

---

CARL SAFINA

# Where Have All the Fishes Gone?

---

*Commercial  
disaster  
looms unless  
Congress acts  
to stop overfishing  
and restore  
depleted resources.*

---

Beginning in the late 1960s, fishing vessels from Eastern Europe, the Soviet Union, East Asia, and other distant nations began arriving in force near the coast of North America. Equipped with the finest electronic fish-finding gear and able to fish for months at a time, these fleets systematically scoured coastal waters, working with floating factories capable of processing phenomenal quantities of wild fish into seafood products at the scene of capture. Neither the fish populations, nor the relatively small-scale American fishers of the day, could last long under the onslaught.

In 1976, Congress, on behalf of U.S. fishing interests, passed the Magnuson Fisheries Management and Conservation Act, giving the federal government authority to manage fisheries and claiming the area between 3 miles and 200 miles from shore—2 million

square miles of ocean—as the U.S. Fishery Conservation Zone (later renamed the Exclusive Economic Zone). In so doing, Congress had two major goals: to re-Americanize fisheries by controlling or eliminating foreign fishing and to restore and conserve the fish.

The first goal was accomplished in short order but the second has proved tragically elusive, due in part to poorly conceived and ineffectively implemented government policies. Government loan guarantees and investment incentives enabled U.S. fishers to rapidly expand their capacity, which soon matched that of the recently departed foreigners. These well-meaning incentives led to tremendous overcapitalization in the industry, far more fishing capacity than needed to capture fish in sustainable quantities, and too many players to allow all the fishers to be reasonably profitable. The result was overfishing on a grand new scale.

This overfishing could have been stemmed or prevented, however, if eight regional fishing management councils empowered by the act to deal with the problem had adhered to Congress's intent and done their jobs. But the councils, comprised of political appointees with heavy fishing industry repre-

---

Carl Safina founded and is the director of the National Audubon Society's Living Oceans Program in Islip, New York. He is a founder and member of the Marine Fish Conservation Network and serves as a voting member of the Mid-Atlantic Fisheries Management Council.

sentation, have often failed to take decisive steps to end overfishing or to develop plans to restore rapidly dwindling fish populations. In short, the feeding frenzy by U.S. fishers and the unwillingness of the fishing councils to slow them down has led to dramatic declines in fish populations and economic disaster for fishers and fishing communities.

Today, overfishing and habitat loss, the other major cause of the plummeting populations, are chronic and widespread. Many fish populations are at or near historic lows, including some species that are familiar table fare. Summer flounder, yellowtail flounder, red snapper, and swordfish populations are so depleted that they can only produce 30 percent, 15 percent, 12 percent, and 40 percent, respectively, of their long-term potential yield. Combined landings of reef fishes such as groupers and snappers fell more than 80 percent during the 1980s. The swordfish's Atlantic breeding population has been halved since the 1970s, and swordfish are typically caught before they can breed. This is just a sample of the number of devastated species.

In retrospect, the Magnuson Act has proved to be a seriously deficient legal instrument for dealing with overfishing and habitat loss. On paper, the act's language seemed strong and farsighted; in practice, it has proved vague or lax in its key directives. But with the act due for reauthorization this year, Congress has another opportunity to correct its flaws. Above all, it must compel fishery managers to halt overfishing, restore depleted marine resources, and conserve and restore habitats.

### **Ravaged fisheries**

Overfishing can be loosely defined as taking more fish than a fish population can naturally replace, although even this definition is very narrow. For example, sustainably catching the entire surplus production of one species may starve another important species that relies on it for food.

The Magnuson Act's failure to prevent the systematic depletion of fish has been perhaps most tragic in New England, where much of the impetus for enacting the law originated. The worst debacle involves groundfish—species such as cod, pollock, haddock, redfish, and flounder that swim close to the ocean floor. These fish were once so prolific that they helped spur European settlement of North America. Around

the year 1500, the explorer John Cabot described the Grand Banks area as so "swarming with fish [that they] could be taken not only with a net but in baskets let down with a stone."

Today, New England cod are at their lowest levels ever and halibut and haddock are commercially extinct. In January, the National Marine Fisheries Service (NMFS) ordered an emergency suspension of haddock fishing on Georges Bank after landings plunged 66 percent in a year. The NMFS Northeast regional director has also recommended closing the Gulf of Maine to haddock catches.

