

# GEAR MODIFICATION IN ALASKA

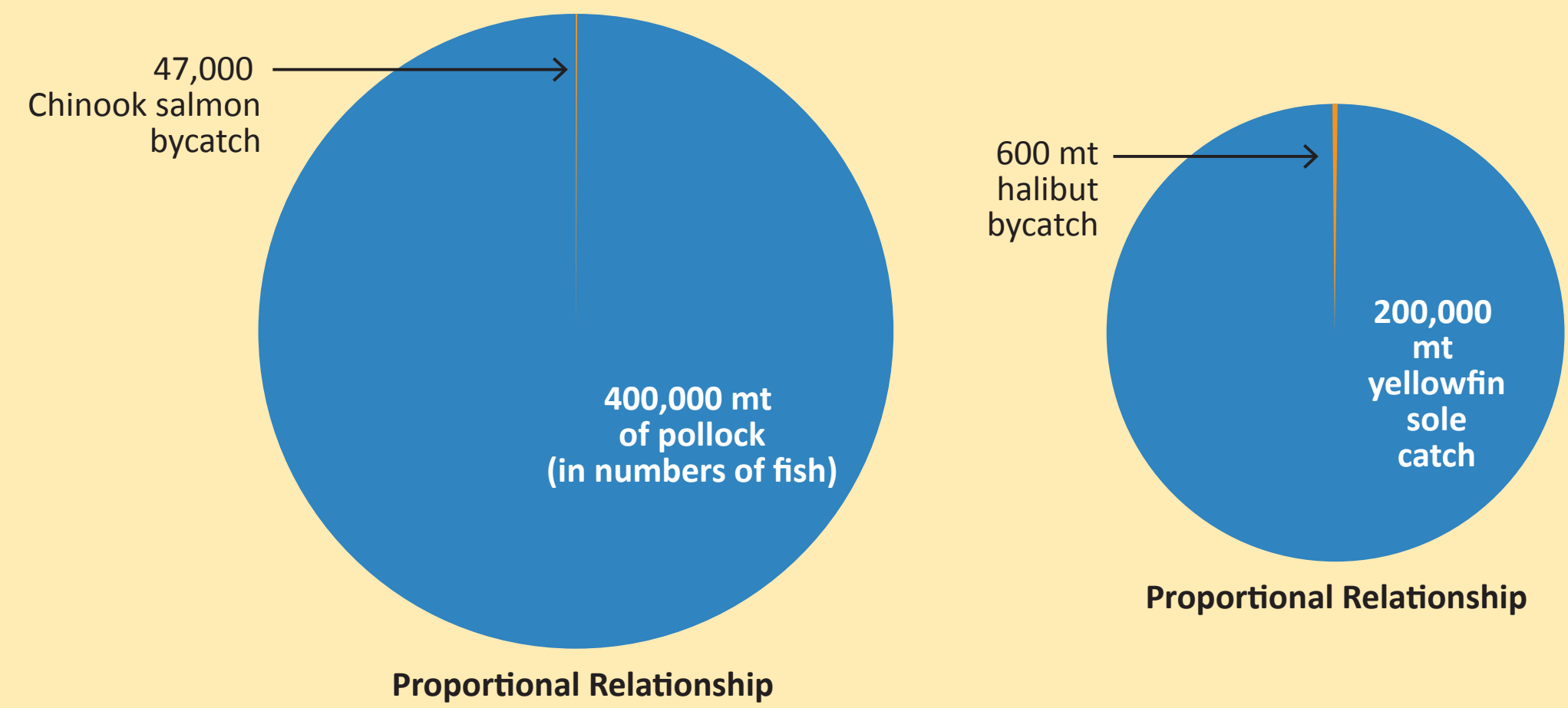
## Addressing Needs of Alaska’s Small-Scale Commercial and Subsistence Fisheries While Maintaining Viable Groundfish Fisheries

