



Restoring Fisheries: A New England Perspective

Introduction

This article examines the state of New England's fisheries, many of which are on the brink of commercial extinction, through the lens of three fishing industry veterans: the CEO of an aquaculture firm whose family has been in the fishing industry for four generations, an entrepreneur working on a new branch of the scallop business and a consultant who works extensively with fisherman and fish processors. It suggests pragmatic, economically viable solutions that have been proven to be effective. The experience of these fishing industry experts illustrates how strong, effective standards can sustain and rebuild fisheries, drive innovation and help build successful businesses. Sadly, their experience also shows the economic damage that has been inflicted on the fishing industry by poorly defined standards and ineffectual enforcement.

As Congress prepares to re-authorize the Magnuson-Stevens Act (MSA) that governs this nation's fisheries, the administration and some members of Congress want to weaken the act's rebuilding requirements and allow overfishing to continue – in some cases for decades. This paper looks at how problems with past regulations have led to today's dire situation and points to proven solutions to strengthen the Magnuson-Stevens Act and protect our nation's fisheries. Those solutions include:

- An immediate end to overfishing
- Strictly enforced rebuilding standards and timeframes
- Strictly enforced limits on Total Allowable Catch (TAC) combined with well-designed quota programs
- Consistent reliance on unbiased scientific information for fishery management decisions
- Marine protected zones and moratoriums on deep sea trawling
- Increased funding for cooperative research between fishermen and scientists

The question is not whether there are solutions to save our fishing industry, but whether our government has the political will to implement them.

What Happened to All the Fish?

Legend has it that the first European sailors found cod in New England so abundant that they could be scooped out of the water in baskets and the number of cod was compared to "the grains of sand."¹ The ubiquitous cod enriched New England's economy throughout the 19th and most of the 20th centuries. In the late 20th century technical innovations rapidly increased the efficiency of fishing fleets. Many of the ships were trawlers from Europe and Japan catching record numbers of groundfish such as cod and haddock. American fishermen watched as the native fish populations were depleted by foreign boats.

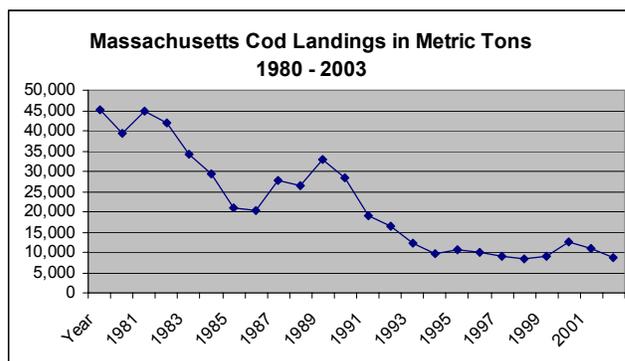


¹ Pauley, Daniel and Jay Maclean, "In a Perfect Ocean", 2003, p. 1 quoting Charlevoix, 1720s

In 1976, the federal government responded with the Magnuson-Stevens Act. The bill banned foreign ships in U.S. waters 200 miles from shore and set up a system of regional fishery management councils to oversee the fishing industry.

The bill set off a gold rush. With loan guarantees and tax incentives, the construction of new groundfishing boats in the northeast tripled in just three years. Between 1976 and 1982, the region's cod landings jumped from about 21,000 metric tons to a high of more than 44,000 metric tons.² Though quotas were in place, they were routinely exceeded by two and three fold. With more boats, better technology and no effective controls, the inevitable happened. In ten years' time, the overall population of New England groundfish dropped by a stunning 65 percent.³ In 1989, cod, haddock and yellowtail flounder were declared overfished, but regulators did little to address the situation.

