



“Summary of article by Anne Platt McGinn: Rocking the Boat: Conserving Fisheries and Protecting Jobs” in Frontier Issues in Economic Thought, Volume 6: A Survey of Sustainable Development. Island Press: Washington DC, 2001. pp. 179-183

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The fishing industry across the globe is affected by severe resource depletion. Fishing disputes between nations are common, and many traditional fisheries have been disrupted by exposure to global market forces. A majority of the world's marine fish stocks have reached peak production and many are in decline. The fishing industry is heavily over-capitalized, with huge factory ships capable of decimating stocks. Government subsidies create further incentive for over-fishing, while important breeding areas such as coral reefs, tidal estuaries, and oceanfloor environments are being ravaged by indiscriminate fishing methods and continental runoff pollution. This article explores the dimensions of the problem, and suggests policy remedies to conserve fish stocks and create a sustainable industry.

The State of the World's Fisheries

Fishery declines due to over-fishing are nothing new. The U.S. government established its first conservation agency, the Commission of Fish and Fisheries, in 1871 in response to over-fishing off the coast of New England and in inland lakes. The whaling industry had severely reduced whale species by the mid-1800s. But the global nature of the problem today is unprecedented. Eleven of the world's fifteen most important fishing areas and 60% of the major fish species are in decline. Whereas no fish stocks were in urgent need of management in 1950, today a majority of the world's fisheries require urgent action to rehabilitate damaged resources.

The dimensions of the problem are not apparent to consumers, since fish supplies appear ample. This is a result of a rapid increase in fish catch since the 1950s, and a more recent boom in aquaculture. However, there is strong evidence that the wild fish catch has reached a plateau, and expanding aquaculture is bringing significant environmental problems in its wake. Still-growing total fish production masks a pattern in which high-tech fishing fleets rapidly drive individual fish species to critically low levels, then move on to other species and different parts of the world. In addition to devastating individual species, this process disrupts the oceanic food chain, making it difficult for species to recover and promoting adverse ecological changes.

In addition to stock reduction through harvesting, significant damage is being done to ocean ecosystems through pollution. Fish nurseries in coastal areas are threatened by pollution from cities, farms, and industries and habitat degradation. Excessive nutrient runoff causes algal blooms which drain oxygen from the water and often release toxins. Fishing gear also causes

major ecological damage to ocean floors, while indiscriminate fishing practices destroy millions of tons of "bycatch" -- unwanted species which are discarded, including fish, marine mammals, seabirds, and turtles. Small-mesh nets and the use of cyanide poison, common in tropical areas, cause widespread mortality among non-target species.

Overcapacity and Economic Decline

The open-access nature of fishing encourages overcapitalization and excessive harvesting. Once the maximum sustainable yield is exceeded, both total harvest and profitability of the fishery decline. Technological increases in productivity then only worsen the problem of over-fishing. This economic principle has been played out on a global scale since 1950, as electronic navigation systems, surveillance technologies, and sonar have enabled huge factory trawlers to harvest entire fish populations. The establishment of 200-nautical-mile exclusive national fishing zones under the U.N. Convention on the Law of the Sea placed some limits on international exploitation of local resources, but it also encouraged the development of major new fishing fleets in developing countries, and did nothing to curb overfishing by nations in their own waters.

By the late 1980s, the world's large-scale fishing fleet had a fishing capacity which exceeded the maximum sustainable yield of all commercial fish stocks by 30% (see Figure 1). Since then, the world's fleet has continued to increase in numbers and capacity, while catch rates have steadily declined.

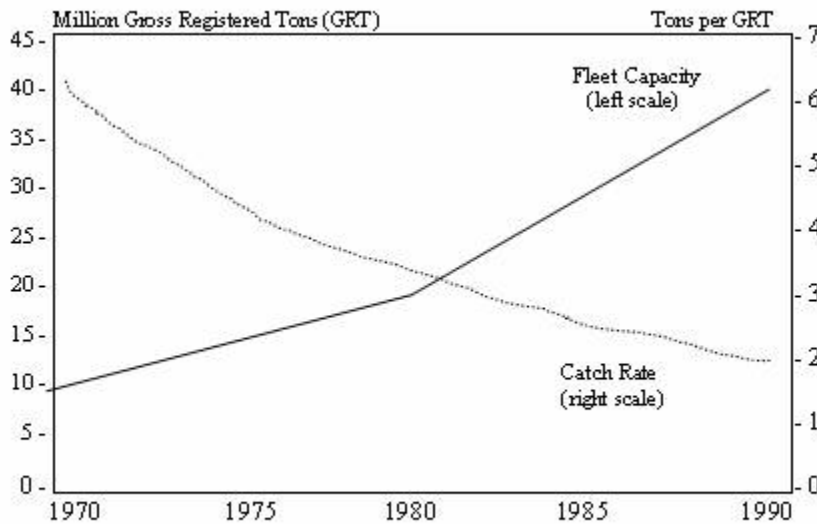


Figure V.2. Global Fleet Capacity and Catch Rate, 1970-1989

As a result of the perverse economic logic of open-access, fishing fleets have taken billion of dollars in losses, but these losses have been balanced by government subsidies estimated at \$14 to \$20 billion. At least 20-25% of global fishing industry revenues come from government subsidies.¹ In addition to political pressure for subsidies, the fishing industry has successfully

lobbied governments to maintain excessive fishing quotas, thereby perpetuating a vicious circle of overcapacity and strain on the resource base.

