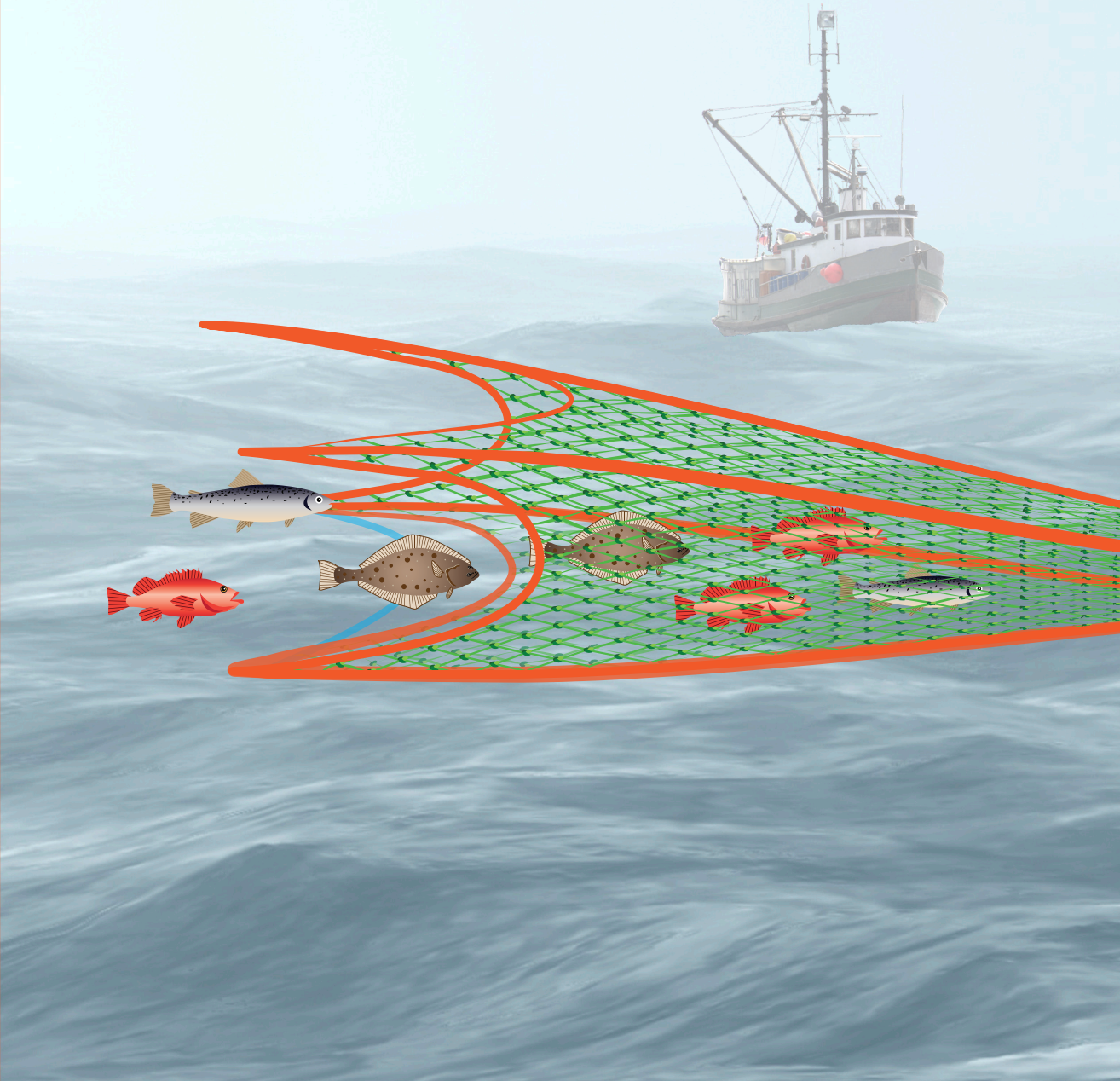


Gear Evolution

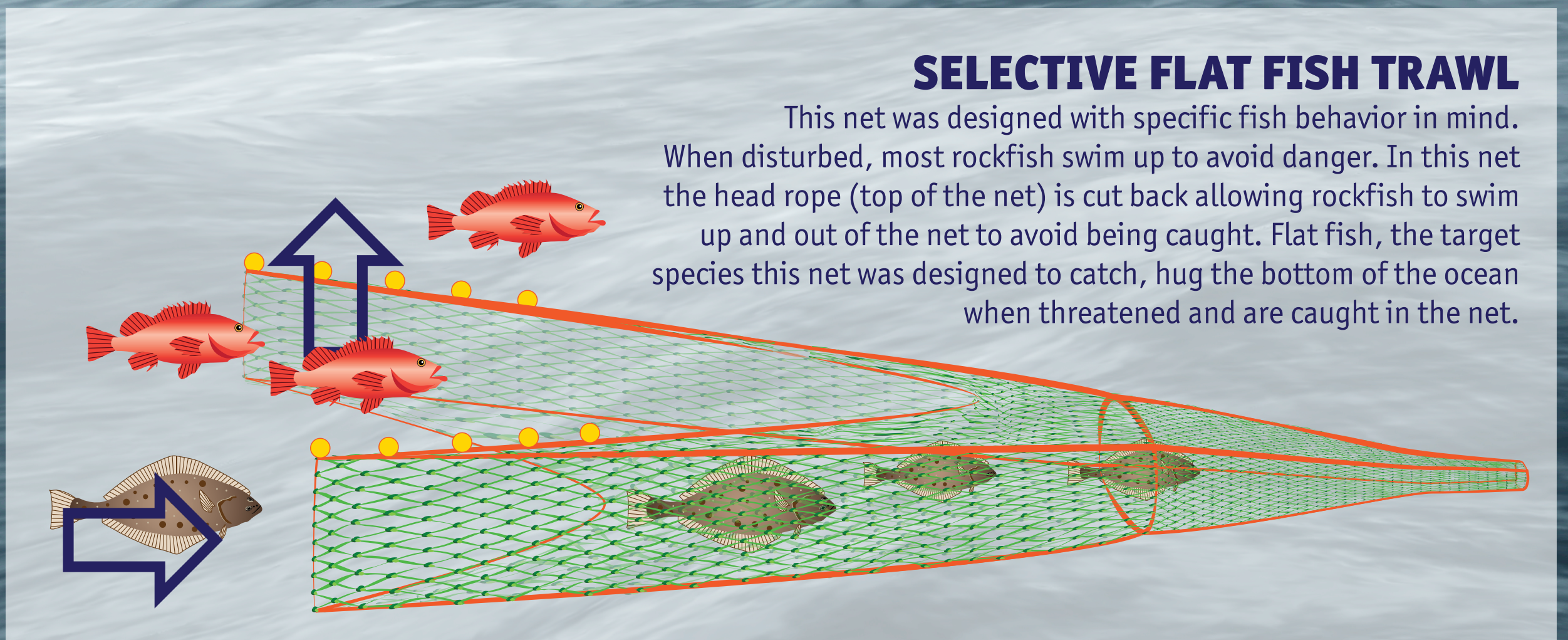


EVOLUTION IN TRAWL NETS

Early trawl nets, while not very selective, were designed to catch a variety of fish that they encountered on the seafloor. However, the more that fishermen understood the health of different species of fish; they discovered the need to make their nets more selective, so that they could target healthy populations of fish, while leaving depleted species in the water.

GEAR EVOLUTION

There are many ways to make trawl nets more selective; net material, technology like cameras, trawling practices such as tow location and length of tow are just a few of the things fisherman can do to reduce by-catch. Excluders can also be used to release a certain species, such as Pacific Halibut. Nets can also be designed to avoid a species before it even enters the net.