Despite tightened regulations in the 1996 Sustainable Fishing Act (SFA), the stock of New England groundfish continued to drop. New data released in August 2005 indicates that Georges Bank cod declined by an additional 25 percent between 2001 and 2004, falling to about one-tenth of healthy and sustainable population levels.⁴ The decline in cod is emblematic of problems throughout the United States. In 2004, 30 percent (or 56) of the assessed, federally managed fish stocks or stock complexes were considered to be overfished. Moreover, two independent national commissions have reported on the decline of fisheries and have proposed solutions.⁵



In a well-researched series of articles on New England's Fishing industry, the *Boston Globe* noted, "Taking control of New England's fishing industry in a bid to save it, the government presided over its collapse, as the number of fish in one of the world's richest fishing grounds fell to historic lows. Tough choices were avoided – like enforcing firm annual limits on the catch. And foolish choices were subsidized: the expansion and modernization of a fishing fleet that may be three times too big for the fishery to sustain."⁶

Denial continues even today. For instance, despite significant, on-going declines in Georges Bank cod, the New England Fishery Management Council recently recommended increasing the TAC limit by over 50 percent in the 2006-2007 season. This perverse action is based on early optimism about the numbers of juvenile cod found in 2003. The proposed plan allows overfishing of cod to continue for years before rebuilding presumably starts. Rather than taking a precautionary approach, the Council proposed to increase the catch in the near term in anticipation of good years to follow – the same mentality that has led to drastic declines in cod over the past two decades.

²Statistics available from NOAA Fisheries, Fishery Statistics Division; <http://www.st.nmfs.gov/st1/>

³Daley, Beth and Gareth Cook, "A Once Great Industry on the Brink," *The Boston Globe*, 26 Oct 2003

⁴New England Fishery Management Council, Groundfish Science & Stock Status, 15 Sep 2005
<http://www.nefsc.noaa.gov/groundfish/GroundfishAssessmentReviewMeetingII.pdf>

⁵ (ref: <http://www.e2.org/ext/jsp/controller?docId=3329§ion=oceans>).

⁶ *ibid*, *The Boston Globe*, 26 Oct 2003

Impact of Ineffectual Regulations

Perhaps no one symbolizes the fate of New England's fisheries better than Paul Sellew, whose great-grandfather, Thomas Gorton, was instrumental in the founding of Gorton's of Gloucester. His family has been in the fishing business for four generations. In the early 1990s, Paul's father, Peter Sellew, had a small fleet of boats and was living the life of a commercial fisherman.

But things were not as they had been ten or fifteen years earlier. Catches were down, stricter regulations limited the number of allowable days at sea and the regulatory goal of a Maximum Sustainable Yield (MSY) – fish populations that could be maintained at a sustainable level indefinitely – became less likely with every passing year. Sellew left the fishing business in 1997, finding that he just couldn't make a living. "It was over," his son Paul said. "Government limits using days at sea were ineffectual and they came too late. The regulations created a nuisance for fishermen, but were never effective in bringing the fish back. They needed stricter rules a lot earlier, before the resource was in such bad shape."

Now Paul Sellew has refocused the family's fishing heritage into raising tilapia at Fingerlakes Aquaculture, a leading producer of high quality, farm-raised fish. Fingerlakes raises its fish sustainably using recirculating aquaculture systems (RAS). RAS technology allows for indoor, year-round production and avoids the problems of traditional outdoor aquaculture – waste disposal, pollution and potential intermingling of farm and wild species. Moreover, unlike farmed salmon and other carnivores that deplete the supply of wild fish for their food, tilapia are omnivorous and can thrive on an all-vegetarian diet. Clearly, this type of sustainable aquaculture can and should play a significant role in solving this country's growing demand for seafood.

Compounding the Problem: Bycatch and Habitat Destruction

Groundfishing, which is traditionally done by dragging a net, has reduced the once complex and three-dimensional seafloor in many places to a barren field. Seafloor structures such as rock formations, sea whip groves and coral and sponge gardens provide key habitat for a variety of bottom-dwelling fish. Fish, especially juveniles, find shelter from deep sea currents and predators in complex habitats. Bottom trawls are known to damage and destroy these habitats, removing refuges and food, and threatening fish populations and other marine life. Scientists estimate it could take 50 to 100 years, or longer, for the sea floor to recover from a single pass of a dragger.



