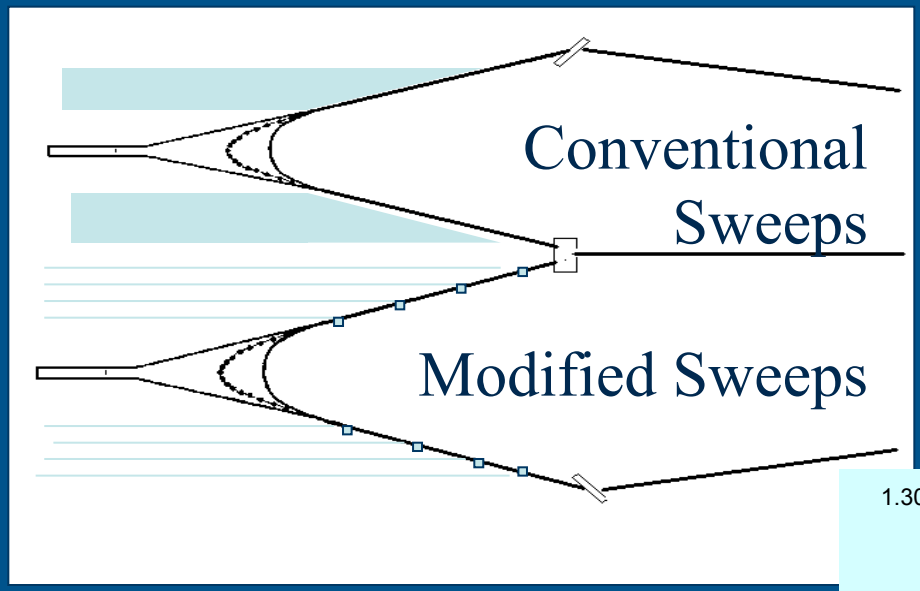
Council "agrees" to add a alternative for elevating trawl sweeps to EIS process (timing)

- EIS analysis concluded sweep mods had merit but no concrete data or studies to back idea that would work……..
- Would it reduce target flatfish catch rates?
- Would it actually reduce effects on common epifauna?
- Would it be practical for fishermen?
- Enforceable?

Step 1: AKSC applies for an EFP to test effects of elevated sweeps on target catch rates

Fieldwork done in 2006-2007, EFP needed to change catch sampling (sample two nets each haul, etc.)

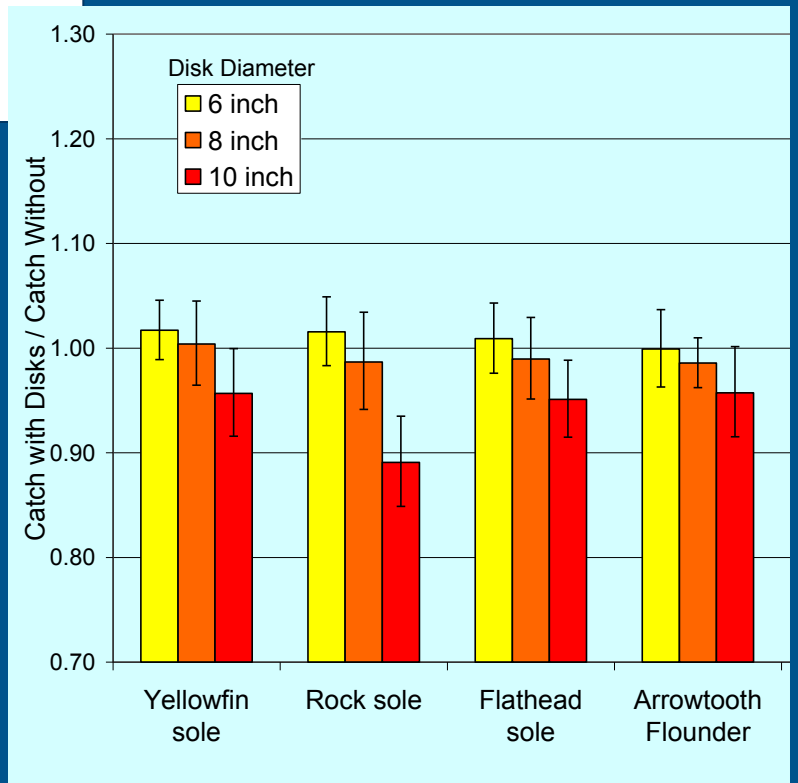
Testing for changes in catch rates with an EFP (F/V *Cape Horn*)