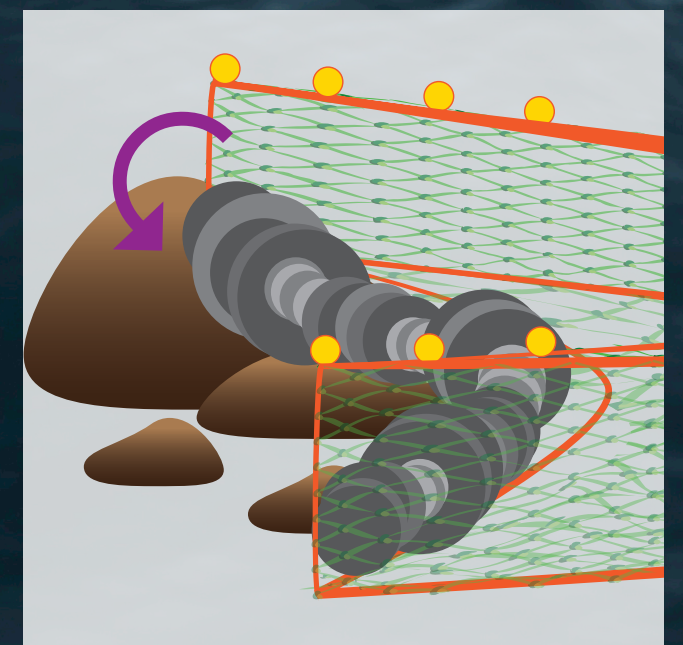
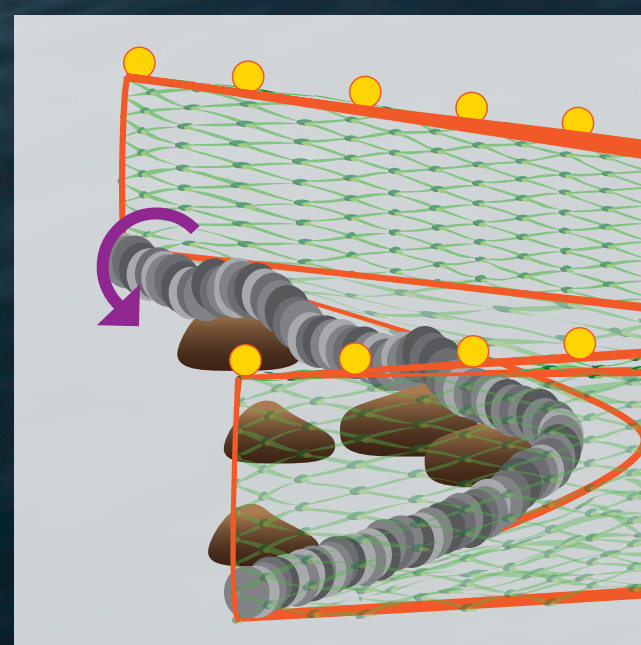


SELECTIVE FLAT FISH TRAWL

This net was designed with specific fish behavior in mind. When disturbed, most rockfish swim up to avoid danger. In this net the head rope (top of the net) is cut back allowing rockfish to swim up and out of the net to avoid being caught. Flat fish, the target species this net was designed to catch, hug the bottom of the ocean when threatened and are caught in the net.

MAXIMUM FOOT ROPE SIZE

A foot rope is the bottom leading edge of the trawl net. Roller gear is connected to the footrope and allows the net to 'roll' over small terrain features. The size and style of roller gear determines what kind of terrain fishermen can pull a net through without risking damage to the environment and their gear.



COLLABORATIVE RESEARCH

Fishermen, net builders and scientists work together to design new trawl gear. By placing cameras on nets while the trawler is fishing, fish behavior is recorded and can be analyzed. With this information future net designs can be made more efficient for catching target species and excluding bycatch.

Today's Trawler

WHAT IS A TRAWLER?

A trawler is a fishing vessel that pulls a funnel shaped net through the water to harvest fish or shrimp. The net is wide at the mouth and tapers back to a narrow tube that collects the catch, called a cod end. There are different types of trawl nets for fishing different species. In Oregon, trawlers that fish for groundfish use nets that fish the seafloor and also midwater column. Shrimpers use nets that work just off of the seafloor.