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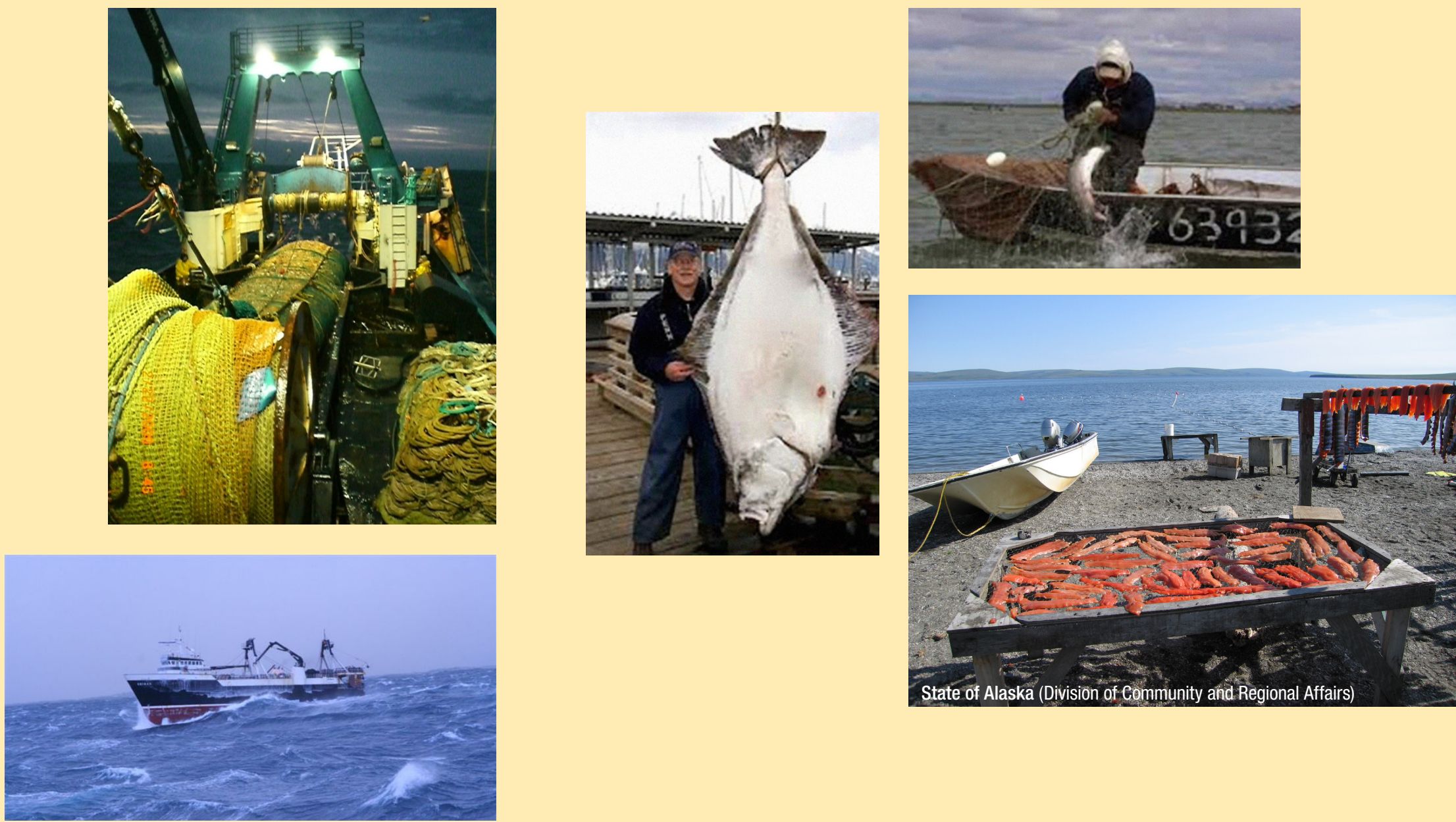
### The Problem: Bycatch of Commercial Fisheries May Affect Small Communities and Fishermen

#### Background:

- Salmon and Halibut are the backbone of many traditional, small scale fisheries that are the economic and social fiber of small coastal communities in Alaska.
- Salmon and Halibut are also taken incidentally in Bering Sea and Gulf of Alaska groundfish fisheries – fisheries that generate over \$2 billion in first wholesale revenues annually.



Compared to the directed catch in the Alaska groundfish trawl fisheries, halibut and salmon bycatch amount to a very small percentage of the total catch. They are also small relative to total catches allowed in the small-scale Alaska salmon and halibut fisheries, however, bycatch amounts could have differential impacts on river systems or local abundance. This raises concerns by those who depend on these species for subsistence and/or as the economic engine of rural communities.

