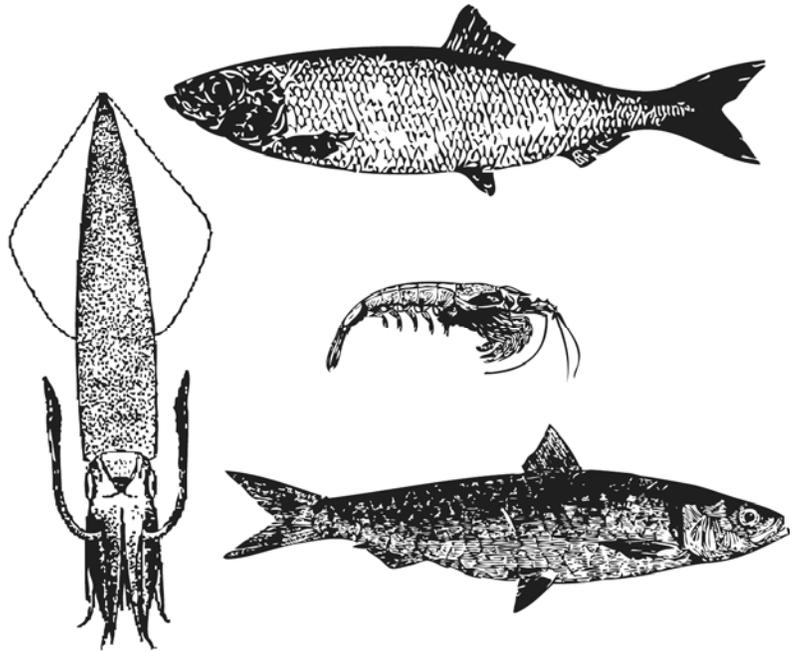


FORAGE FISH

They are short-lived. For the most part, they go unnoticed beneath the surface, except for an occasional supporting role in documentaries of the majestic ocean predators. While we may not pay them much attention, the lives of many other creatures are keenly attuned to their numbers and whereabouts, inspiring migrations that cross oceans and span thousands of miles. Though small, they compensate by forming vast schools to safely navigate the seas. These immense congregations fuel the ocean food web. They are forage fish.



The term “forage fish” is used to describe species that play a significant role as prey for ocean predators, although not all species that fit this description are true fish. The most important forage species in the waters of the United States are krill, squid, and a variety of small, silvery schooling fish that include herring, sardines, anchovies, menhaden, butterfish and alewives. Collectively, these animals comprise a vital link in the ocean food web. Ocean producers, comprised mainly of phytoplankton, produce food energy from the sun and are the raw fuel for the food web. Forage fish transfer this energy through the food chain all the way up to top predators such as seabirds, sharks and whales, by ingesting the plankton and becoming food themselves. Though their populations are large, there are relatively few individual species that perform this important ecological function. In the ocean ecosystem, there are actually more species of apex predators and producers than there are of forage fish, making the abundance of each forage species that much more critical. Alarmingly, large-scale fisheries are in place for most of them.

Fishing down the food web led to the large-scale harvesting of forage fish. Commercial fisheries historically targeted high-value ocean predators such as cod, rockfish, swordfish and tuna. As technology advanced, fisheries became so efficient at locating and removing their targets that stocks of these predators collapsed, and so did the fisheries. To make up for the loss of revenue, fishing operations set their sights on species lower in the food chain. Though these species were of lesser value, fishermen compensated by taking a greater number of them.

It is important to understand the vulnerability of forage fish populations when faced with modern fishing equipment. Fishing for these animals may be likened to shooting fish in a barrel. Because they swim near the surface in tight schools, they are relatively easy to locate under the surface with sonar or from above with spotter planes. Once located, they are scooped out of the water using trawls, purse seines or other forms of highly efficient nets that are capable of removing most of the school.

When fishing operations are permitted to harvest forage species when they congregate to breed, it is a double whammy for the fish stocks. Not only are a large number of them taken, they are removed from the ocean before they have an opportunity to reproduce. Spawning and other behavioral patterns are instilled in the life cycle of forage fish and are highly predictable. Experience has taught fishermen exactly how to take advantage of these patterns to maximize their catch.

Fishing during spawning periods or at other times when forage fish amass in large numbers can also be a blow to predators. Whales, tunas and sharks are just a few of the creatures that have evolved to migrate long distances to specific sites for feeding and breeding. Their survival hinges on the ability to obtain enough nourishment from their feeding grounds to sustain their long journeys. The timing and location of these feeding areas closely coincides with the behaviors of forage fish, so it is not surprising that fishermen and ocean predators are at odds competing in the same waters. Whether adapted for speed, size, endurance or stealth, the great ocean predators find themselves on the losing side of the battle when faced with the machinery of commercial fishing.

Eventually, if the ocean food web collapses, people will lose too. Humans are integrally woven into the ocean food web. Seafood is a major source of protein for the world's population. In the U.S. alone, per capita seafood consumption has risen to over 16 pounds per year. Our domestic seafood industry produces 10 billion pounds of the supply annually, which is harvested from the ocean in every region of the country. Commercial and recreational fishing industries provide over a million jobs and an annual infusion of billions of dollars into the U.S. economy. If the current course of fisheries and ecosystem declines is left unchecked, fish stocks may deteriorate to a point where recovery is next to impossible, crippling our economy and destroying an essential food source.

The National Coalition for Marine Conservation (NCMC) is asking fishery managers to put Forage First! NCMC's "Forage First!" Campaign was launched with the publication of our report, *Taking the Bait: Are America's Fisheries Out-competing Predators for their Prey?* The report encourages fishery managers to protect predator-prey relationships as a first step toward an ecosystem-based approach to fishery management. Simply put, ecosystem-based fishery management prioritizes the integrity of the ecosystem when setting allowable catches for the fishing industry. We believe that protecting a forage base for predators is essential to managing fisheries in a sustainable manner. Our campaign aims to engage the scientific, environmental and fishery management communities on how we as a nation can better understand and appreciate the ecological role that each species plays in the ocean ecosystem and guard these roles accordingly, before we unravel the food web that supports a vital living resource for the American people.



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