Bycatch – marine organisms that are caught unintentionally and discarded – are a major problem for fishermen as well as for the survival of our fisheries. It has been estimated that the commercial trawler fleet in New England may discard as much as 50 percent of the fish and other ocean life it catches at sea.⁷ The exact amount is not known because, despite a legal mandate to monitor bycatch, there is no systematic program in place to do so. Fishermen often throw back fish that are either dead or seriously injured. Recent research has shown that fish

⁷ Pollack, Susan. "New England Groundfish Discards". p. 60, Win-Win Bycatch Solutions: A Handbook for Collaboration, Brad Warren (ed.), 1994. National Fisheries Conservation Center, Seattle, WA. See also: Alverson, D.L., M.H. Freeberg, J. G. Pope & S. A. Murawski., 1994, "A global assessment of fisheries bycatch and discards." FAO Fisheries Technical Paper No. 339. Rome, Italy. 233 pp.

injured in gear – with injuries as apparently benign as a scrape or trauma of being caught – have a far lower survival rate than was previously believed.⁸

Innovative Solutions

One group of New England fishermen, the Cape Cod Commercial Hook Fishermen's Association (CCCHFA), has taken steps to deal with both the bycatch and habitat destruction problem. Their approach has proven both practical and profitable.

For starters, hook fisherman, unlike draggers, do not destroy sea bottom habitats essential for fish survival. In addition, the CCCHFA implemented several innovative initiatives: species-specific bait, increased observer coverage on fishing vessels and their own approved management plan. The group has pioneered the use in the U.S. of selective man-made bait that attracts haddock but not cod, and used it to all but eliminate cod bycatch. To substantiate their claims, they placed independent fishery observers on board their boats and proved that their bait can reduce the rate of cod bycatch to as low as 1 lb of cod for every 50 lbs of haddock.

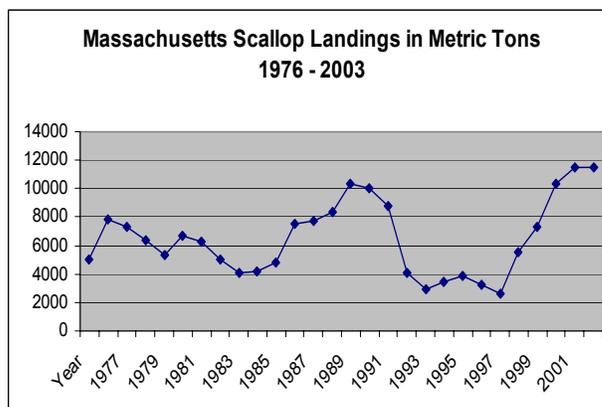
CCCHFA has also developed another new concept: a self-management plan that provides them with a sector allocation quota for a share of the codfish on Georges Bank. Fifty eight fishing businesses signed a contract, created a charter and wrote bylaws to collectively manage the fish and themselves. This marks New England's first community-based management program guaranteed not to overfish. This model program is being looked to by fishermen all over New England.⁹

Nevertheless, local fish populations were so low this year that Cape Cod fishermen and the businesses that depend on them struggled financially. According to CCCHFA, "These problems are made worse by fisheries policymakers afraid to take strong action today in order to ensure plenty of fish in the future. Rather than putting off the problems to the next generation or two, we encourage tackling ocean conservation now."¹⁰

Scallops: An Accidental Success Story

The scallop business in New Bedford is thriving. The size of the catch more than doubled since 1999, and its value grew 37 percent to over \$206 million in 2004.¹¹

The rebuilding of the scallop population was a by-product of the 1994 collapse of groundfish populations. This collapse forced the closure of 6,600 square miles of Georges Bank, the region's most fertile fishing grounds. These closures protected scallops from overfishing and allowed those in the closed areas to mature and reproduce, increasing the scallop population there



⁸ Davis, Michael W. "Key principles for understanding fish bycatch discard mortality", *Can. J. Fish. Aquat. Sci.* **59**: 1834-43 (2002)

⁹ CCCHFA Annual Report, 2004 http://www.ccchfa.org/pages/media_center/42/pages/files/AnnualReport2004.pdf

¹⁰ *ibid*, CCCHFA Annual Report, 2004

¹¹ Statistics available from NOAA Fisheries, Fishery Statistics Division; <http://www.st.nmfs.gov/st1/>

dramatically. This success demonstrated the value of closed areas and now, much like the crop rotation system used to keep farmland fertile, scallop management plans in New England rotate the harvest from area to area to prevent overfishing.