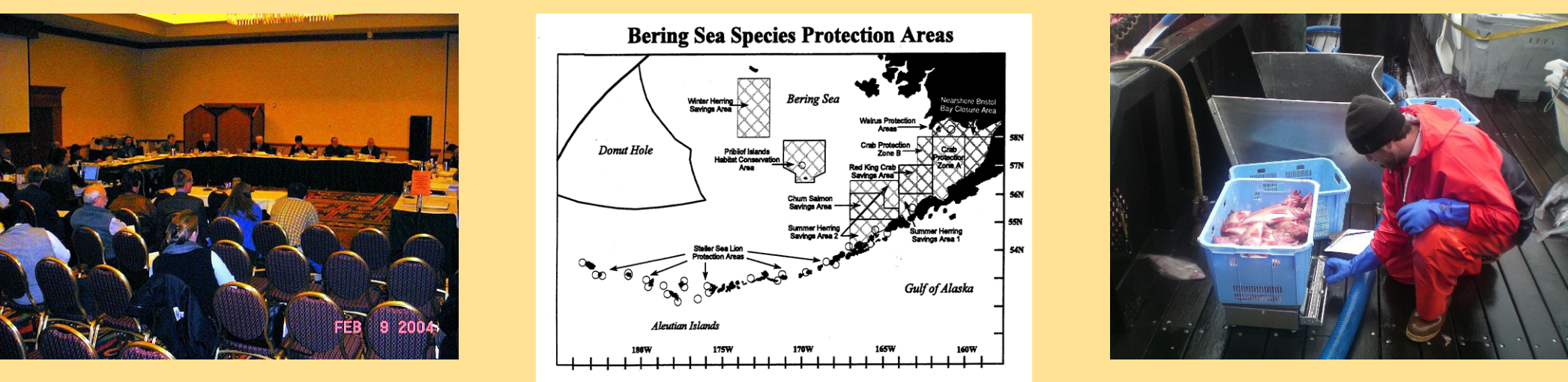


### Bycatch Management:

Over the last 20 years, the North Pacific Fishery Management Council (NPFMC) has devoted considerable effort to managing and controlling salmon and halibut bycatch in groundfish fisheries. Given the inherent difficulty of avoiding these species in trawl fisheries, balancing the needs of these stakeholders is never easy.

Among the measures the NPFMC has implemented to control bycatch are annual “hard caps” on salmon and halibut. When the annual bycatch cap is met, the groundfish fishery closes no matter how much target yield is left un-harvested.

Additionally, the NPFMC has implemented: 1) Bycatch reduction incentive programs; 2) Time and area closures, 3) High levels of observer coverage to enable accurate tracking of bycatch accounting.

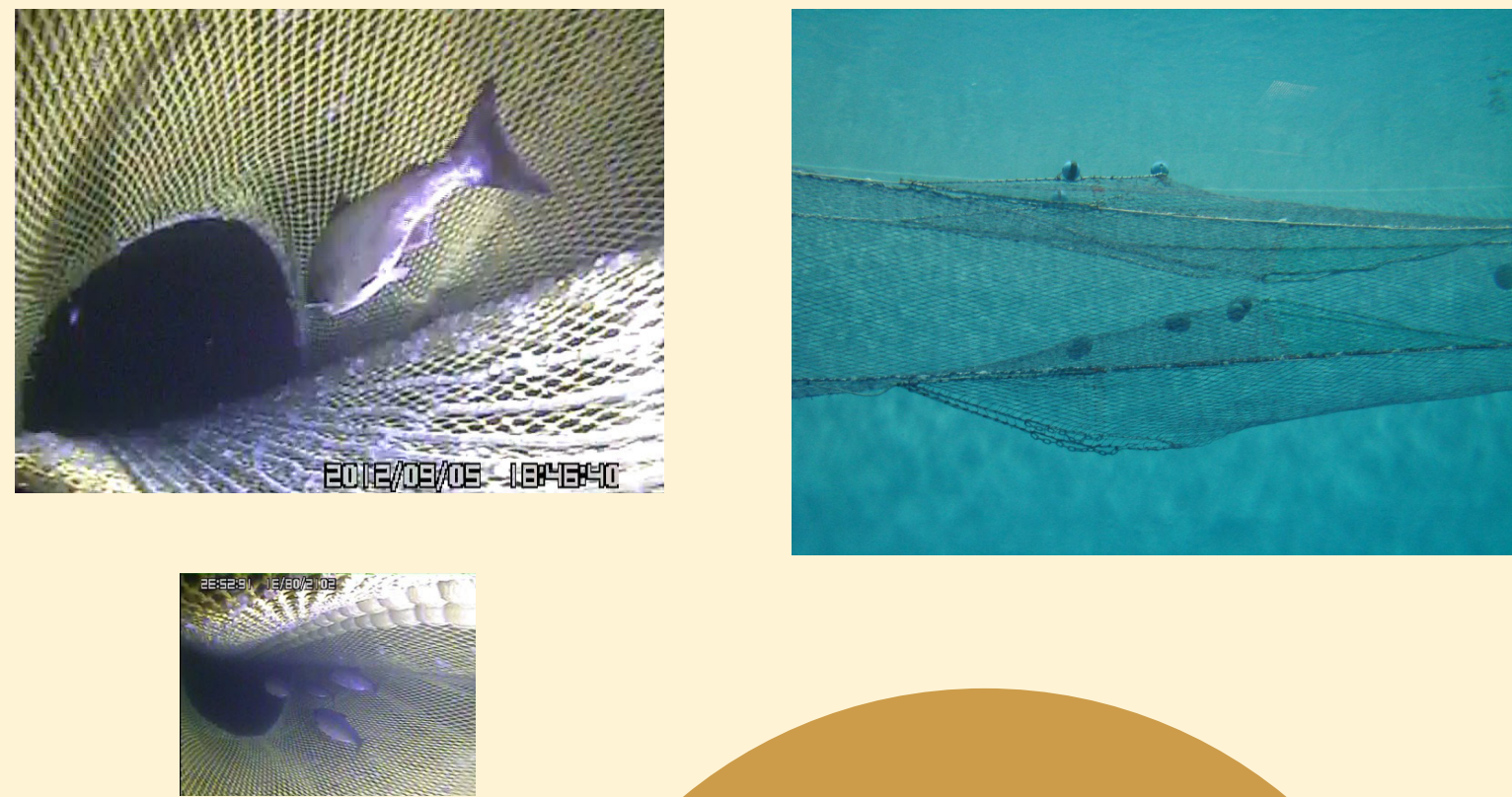
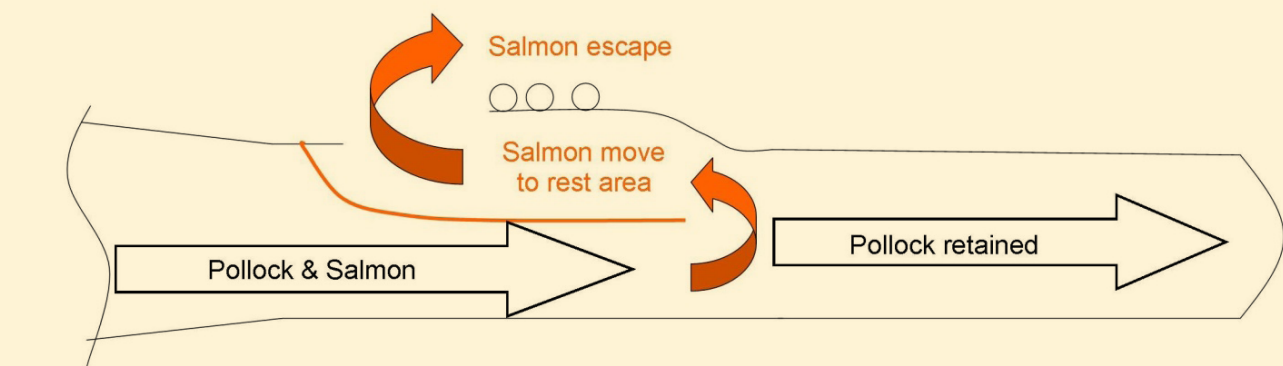