Primary Net and Net Reel

Trawl nets are designed specifically to catch target species. The nets are stored on net reels that also deploys and recovers the net from the ocean; it is operated hydraulically with controls positioned on the back deck. Some vessels have 2 net reels to harvest different species of fish by using nets that target different species. This makes it easier to switch from harvesting one species of fish to another, by having a different type of net ready to be used.

Doors

Trawlers use trawl doors (metal for ground fish and wooden for shrimp) that are attached to each side or wing on the front of the net. The doors spread the mouth of the net open and provide weight to keep the net at the desired depth.

THE OREGON TRAWL FLEET

The trawl fleet consists of approximately 100 vessels working off the Oregon Coast; over 40 of them are home ported in Newport. A large portion of these vessels participate in both the Hake, Groundfish and Shrimp fisheries. A big part of the coastal economy is the employment of fisherman and many other fishing.

WHAT DO THEY FISH FOR?

The trawl fleet is responsible for almost all of the whiting (hake), pink shrimp, flat fish, and rock fish that is harvested off of the Oregon Coast. Much of this catch is also shipped throughout the United States, Europe and Asia.

Hatch to Fish Hold

This is where the catch is stored. Flake ice is usually used to chill the fish catch until it is delivered, except for whiting where the hold is filled with circulating refrigerated seawater to chill the catch. These holds can accommodate 40,000 to 300,000 pounds depending on the type of trawler.

Sorting Baskets

Fishermen use these baskets to sort catch and give the observer the opportunity to record data.

Crew Members

On a trawler of this size, a typical crew would be 2 deckhands, the skipper, and an observer.

Protecting the Resource

TRAWL FISHERIES MANAGEMENT

Regulating agencies, such as National Ocean and Atmospheric Administration (NOAA) and Oregon Department of Fish and Wildlife (ODFW), use a variety of tools to regulate the groundfish trawling.

RESTRICTED AREAS

One tool in managing a fishery is to regulate which areas can be fished. Restricting areas from extractive uses can benefit critical habitat, fish species, and other marine life. Some restricted areas limit use while other areas are closed to all extractive activities.

EXCLUSIVE ECONOMIC ZONE (EEZ)

The EEZ was established in 1976 to protect our nation's economic interest by excluding foreign fleets from fishing within 200 nautical miles from shore.

ROCKFISH CONSERVATION AREA (RCA)

RCAs were created to ensure the continued reproduction of certain species of rockfish. An RCA is closed to fishing activities that pose a risk to catching rockfish, but open to other types of fishing

ESSENTIAL FISH HABITAT (EFH)

EFHs are restricted areas created to protect bottom habitat and are closed to bottom trawling but open to other types of fishing and extractive uses.

MARINE RESERVES

Marine Reserves are more general protected areas, closed to all extractive and development activities.

