Peak Menhaden

Contributed by Alice Friedemann
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Very few people have heard of menhaden, but they're the most important fish in the Atlantic and gulf waters, and they're almost gone.
I'd never heard of menhaden until my husband, who grew up in Florida, mentioned them.

"When we were swimming and the menhaden came through -- they looked like the shadow of a large, approaching cloud -- the water boiled with fish, and everyone got out as fast as they could because there were sharks slashing through them, biting at anything that moved," he told me.

In The Most Important Fish in the Sea. Menhaden and America, Island Press 2007, H. Bruce Franklin describes menhaden schools as acting like a single organism: "flashes of silver with flips of forked tails and splashes, whirling swiftly … in moves more dazzling than those of a modern dancer, as they seek escape from hordes of bluefish below and gulls… above…a breathtaking experience".

Menhaden are the vacuum cleaners of the Atlantic and Gulf coasts, filtering up to four gallons of water a minute to extract phytoplankton (algae and other tiny plants). Although they grow a foot-long at most, the weight of a menhaden school can equal that of a blue whale.

On land, plants are at the bottom of the food chain, eaten by many herbivores – mice, rabbits, cattle, insects, and so on. In the ocean, plants are also at the bottom of the food chain, but there's only one main herbivore, menhaden. The other filter feeders, like baleen whales, herring, and shad, eat zooplankton (tiny animals).

This gives menhaden an extraordinary importance in the ocean food web, because they are the main food source of the entire food web above, and the main species keeping the ocean ecosystem healthy by clearing the water of excess algae.

The main reason menhaden don't have much competition is because they can digest cellulose, which very few creatures can. On land, just termites, ruminants, and some coprophagous animals have figured this out.

When the pilgrims first arrived, they were astounded by the sea life in the ocean –rivers and coasts were teaming with six-foot-long salmon, foot-wide oysters, and schools of 140-pound striped bass. There were so many whales criss-crossing bays, estuaries, and the coast, they were a peril to ships.

The food chain for this vast abundance of life depended on the billions of menhaden that formed a river of flesh along the Atlantic coast. Menhaden were eaten by dozens of kinds of fish, sea mammals, and birds. The only reason we don't eat them is because they smell awful and are too oily. But we do eat them indirectly when we dine on menhaden predators, such as tuna, cod, shark, and swordfish. Menhaden are a preferred bait of commercial and sports fishermen, and used to bait lobster and crab traps.

The Native American word for menhaden translates to "fertilizer" because they buried these fish below the corn they

planted. The Pilgrims copied them, and grew triple the corn they could have otherwise.

Later generations forgot about using menhaden as fertilizer, which led to soil depletion as early as the 1630's in some areas, and extensively in New England and Long Island by the late eighteenth century. An article about using menhaden as fertilizer in 1792 changed all that. It wasn't long before millions of tons of menhaden were caught and dragged as far as seven miles inland, dumped on fields, which saved farmers the enormous cost of importing guano from Peru.

By 1880 menhaden also replaced whales as a source of oil, and the bits that weren't used for oil were made into fertilizer or animal feed and shipped all over the country.

Menhaden were much easier to catch than whales, especially after 1860, when the purse seine was invented. Schools bunched up when threatened, and easily scooped up by two ships closing the net up like a large purse. Many valuable game fish feeding on the menhaden were caught as well and ended up as oil and fertilizer.

Meanwhile, wealthy landowners had permanent nets across rivers and offshore from their property, scooping up all passing fish. Fish populations declined dramatically, by 1870 ninety percent were gone. Commercial fishermen and citizens desperately tried to stop permanent nets and the menhaden fleets, but wealthy interests were able to prevent any restrictions on fishing. By 1800 salmon had been fished out of New York and Connecticut, by 1840 there were no salmon south of Maine, and when the menhaden industry was finally banned in Maine in 1879, it was too late, the menhaden were gone, and the northern fishery collapsed.

From the 1860's to today, the weight of menhaden harvested is more than the combined weight of all other commercial fish -- more than all the salmon, cod, tuna, halibut, herring, swordfish, flounder, snapper, anchovies, mackerel, and so on.

State by state, the menhaden industry wiped out menhaden and went bankrupt, but didn't die out completely, because the U.S. government spent taxpayer money to keep the industry going in states where menhaden still existed. There was no reason to do this -- menhaden oil, animal feed, and fertilizer had been replaced with much cheaper petroleum and soybean substitutes. The place menhaden inhabit in the ocean's food chain, however, is irreplaceable.

Now one company, Omega Protein, catches the majority of menhaden, with 32 spotter planes directing a fleet of 61 ships. Their spotting planes and vessels can find and catch the few remaining schools, since they swim close to the surface. They make poultry feed and fishmeal for farmed salmon out the menhaden, products that can be made more cheaply from plants.

Omega Protein is doing this in two of the most productive fisheries, the Gulf of Mexico and Chesapeake Bay, both of which have suffered tremendous ecological damage and fishery destruction the past few decades.

Menhaden play an even more important role than the main food item for fish – they filter phytoplankton out, allowing sunlight to reach the depths where aquatic plants can prosper, which increases oxygen levels, allowing shellfish and fish to thrive.

When algae aren't consumed, they erupt into toxic algal blooms, die and sink to the bottom, smothering plants and depleting oxygen. This leads to massive die-offs of all sea life within these areas, such as the 8,000 square mile dead zone in the Gulf of Mexico.

If the menhaden industry were shut down, the ocean and estuaries would be cleansed, shellfish and fish populations recover, and a new sport and commercial fishing industry emerge as the dozens of fish that feast on menhaden return. Far more jobs would be created if menhaden schools recover, than would be lost if Omega Protein were no longer in business. Oysters, crabs, striped bass, and many other tasty species of seafood might thrive again if the oceans were cleared of toxic algal blooms.

Franklin was not exaggerating when he titled his book The Most Important Fish in the Sea.