Collaborative Research to Support a New Venture

Geoffrey Day has experienced the fishing business from the bottom up, starting over 25 years ago by selling striped bass, working in an ice house and selling oysters door-to-door. Geoffrey studied human ecology in college and wrote his senior thesis on the failures of the seafood industry. Now, the scallop fishery is booming and opportunity is calling. In his current venture, he has put together a team funded by industry to coordinate fisherman, scientists and regulators to research and develop a new market – roe-on scallops. In the United States, people generally eat only the scallop muscle. But in Europe and Asia, the scallop roe is a highly valued delicacy that is typically thrown away in the U.S.

In the spring of 2005, the coastal waters off New England suffered a severe outbreak of “red tide,” a harmful algae bloom that can produce toxins that accumulate in shellfish which can cause paralytic shellfish poisoning in humans. The shellfish fishery was closed, but scallops were mainly excluded from the closure because traditional scallop meats retain no toxins. However, as scallop roe can retain dangerous toxins, the roe and whole scallop harvest was specifically curtailed.

Ever persistent, the team's on-going research, aided by fishermen, scientists, industry and regulators from Massachusetts to South Carolina, has shown that there may be a safe harvest possible well south of New England that, if successful, could yield millions in added value. The project is funded by a unique research program developed by and for fisherman who set aside a portion of their revenues to study issues that impact the fishery.

Filling the Knowledge Gap: What Happened to All the Research Money?

Susan Goldhor, a marine biologist by training, studies recycling of fish waste and how fish react to different types of bait. Formerly Dean of Science at Hampshire College, Goldhor left academia to start her own business working with fish processors and communities to find practical, profitable and responsible methods to dispose of fish waste. Her solution was, in part, to transform fish waste products into usable bait. Today she works with fish processing companies, municipalities and fishing groups on a variety of research projects.



Susan offers the perspective of a working scientist/entrepreneur on the problems of understanding marine ecosystems. “We've hit cod on so many fronts that it's impossible to say where the tipping point came. When we closed large areas, the haddock came back but the cod did not. Why the haddock have rebounded and the cod haven't is not clear to scientists. What is clear is that we should have closed those areas earlier if we wanted to keep on fishing cod, and that we don't know enough about the ecosystem to be able to make wise decisions.”

Despite the fact that current law requires management decisions be based on “the best available science,” the funding for fisheries research has been cut drastically. For many years this research was funded by the Saltonstall-Kennedy (S-K) grant program. A notice on the National Marine Fishery Service (NMFS) web site says it all:

Notice: The FY 2004 competitive S-K Grant Program has been canceled due to insufficient funding... The President's budget request for FY 2005 also does not provide sufficient funding for the competitive S-K Grant Program.¹²

According to Goldhor, "when you don't know enough about a system you want to preserve, you need to act conservatively. You must take steps before everyone agrees that steps must be taken and make potentially unpopular decisions."

Geoffrey and Susan's experiences demonstrate the value of scientific research that combines the real world experience of the fishing community with the scientific expertise of academia. Despite having a common goal of saving the fishing industry, all too often, these two groups have been adversaries. The skill, empirical knowledge and equipment commercial fishermen offer can play a valuable role in research projects.

Proven Solutions: Ingredients of a Well-Managed Fishery

An immediate end to overfishing: In order to sustain healthy fish populations we must end overfishing. The current Magnuson-Stevens Act requires an end to overfishing. As the MSA undergoes reauthorization, we must not weaken this mandate.