The state of yellowtail flounder, once the backbone of southern New England fishing ports, is similarly dire. "The stock has collapsed! Fishing mortality on this stock should be reduced to levels approaching zero," a recent NMFS report said. The report stated that of every 100 yellowtail flounder alive at the beginning of the year, only eight survive the year. Under this pressure the breeding population declined by 94 percent between 1989 and 1992. Contributing to the problem is that many juvenile flounders are caught and discarded dead because they are too small to sell.

Although the NMFS has authority to temporarily shut down imperiled fisheries by emergency action, in practice it seldom does so. It largely defers to the eight regional fishery management councils, which often make decisions at odds with the recommendations of NMFS's scientists. Despite New England's terrible problems, the regional council recently adopted a groundfish plan that aims merely to halt—but not reverse—fish-population declines over the next five to ten years.

The pattern of devastation of New England groundfish populations parallels that of neighboring Canada, which doesn't even have a fisheries-protection law similar to Magnuson. The Canadian cod fishery had to be closed last year, an action that cost 42,000 jobs and \$1.8 billion in unemployment payments.

Shellfish in New England also have been hammered. Lobsters in the Gulf of Maine are officially deemed overexploited, and NMFS says that sea scallops are at or near all-time lows. The regional council's scallop-management plan will take years to end overfishing and does not address rebuilding the populations.

The near-collapse of New England's fisheries has caused drastic economic dislocation, in addition



some animals, such as sea turtles and albatrosses, by-kill is the main source of adult mortality.

The incidental kill of unwanted animals is a nearly universal aspect of fishing, yet the Magnuson Act almost entirely overlooks it. By-kill can produce extraordinary waste and even overfish species. Estimates of discarded by-catch in Alaskan fisheries in 1990 range to well over half a million tons annually. Ten pounds of unwanted fish are killed for every pound of shrimp caught in the southern United States. Total discard in the U.S. shrimp fishery is estimated at 175,000 tons of juvenile fish a year—fish that would otherwise grow to support other important fisheries. According to the President's Council on Environmental Quality, this by-catch has contributed to an 85 percent decline in the Gulf population of bottom fish such as snappers and groupers during the past 20 years, making the real cost of a shrimp dinner expensive indeed.

The Gulf of Mexico Fishery Management Council warned in 1990 that "red snapper are severely overfished in the Gulf of Mexico and the spawning stock is so reduced that the population may either be in a state of collapse or dangerously close to collapse." Rebuilding the red snapper population, the council said, cannot be effected without protecting juvenile snapper from being killed as by-catch in the shrimp fishery.

Congress, adept at circumventing due process and at interfering destructively in fishery management, reacted to this warning with absurd irresponsibility. Sen. John Breaux (D-La.) inserted language in the last Magnuson Act reauthorization prohibiting "any measures . . . to reduce incidental mortality of nontarget fishery resources in the course of shrimp trawl fishing for three years." This happened despite the act's proscription against favoring one fishery over another. And recently, Congress extended this exemption.

Although systematic overfishing empties U.S. ocean waters and destroys fishing communities, the nation can abandon hope for restoring fisheries unless it stems the ongoing loss and degradation of habitats. Rivers, wetlands, estuaries, reefs, sea-grass meadows, and mangroves provide the breeding, feeding, and nursery grounds that fisheries rely on. For instance, about 70 percent of the U.S. fish catch is made up of species that depend on estuaries for at least part

of their life cycle. In addition, there is the more subtle but no less important degradation of water quality from sediment, excessive nutrient runoff, and pesticides and other toxins.

For species that ascend rivers to spawn, such as salmon, white perch, and shad, habitat degradation—not overfishing—is the leading cause of depletion. Salmon that once found their way by the millions from mid-ocean to the rivers of their birth are now finding their way onto the endangered species list.

### **A renewable resource**

In addition to their enormous biological value, marine fish represent a significant part of the resource endowment of the United States. NMFS valued the 1991 commercial catch at roughly \$4 billion and the total economic impact at \$50 billion. Sport fishing contributes another \$69 billion, according to a 1994 Sport Fishing Institute report. Due to overfishing and habitat degradation, however, U.S. fisheries now produce only 60 percent of their potential value, the NMFS estimates.

According to a 1989 statement by more than 40 scientists, "[F]ishing effort and capital investments in vessels and gear are just too high," adding that "the exploitation ethic, where decisions favor the short term, virtually guarantees . . . severe economic and social dislocations."