Twin Trawl

Fishes two trawl systems in parallel at the same time

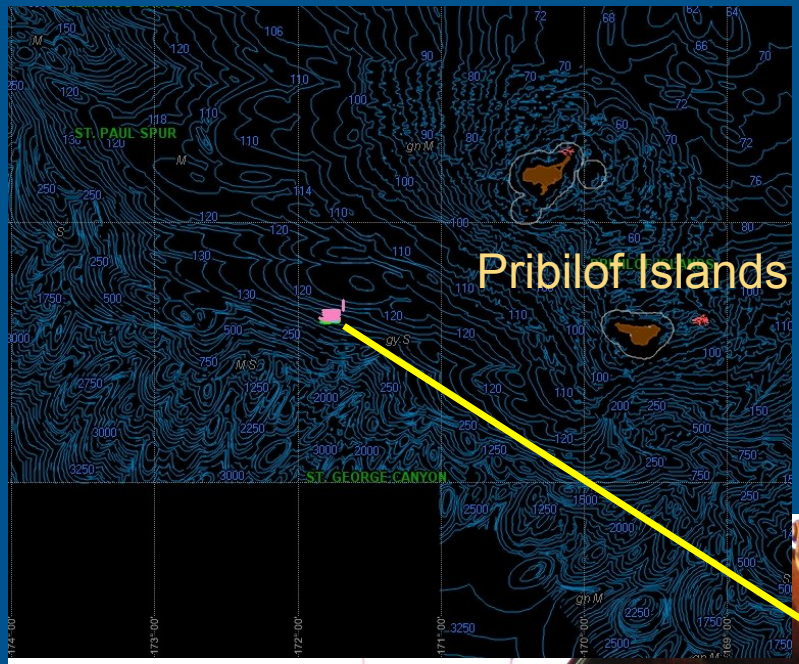
Flatfish catches not significantly reduced (2006-2007)



Step 2: Research needed to look at whether effects on seafloor were reduced (partnership with AFSC Dr. Craig Rose et al.). High degree of collaboration from flatfish fishermen

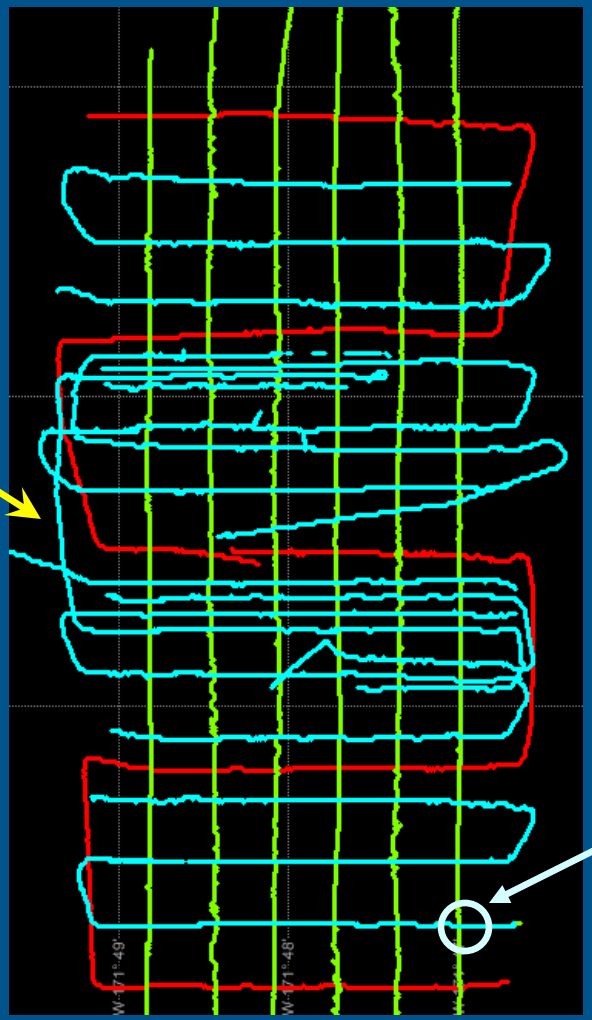
- SRP used (2009-2010), industry vessel and input from captains so trawl effects would be representative