### A Different Approach to Controlling Bycatch: Cooperative Research for Gear Modifications

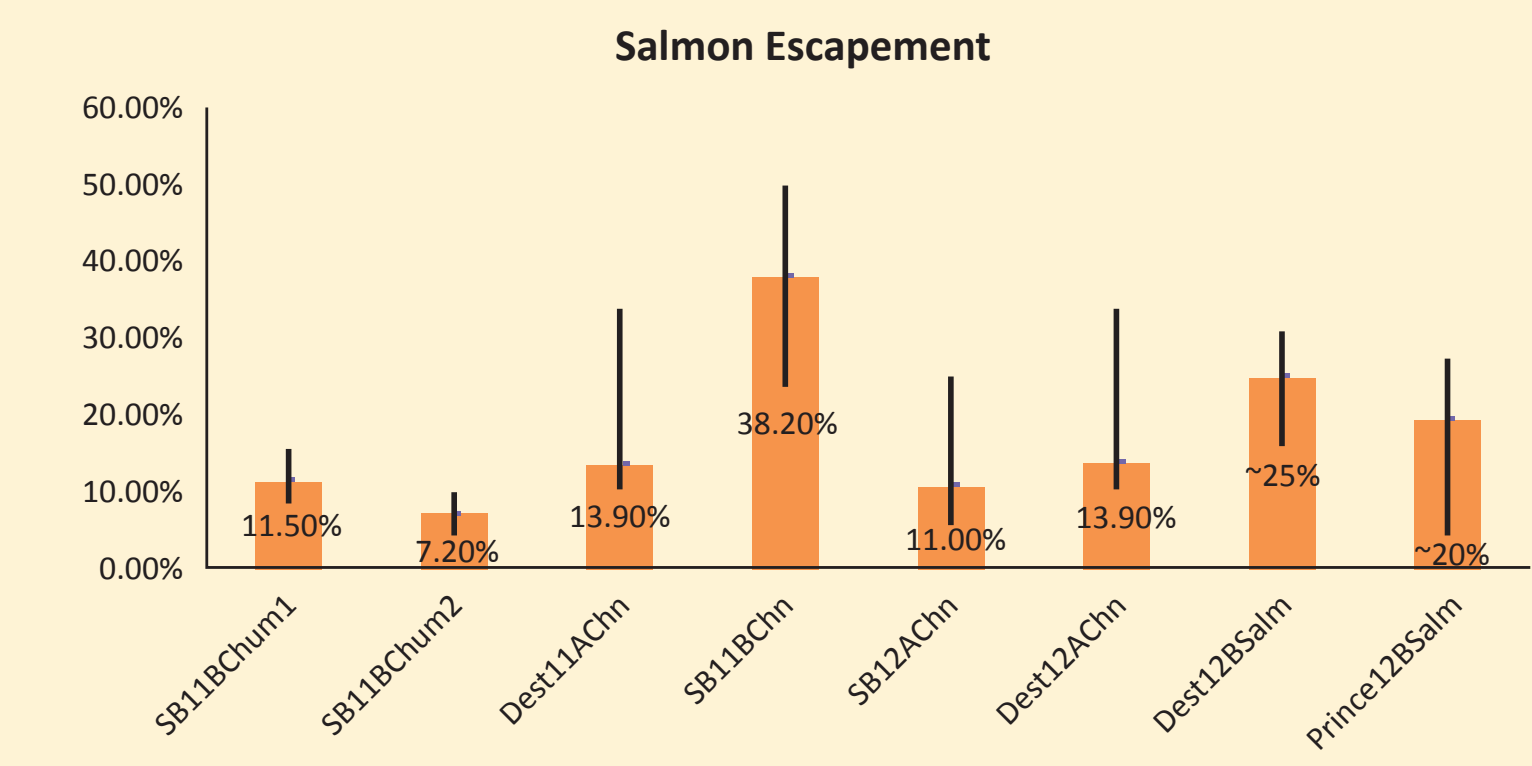
While Alaska groundfish trawlers and small coastal communities are sometimes at-odds over the degree to which bycatch controls are needed, one thing they tend to agree on is that gear modification in the groundfish trawl fisheries is very beneficial if it reduces the amount of halibut and salmon caught in groundfish nets without high rates of loss of target fish. This would avoid triggering the bycatch caps and closures and reduce costs of bycatch reduction measures for trawl fisheries.

