This piece was written for a webpage targeting readers that already had a basic understanding of science.

The Three Steps of Effective Fishery Management

Because fish and shellfish are renewable resources – they can reproduce and replenish their populations naturally-- we can catch a certain amount of fish on an ongoing basis without using up the resource. **Fishery management** is deciding when, where, how, and how much fishermen can catch, to make sure our seafood is sustainable and will be there for future generations.

In order to work, fishery management needs three things: information about the fishery (sound science), rules and limits based on that information (management), and a way to carry out the rules (enforcement).

Here's a deeper look at the different parts of effective fishery management:

1.) SOUND SCIENCE

Know What You Have
It's often said that "counting fish is like counting trees, except trees don't move and you can see them." Good fishery management starts with accurate scientific information about fish and fisheries, which means that fishery scientists spend a lot of time counting fish populations. Using many different samples and biological models, they estimate how many fish are in the water. Working with fishermen, universities and other partners, fishery scientists are constantly looking for new ways to make the science of counting more precise. Scientists also research the biology of fish species – what they eat, how they reproduce and how quickly they grow – as well as the ecosystems in which they live – their habitat, other marine species that share that habitat and environmental conditions.

History Predicts the Future
Fisheries scientists also research the history of fisheries, including how many fish have been caught in the past, who was fishing, and what kind of living fishers made. They keep track of current amount of fishing by putting observers on commercial fishing and processing vessels to collect data on what and how much they catch. All of this is done in an effort to provide the best scientific advice to fishery managers so they can make sound decisions about the sustainable operations of fisheries.

2.) MANAGEMENT

Slow and Steady

Fishery managers compile all the scientific data and use it to set standards and guidelines for the operation of fisheries, which are laid out in Fisheries Management Plans (FMPs). FMPs usually place limits on the amount of fish that can be harvested, the amount of fishermen that can participate in a fishery, and where, when and how fish can be caught. These limits are based on levels determined by scientists to ensure that fish are not being caught too quickly (overfishing) and that enough fish are left in the ocean to reproduce and keep the population and ecosystem healthy. Scientists monitor fisheries and fish populations to make sure overfishing is not taking place and that populations are not overfished. If the number of fish decreases too fast, managers change the fishery management plans with new regulations to bring the rate of fishing and/or the population back to sustainable levels.

Everything Is Connected

Managers may also put additional measures in place to address other issues such as a fishery's potential impacts on habitat or other species, the safety of fishermen and marketability of the catch. They might limit the type of fishing gear used, the location of the fishery or the time of year the fishery can take place, or even implement innovative approaches like catch share programs. Shrimpers, for instance, use turtle exclusion devices, and fish excluders are growing in popularity. New trawls have also been designed to reduce damage to the sea floor. These measures support the goals of sustaining fish populations, protecting habitat and other species, and keeping fishermen working. Reaching these goals is not easy. Managers must make tough, sometimes unpopular decisions about fisheries as they attempt to balance the needs of the environment and the people that depend on the environment for a living.

2.) ENFORCEMENT

Cheaters Never Prosper

While scientists provide the research and managers set regulations, sustainably managing our nation's fisheries would be impossible without someone to follow through on his or her hard work and enforce the rules. Fortunately, most commercial and recreational fishermen comply with fishery regulations – when fishermen follow the rules, everybody wins: the fish, the fishermen, and future generations. NOAA Fisheries Office of Law Enforcement is there to ensure fair competition and a level playing field for those who obey the rules. Agents and officers work with coastal states and partner with other agencies such as the U.S. Coast Guard to prevent illegal activities such as fishing out of season, fishing in restricted areas and exceeding catch limits. They use traditional enforcement techniques such as patrols and investigations as well as satellite tracking systems and education to get the job done. Their work helps protect fish stocks and other marine species, the livelihoods of people involved in the commercial and recreational fishing industries, and the health of seafood consumers.