The problem is global. The United Nations Food and Agriculture Organization has determined that all the world's major fisheries are either fully exploited, overexploited, or depleted. The myth of limitless marine resources is just that—a myth.

From a fishing perspective, however, whether the last fish dies or not is almost academic, because fishing economies go extinct long before then. Extinction involves a four-step process, with the most damage occurring long before the last fish disappears.

The first stage is depletion, in which the fish population falls below its most productive level. Fish are smaller and fewer than they could be and chances for successful spawning are reduced. Consequently, the population's ability to support fishing declines, as do profit margins, and some businesses become unviable. Other members of the ecosystem may experience food shortages or unnaturally decreased predation pressure.

Next comes ecological extinction, with the species no longer fulfilling its role as prey, predator, or competitor in the ecosystem. Entire marine communities may undergo a profound shift in numerical and functional relationships. Ironically, less valuable (to fishers) competing species can increase, further suppressing the recovery of more valuable species.

A third stage, commercial extinction, occurs when a species is so rare that it is no longer profitable to fish for it, although price increases can delay this. For example, though it may take several weeks for U.S. fishers to catch a single bluefin tuna, demand from Japanese sushi connoisseurs has pushed prices to between \$6,000 and \$30,000 per fish, allowing some fishing boats to remain profitable.

To date, the last stage, extinction, has been rare in the oceans, but several fish have been listed as endangered or threatened under the Endangered Species Act. The western Atlantic bluefin tuna, whose breeding population numbers only 20,000, down from 250,000 in 1975, has been proposed for listing under the Convention on International Trade in Endangered Species. Listings of several shark species are also being considered under the convention. More fish may appear on endangered-species lists in the future, but by then it likely will be too late to save the fishing jobs and coastal communities that depended on them.

### **Why the act failed**

By creating the eight regional fishery management councils, the Magnuson Act mandated a unique form of participatory government. The act directs that the councils be comprised of "individuals who, by reason of their occupational or other experience, scientific expertise, or training are knowledgeable regarding the conservation and management of the commercial and recreational harvest." In practice, members know a lot more about catching and marketing fish than about marine biology or natural resource stewardship. Indeed, the heavy fishing industry representation on the councils have resulted in biases so pronounced as to largely account for

---

## *The Magnuson Act should require enforceable action plans for restoring overfished species.*

---

the failures to prevent overfishing. By comparison, we do not allow electric companies to sit on utility commissions.

Council members are not necessarily self-serving or intent on circumventing the act. They often mean well, seeking to shelter local fishers from short-term economic pain. Unfortunately, an ounce of pain deferred one year and an ounce deferred the next add up to pounds of trouble. As a result, financial returns are now so low in

many fisheries that more boats are going out of business than ever before.

Another significant flaw in the system is the political weakness of NMFS, ostensibly the nation's marine steward. NMFS "is an agency with severe problems and challenges that require immediate attention," reports the National Fish and Wildlife Foundation, a congressionally established nonprofit organization. NMFS has been marginalized by inadequate legal authority and the council system that gives the fishing industry more management authority than the agency's own resource-management professionals, economists, and social scientists.

Foremost among the agency's problems is that it is buried in the Commerce Department, which largely deals with manufactured commodities. It should be in the Department of Interior, among groups that understand sustainable resource stewardship and its role in the economy. No secretary of commerce has had a background in natural-resource issues, and it is unreasonable to expect NMFS to rise above unwanted-stepchild status in the department.

For years, NMFS suffered from poor leadership, and it has been chronically underfunded. The service has never had the resources necessary to ensure compliance with its directives, a gap likely to widen as the government imposes more area closures, restrictions on mesh size, and other regulations on troubled fisheries.

Moreover, although monitoring is critical to management, NMFS does not collect adequate information to determine the status of a third of the commercially important marine fish in the United States. And the service has only a consultative role in de-

termining whether the government will grant permits for activities that degrade habitat.

### **Overhauling the act**

The Magnuson Act states that, "Conservation and management measures shall prevent overfishing while achieving the optimum yield from each fishery on a continuing basis." However, overfishing is undefined, whereas optimum yield is defined as the maximum sustainable yield "modified by any relevant economic, social, or ecological factor." This definition sounds eminently reasonable but it can be used to justify virtually any catch level, including one that exceeds the reproductive abilities of fish.