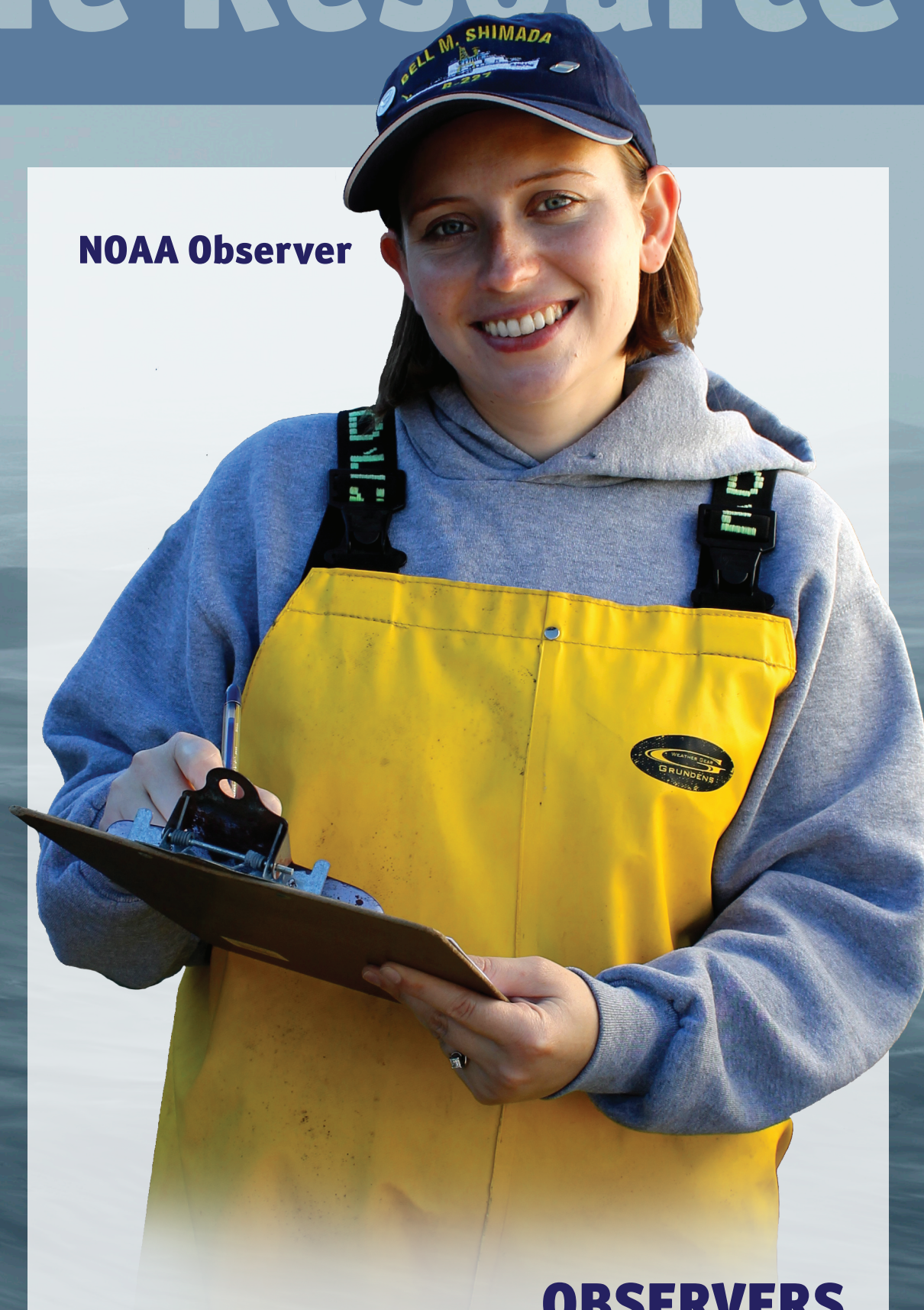
STOCK ASSESSMENT

Stock assessments use data collected by fisherman, observers and scientists. The data is compiled and used to determine the overall allowable quota.

VESSEL MONITORING SYSTEM

Vessel locators are required on all trawl vessels. It is a tracking beacon that is used to monitor where a vessel has traveled to ensure compliance such as staying out of restricted areas.

NOAA Observer



OBSERVERS

Groundfish trawlers are required to have an observer on board. The observer is not part of the vessel's crew. They inform managers by verifying the amount of fish caught and other relevant biological information from the fishing trip. This information is reported to the regulatory agencies and is used to track how much of a quota is caught. This extremely accurate accounting of fish harvesting is important to fishery managers and scientists in setting future quota.

INDIVIDUAL TRANSFERABLE QUOTAS

Each year, fishermen receive an allocation of quota based on their historical catch of the different species of groundfish. The quota system requires that every fish caught is accounted for and discards have been reduced to less than 5% of the catch. Fishermen are able to catch their quota anytime during the year and can increase the value of their catch by fishing when market conditions are more favorable. Quota can also be traded or transferred to other trawl vessels.