#### Three gear innovations that have developed through these collaborative efforts:

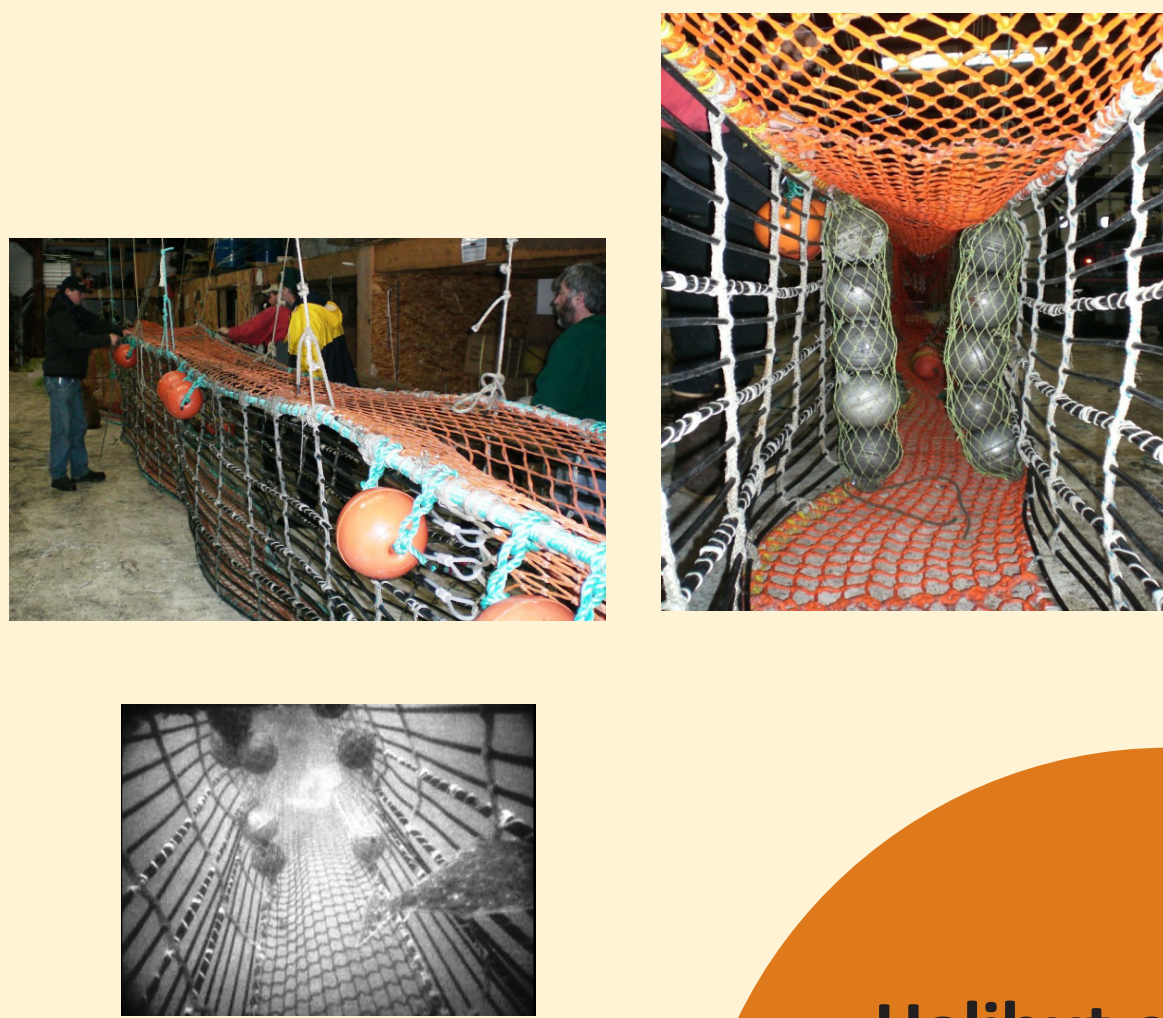
The **first** gear modification is designed to reduce salmon bycatch in pelagic pollock trawls. The excluder design is based on diffences in swimming ability, salmon are stronger swimmers.