Nothing in the law compels the regional councils to develop fishery-management plans when species are overfished. Although guidelines added to the law in the late 1980s direct councils to quantitatively identify a level of fishing mortality that constitutes overfishing and to prepare a recovery plan when overfishing exists, the guidelines lack the force of law. As a result, many fisheries lack adequate recovery schemes or even management plans.

The act has other critical omissions as well. Its guidelines fail to specify a time in which a council must address overfishing once identified. It contains no provision for action if a council fails to respond to overfishing. It does not require managers to consider important ecological relationships among fishery resources when they determine catch quotas for any single species. And the guidelines fail to direct councils to establish specific goals or timetables for rebuilding depleted but stable populations.

Amendments to the act should require the secretary of commerce to intervene when a council fails to develop an adequate recovery plan within a specified period. Creating an independent scientific panel to assure that catch quotas are sustainable would help ensure that management measures recognize the boundaries of natural capacity. Moreover, management plans for overfished species should include a moratorium on new entrants into the fishery until populations are rebuilt. And the act should require management plans to favor long-term benefits to the nation over short-term profits as the best way to help fishers and coastal communities.

Also in need of addressing are peculiar problems involving Atlantic tunas and billfishes (swordfish and

marlins). The International Commission for the Conservation of Atlantic Tuna (ICCAT) is involved in managing tuna and billfish off the U.S. Atlantic coast because some species migrate annually across international and high-seas boundaries. The commission can recommend that member countries implement management measures but rarely does so, and its recommendations are characteristically lax and often contrary to scientific information. As a result, the populations of bluefin tuna, swordfish, and marlins have declined 50 percent to 90 percent in the past 20 years, according to the commission's own data. Amendments to the Magnuson Act, added in 1990 at the behest of tuna and swordfish interests, forbid the United States from imposing catch quotas more restrictive than those agreed to by the commission. This allows other countries, such as Japan, to participate in setting quotas in U.S. waters for fish that are imported to that country from the United States. The language must be struck from the act and U.S. authority to manage these resources restored.

The Magnuson Act should also make it national policy to reduce excessive by-catch. The act should provide mechanisms for collecting better data on by-catch and create incentives for reducing it. And penalties to discourage excessive by-catch and encourage less destructive fishing should be established.

To protect habitat, the act should be amended to increase the consultative role of regional councils and provide the secretary of commerce, through NMFS's Office of Habitat Protection, with authority to restrict, modify, or prohibit actions that would damage essential fish habitats. Currently, fishery managers can only comment on activities potentially damaging to habitat, and any recommendations are merely advisory.

Finally, Congress should recapture some of the costs of managing public marine resources, perhaps by creating a trust fund for marine activities similar to the Highway Trust Fund. These fees could help fund efforts to protect habitat and regulate fisheries.

The House Merchant Marine and Fisheries Committee and the Senate Commerce Committee have been holding hearings on possible changes to the act. Meanwhile, the Marine Fish Conservation Network has drafted a bill, endorsed by more than 50 fishing, environmental, and scientific organizations, to eliminate the act's loopholes and vagaries. The network's bill

offers a comprehensive set of amendments reflecting the act's original intent of restoring the nation's fish and fishing activities. The amendments address overfishing, recovery of depleted fish, by-catch-reduction policy, habitat safeguards, management councils, and user fees. The amendments would define and prohibit overfishing and require recovery plans with defined goals and timetables. Prohibitions on overfishing would not penalize people who fish but rather would require NMFS to intervene when councils failed to develop adequate management and recovery plans.

The Magnuson Act provides the legal potential to stop overfishing and protect habitats. But it does not provide the legal imperative to do so. It could. For that to happen, it must be amended to bring to fruition Congress's intended purpose of restoring and sustaining our biologically and economically vital marine resources.

*Recommended reading*

- National Fish and Wildlife Foundation, *FY 1993 Fisheries and Wildlife Assessment*. Washington, D.C.: National Oceanic and Atmospheric Administration, U.S. Department of Commerce, March 1992.
- National Marine Fisheries Service, *Our Living Oceans: Second Annual Report on the Status of U.S. Living Marine Resources*. Washington, D.C.: U.S. Department of Commerce, 1992.
- National Oceanic and Atmospheric Administration/National Marine Fisheries Service, *Report of the 17th Northeast Regional Stock Assessment Workshop*. Woods Hole, Mass., January 1994.
- Safina, Carl, "Bluefin Tuna in the West Atlantic: Negligent Management and the Making of an Endangered Species." *Conservation Biology* 7 (June 1993): 229-234.