Testing for reduced damage to sessile epifauna



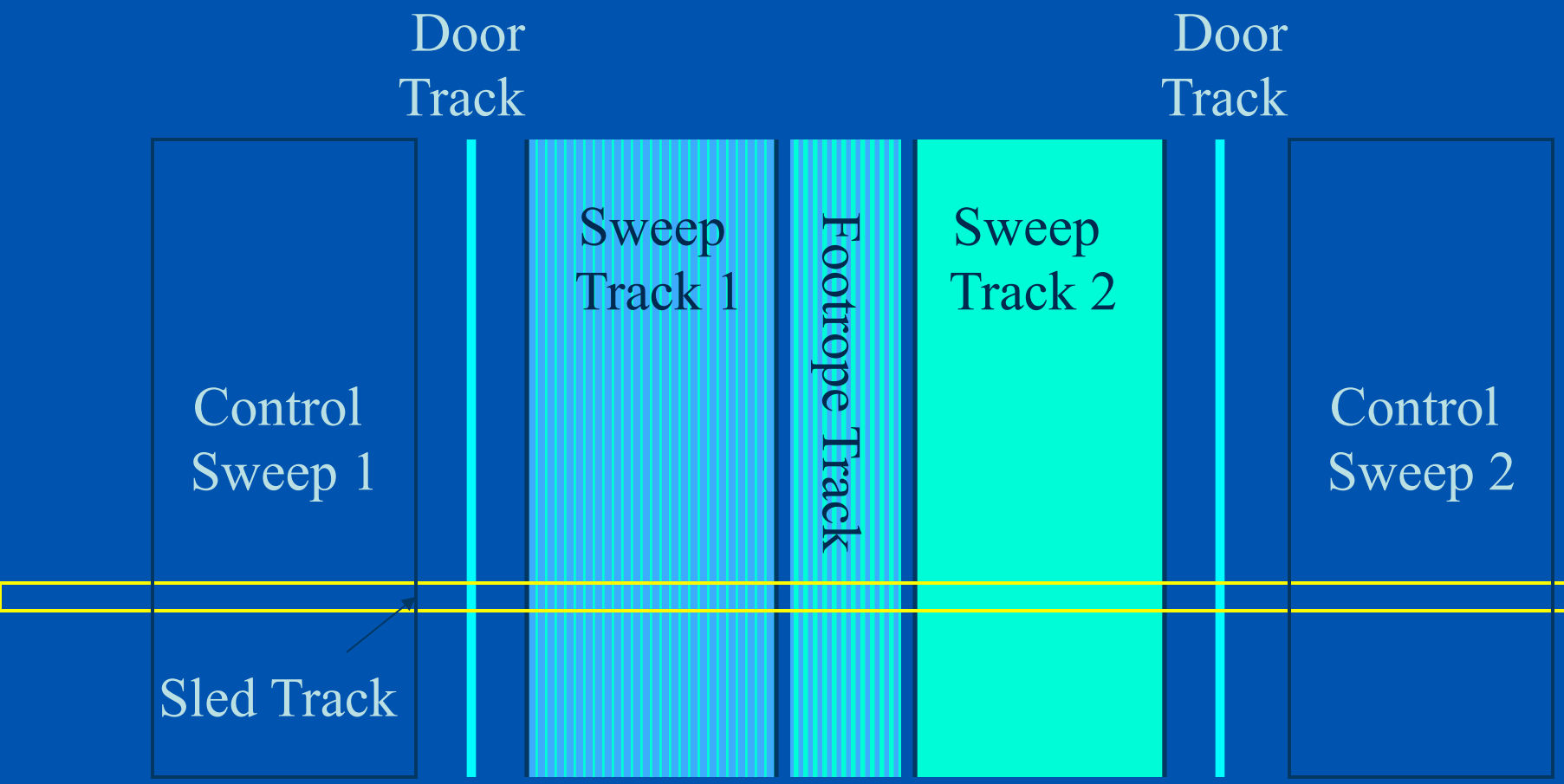
Sled transects across trawl tracks

1 – 2 days after trawling

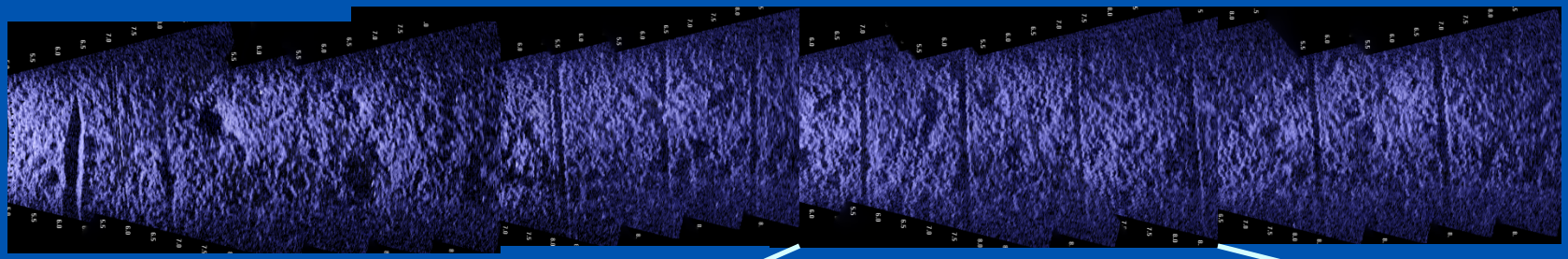


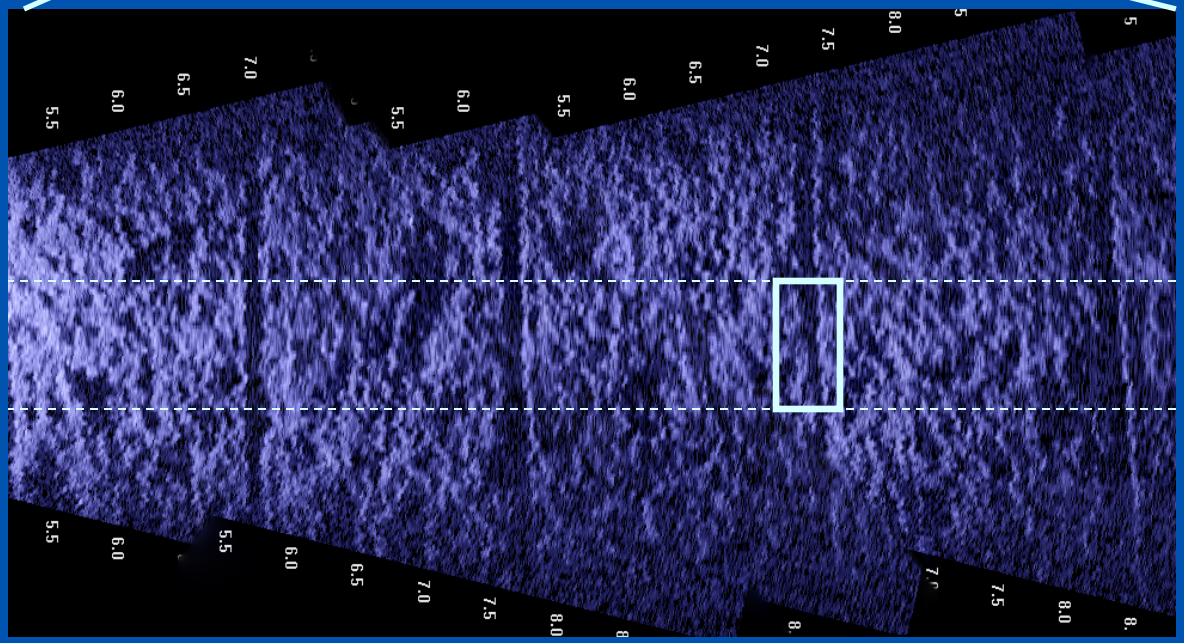
Video and sonar on sled

Sled sampling of trawl tracks



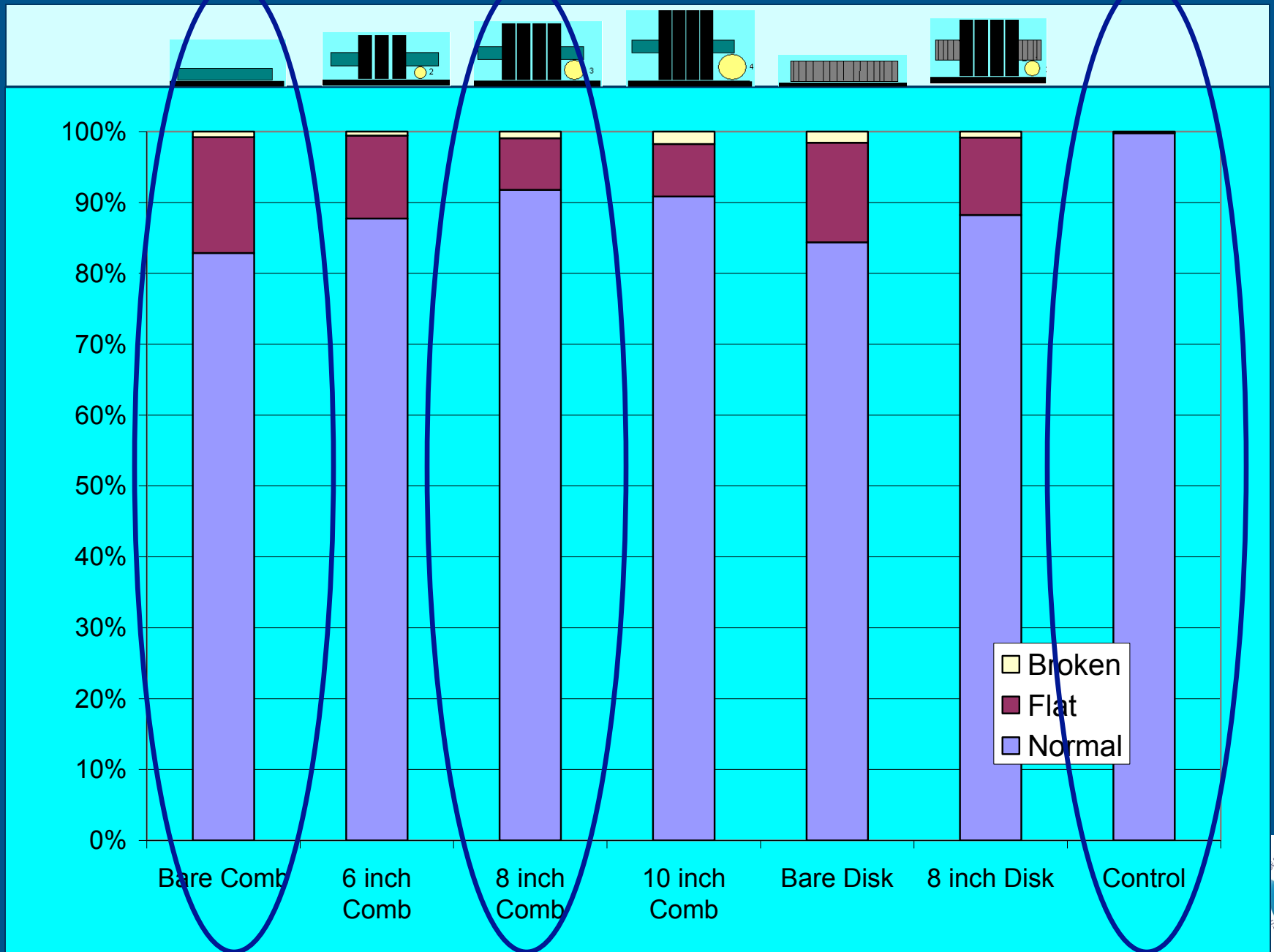
Seafloor Imaging





Sonar imagery allowed the trawl footprint to be located in the video

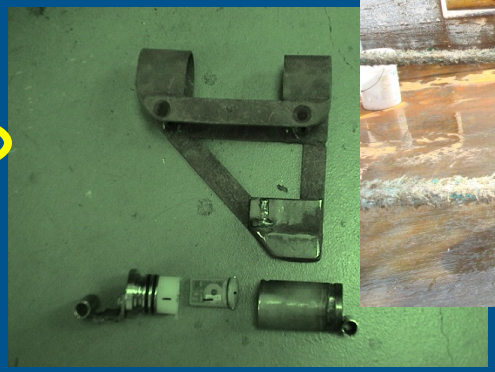
Results of effects trials (Sea Whips)



Step 3: Further developments and testing

Spacing (F/V *Arica*)

- Tests at 45, 60 and 90 ft
  - + 90 ft with 10” bobbin
- Developed tilt recorders to measure clearance (ride along)



Enforceability (F/V *Vaerdal*)

- Discussions on definitions
- Demonstration for non- fishers (LOA)

Gear Modifications to protect habitat

Substantially reduced effects on structural epifauna

Advantages over closures

Applies reduction in habitat effects where fishery occurs

Does not further limit ability to respond to changes in fish abundance on broad Bering Sea shelf

Collaboration with the Bering Sea Bottom Trawl Fleet

Sustained interest and participation from fleet

Necessary to develop effective, practical solutions

Utilized several different available arrangements to conduct Cooperative Research for critical information needs

End product was worth it!