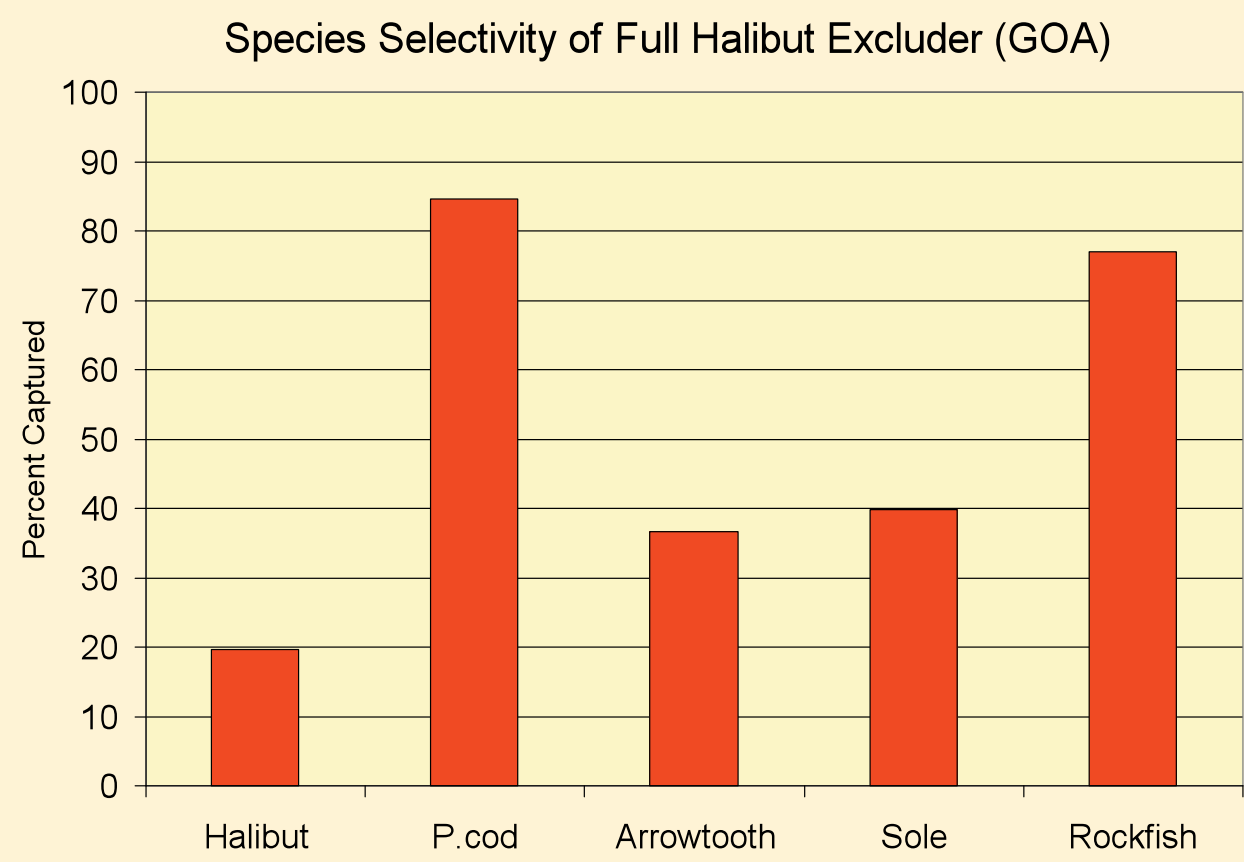
Salmon Excluders: Chinook salmon bycatch reduced by 20%-45%; pollock loss <1%.