Strictly enforced rebuilding standards and timeframes: The current MSA requires that overfished populations be rebuilt in as short a time as possible, not to exceed 10 years where biologically possible. When strictly enforced, this provision has been shown to be effective. It must be maintained if we are to save our depleted fisheries.

Strictly enforced limits on Total Allowable Catch combined with well-designed quota programs: Unlike New England, virtually every other fishery management region uses a system of hard quotas on TAC. That means once the catch of a managed species reaches a pre-defined limit, the fishery is closed. In New England, quotas are regularly exceeded with no short-term consequences to either the fishermen or the Fishery Management Council. A key recommendation of the Bush-appointed U.S. Commission on Ocean Policy report was that each fishery management council be required to set "hard TACs" at or below the allowable biological catch as determined by qualified scientists.

A system of hard TACs works best when combined with Limited Access Privilege Programs (LAPPs) to allocate a certain percentage of the catch to qualified fishermen. When a quota program was implemented in Alaska along with hard TACs that were strictly enforced, the results were dramatic. The destructive practice of 'derby fishing', in which fishermen compete to harvest as much as possible in a very short period of time, was eliminated. The result was higher profits for fishermen, reduced bycatch and better monitoring of total allowable catch limits.

Consistent reliance on unbiased scientific information for fishery management decisions: Lee Crockett, executive director of the Marine Fish Conservation Network, clearly lays out the case for unbiased science. "The North Pacific council has been successful at keeping healthy fish populations year after year for its fishermen because, for them, science is king. On the other hand, regions where council members have ignored scientific data or have allowed economic or political

¹² Office of Constituent Services, National Marine Fisheries Service, <http://www.nmfs.noaa.gov/ocs/skhome.html>

pressures to drive management decisions have suffered from severely overfished populations and wide-spread fishery closures.”¹³

Marine protected zones: Marine protected zones not only protect fish, they protect fish habitats and spawning grounds. Recently, fishery managers in Alaska banned commercial fishing nets that drag the sea floor from more than half a million square miles of ocean near the Aleutian Islands under a government plan to protect the deep-water corals and sponges that help nurse Alaska's fishing grounds. The closures in Georges Banks revived the scallop industry and have helped with the rebuilding of haddock and yellowtail flounder. This is a proven solution that should be part of every well-managed fishery.

Increased funding for collaborative research: Scientists and fishermen agree that ‘the best available science’ is vital if we are to save our fisheries. But they also agree that the gaps in our knowledge are staggering. We lack a clear picture of the relative roles of natural processes and human influence. We don’t understand the lifecycle of the cod, the impact of global warming, the reason why we get devastating outbreaks of red tide or the impact of a myriad of other variables. To improve the effectiveness of our management efforts, we need to increase funding for collaborative research that combines the real world experience of the fishing community with the latest academic and scientific advances.

Conclusion

A recent study sponsored by Environmental Entrepreneurs found that U.S. fisheries managers **could triple the profit to fisherman** for 17 depleted ocean fish populations if they follow through with official rebuilding plans for those populations of fish.¹⁴ Fishing industry veterans, like those profiled in this paper, recognize that we must take definitive action to stop overfishing and rebuild depleted species or there will not be anything left for future generations.

For a cautionary tale of inaction and bungled management, we need only look to our north. In 1992, the once abundant cod stocks off the coast of Newfoundland collapsed. Some 19,000 fishers and plant workers were directly affected and up to 20,000 other jobs were lost or harmed. To this day, the fishery is closed and Newfoundland cod stocks have not recovered. According to Mark Kurlansky, author of the book *Cod*, “One of the greatest obstacles to restoring cod stocks off of Newfoundland is an almost pathological collective denial of what has happened.”

13 The Marine Fish Conservation Network, 17 Mar 2005,
http://www.conservefish.org/site/mediacenter/gulfenhancementact_pressrelease.pdf

14 Sumaila, Ussif Rashid and Elizabeth Suatoni,, [Fish Economics: The Benefits of Rebuilding S.S. Ocean Fish Populations](#), Oct 2005, University of British Columbia, Vancouver, B.C.