Impacts on Local Fisheries

In many developing countries, fish is an essential food for meeting minimal nutritional needs. People in developing countries consume an average of 9.2 kilograms of fish per person per year, as compared to 27.9 kg/person/year in industrial countries. However, this represents a much larger portion of their animal protein. In many areas, traditional fisheries have come under pressure from mechanized trawlers and export-oriented aquaculture. While fishery exports can bring in needed revenues and raise incomes for some, they also threaten food security for those previously dependent on local fisheries, and for other local consumers who cannot afford the higher prices resulting from export demand.

More than 200 million people worldwide depend on fishing for their income. But traditional fishers often find themselves squeezed between offshore factory trawlers and migrants from the interior attempting to enter the fishery. Depletion of fish stocks in the northern hemisphere has led industrial countries to pay for access to southern exclusive economic zones. As global demand for fishery products grows, the competition for access to fisheries will grow stronger, with further negative effects likely for local fishing communities, who rarely share in the revenues from fishing concessions.

Promoting Sustainable Aquaculture

Aquaculture is the most rapidly growing area of global fish production. Production of fish and shellfish through aquaculture was valued at over \$36 billion in 1995, up from about \$10 billion in 1984. Traditional forms of aquaculture, such as integrated fish and rice farming in Asia, have offered an ecologically sound method of improving local food security and household nutrition. By contrast, the intensive aquaculture characteristic of much of the rapidly expanding industry has created a host of environmental problems.

The monoculture of primarily carnivorous fish species demands large amounts of feed, water, and fertilizers. Rather than contributing to resource reuse and recycling, as traditional aquaculture has typically done, modern systems are generally resource-intensive and high-polluting. Ecologically valuable coastal areas such as mangrove swamps are often destroyed to make room for intensive aquaculture. Raising carnivorous fish species such as shrimp and salmon actually contributes to further depletion of natural fisheries, since high-protein fishmeal pellets are produced from wild fish. Six million tons of wild ocean fish are used to feed farmed species each year. Waste and uneaten food pollute the aquatic environment, triggering eutrophication² and algal blooms. A further threat is posed by the escape of domesticated fish into rivers, lakes, and coastal areas. These escaped fish can dilute the wild gene pool and spread diseases.

To promote sustainability in aquaculture, it is important to encourage the use of species which do not require fishmeal, preferably native species which do not pose genetic hazards to wild stocks. Conversion of ecologically valuable coastal areas must be halted, and resource recycling rates

increased with the adoption of integrated systems on the model of traditional small-scale aquaculture.

Policies for Sustainable Fisheries

The 1982 Law of the Sea and the oceans chapter of Agenda 21, adopted at the 1992 Earth Summit, address the sustainable use and conservation of marine resources. Despite some successes, such as the banning of high-seas driftnets, efforts to promote sustainable fishing practices have generally had weak implementation. In 1995 more than 60 fishing countries agreed to a voluntary Code of Conduct for Responsible Fishing. Also in 1995 the Convention on Highly Migratory and Straddling Stocks was adopted. In theory, these commit governments to sustainable fisheries management and stock conservation. However, the convention lacks force because **most** major fishing nations have not signed or ratified it.

Policies which are needed to conserve fisheries include:

- a shift from maximum yield to more conservative catch limits
- effective data collection and reporting systems
- reducing or eliminating fishing subsidies
- prohibition of indiscriminate and destructive fishing practices
- integrated coastal management and marine sanctuaries
- individual transferable quotas to limit entry to fisheries
- fishing permits, licenses and user fees to recapture resource rents
- retraining and alternative income opportunities for displaced fishers
- consumer education and boycotts to promote sustainable practices

The adoption of such policies can help both to conserve fish stocks and to create a healthy fishing industry which will provide stable employment for millions of people in traditional as well as properly managed commercial fisheries.

Notes

1. Matteo Milazzo, *Subsidies in World Fisheries: A Reexamination*. World Bank Technical Paper No. 406, Fisheries Series. Washington, D.C.: World Bank, April 1998.

2. Eutrophication occurs when water contains an excess of nutrients, causing algae and other simple forms of plant life to proliferate, reducing dissolved oxygen and killing off other aquatic life.