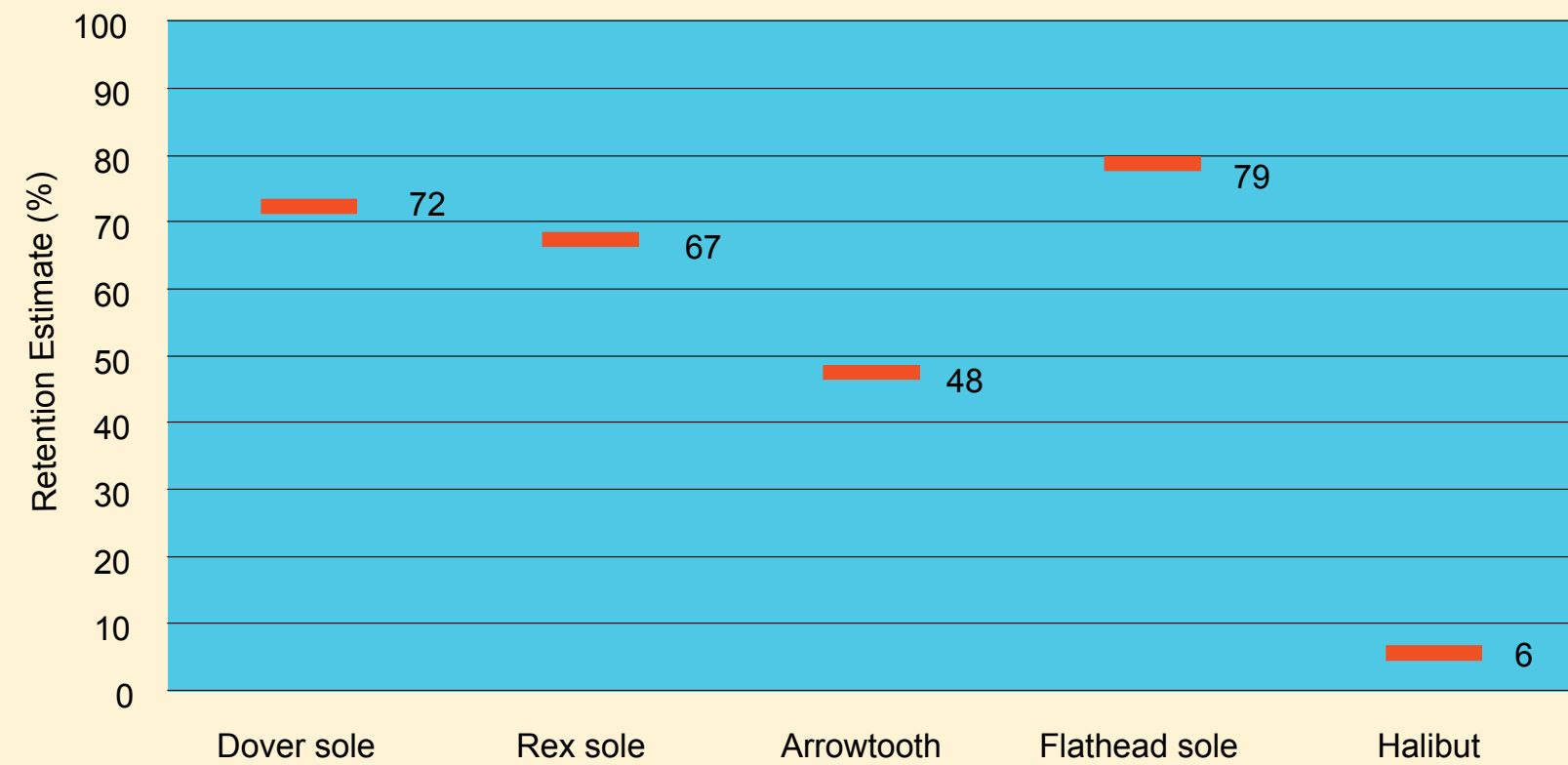
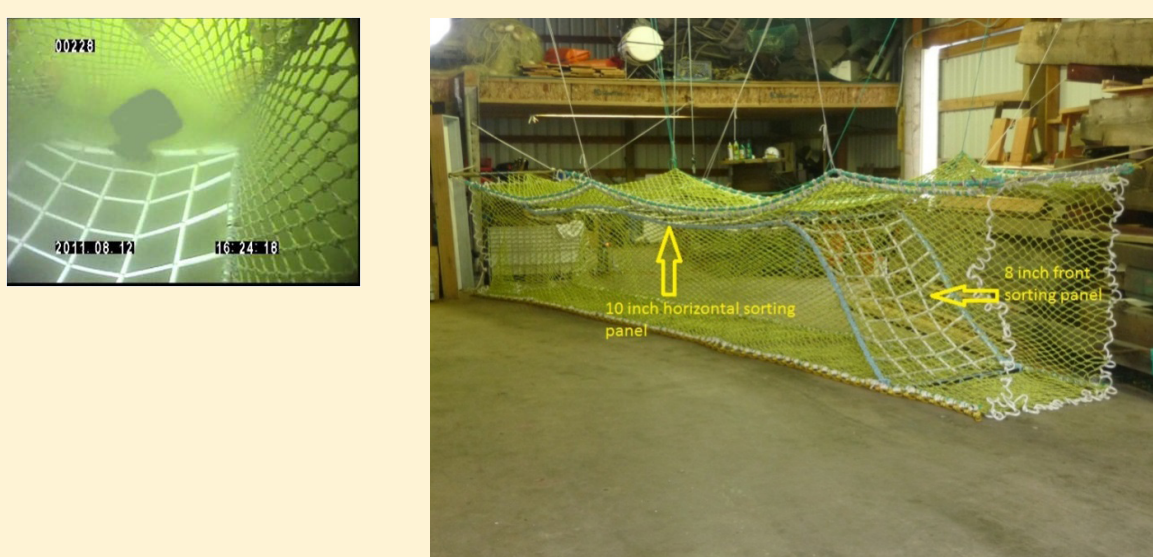
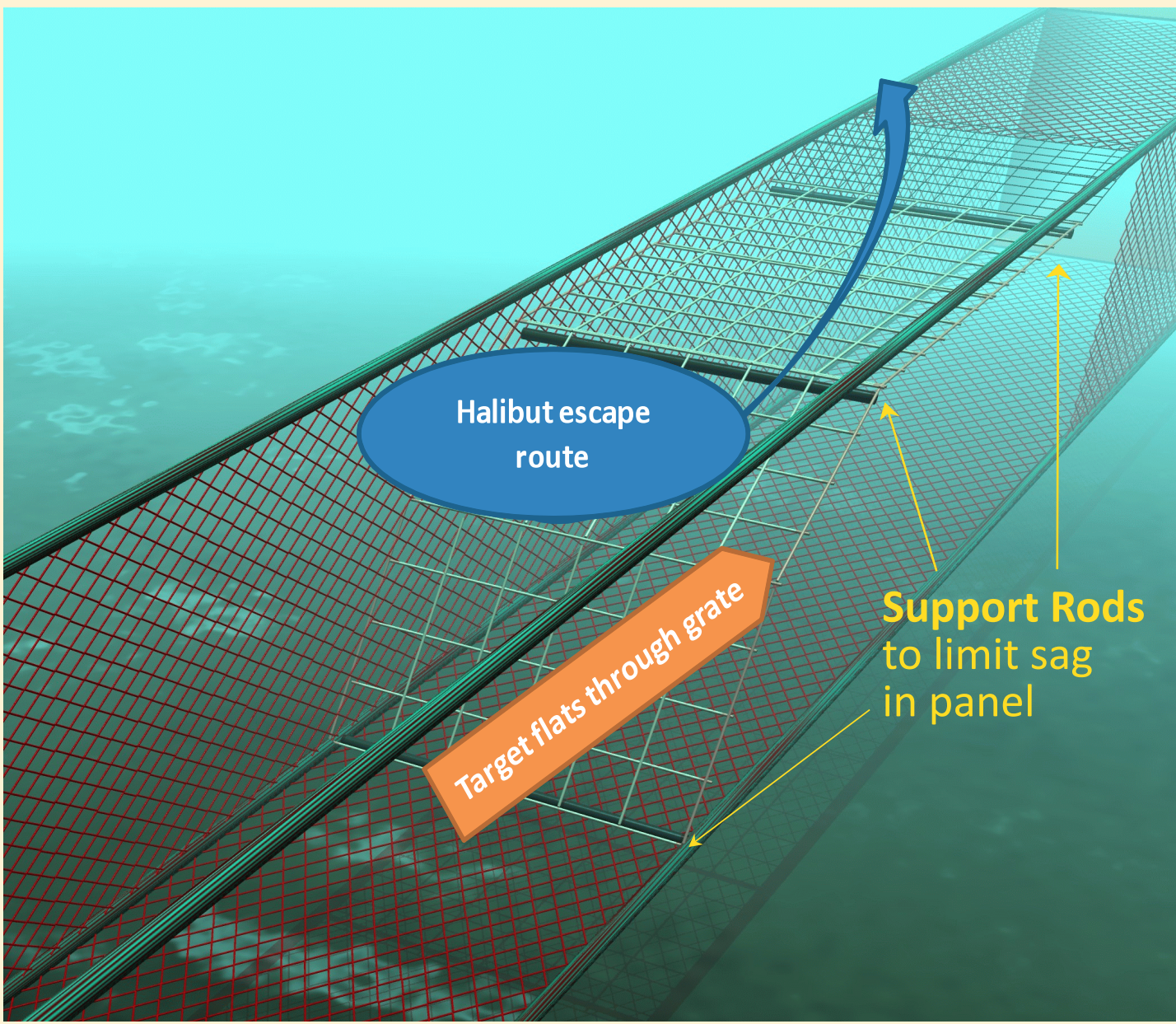
The **second** gear modification reduces halibut bycatch in cod trawls. For halibut, differences in body shape from target species are most important in the design of the excluder.



Halibut excluders: Halibut bycatch reduced by 50-80% ; loss of target flatfish and cod catch 15% to 25%.



The **third** gear modification reduces halibut bycatch in flatfish trawls. The halibut excluder design is based on differences in body size from the target species.



#### Today, all of these devices are in regular use by pollock, cod, and flatfish trawlers in the Bering Sea and Gulf of Alaska.

### Cooperative Research is the way to go!

Each gear modification that has been developed would not have been possible without the AFSC RACE Division’s willingness to share its expertise with systematic field testing methods, underwater video and sonar for evaluating fish behavior, and gear engineering. Similarly, each innovation required a large investment in time and resources by captains and gear manufacturers and a willingness by industry to work cooperatively within a systematic development and testing process.

For more information about our cooperative research collaborations, gear modification designs and testing methods, and plans for future projects, please consult the authors.