

Striped Bass Game Fish 2006:
Symposium Overview & Speakers' Text

Southborough, Massachusetts
May, 2006



Striped Bass Game Fish 2006 Symposium

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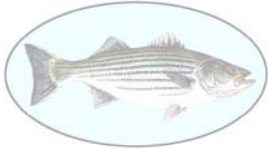
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For more information contact Stripers Forever at www.striperforever.org



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Striped Bass Game Fish 2006 Symposium Introduction

On May 20, 2006, in Foxboro, MA, Stripers Forever gathered a panel of five widely recognized experts on saltwater fisheries management, conservation and aquaculture, and presented a symposium on the concept of game fish designation. All the presenters underlined the well recognized fact that society is better served by giving certain recreationally important species game fish status and reserving them for personal-use fishing. For Stripers Forever, the symposium was the perfect opportunity to discuss the management of the wild striped bass, probably the single most important saltwater game fish in America.

We present here a brief overview of each speaker's remarks, plus some highlights from the question and answer session. The full texts of each presentation follow these introductory remarks, along with the question and answer session in its entirety.

Steve Williams, Executive Director of the Wildlife Management Institute and past Director of the U.S. Fish and Wildlife, voiced his support for making the wild striped bass a game fish based on the historical precedents found in wildlife management in America.

- Williams quoted the late Gifford Pinchot, an historically important conservationist: "...conservation means the greatest good for the greatest number of people for the longest time...conservation demands the complete and orderly development of all of our resources for the benefit of all the people instead of partial exploitation of them for the benefit of a few."
- Williams pointed out that many species of North American game birds and animals have increased dramatically since market gunning ceased to exist. "The recovery of each of these species was due to concerted action by dedicated hunters and other conservationists to stop market hunting and regulate harvests while also promoting scientific population and habitat management."
- Williams also explained that the conservation community is working hard to instill in the Magnuson-Stevens Act a set of values referred to as the SALT provisions. "S" stands for the use of science in fishery management decisions; "A" means allocations for recreational fishing in an equitable fashion; "L" is for licensing anglers to improve data collection and funding for fisheries; and "T" promotes the concept of fishing tackle that is less destructive to ocean habitats.

Rob Southwick, President of Southwick Associates and a nationally recognized expert in wildlife economics, explained the data reported in the Southwick Report he authored for Stripers Forever in 2005.

- From Maine to North Carolina, there are conservatively 3,000,000 recreational striped bass anglers. This is a large cross section of the public, and the public owns this fishery resource. "Government agencies have the responsibility to manage this fishery for the public good – to provide the maximum benefit for the maximum number of people. This is where economics come into play."

- “I can show you what the difference is in the impact between recreational and commercial fisheries ... one pound of [striped bass] landed in the recreational sector provides eight times more economic benefits for the coastal area of the U. S... than one pound of [stripers] landed by the commercial fishing industry.
- “[Recreational fishermen] are willing to spend a lot of money because the value is not in the fish; it is in the quality of the experience. But people are willing to spend a lot of money for that quality experience.”
- “Some folks would say that a lot of those anglers are just guys with money to spend on striper fishing... [But] if we manage the resource properly and maximize the dollars that can be earned from the fishery, a lot of people – including those who don’t care to fish – can benefit...” There would be offsetting losses in the commercial sector, but if we made this kind of change – game fish [status] for striped bass - from Maine to North Carolina there would be a net of 14,000 more jobs created.”
- The gross domestic product of the U. S. would increase by almost \$1.8 billion. “That amount of economic activity equates to the sales of a Fortune 1,000 company. How many states trip over their feet to try to attract Fortune 1,000 companies?”
- “People speak louder with their checkbooks...there is no difference in the quality of farmed versus wild striped bass and that is reflected in the market prices of both products.”

Dr. Russell Nelson, an independent consultant, former research biologist for the National Marine Fisheries Service, and past Director of Marine Fisheries for the State of Florida, explained how the red drum became (and still remains) a game fish during his tenure as director in Florida.

- “Right up front they asked me if some species [like redfish] should only be managed as recreational fish. I was like, duh... Some animals like mullet and sardines that reproduce quickly and in great numbers are meant to be managed commercially. But fish like red drum that don’t reproduce until they are four-plus years of age should be managed as recreational species...Back in the 1980’s, Texas decided there weren’t enough sea trout or redfish in their waters to support commercial and recreational fishing, so those two species were declared game fish...”
- “Many of the same elements that existed during the so called ‘redfish wars’ in the South are mirrored in the striped bass situation today...”

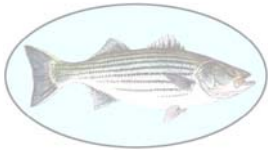
Bruce Freeman, former Fisheries Director of the New Jersey Division of Fish and Game, Director of North Carolina’s Division of Marine Fisheries, and a long-standing veteran of the Atlantic States Marine Fisheries Commission, discussed the history and ramifications of designating the striped bass as a game fish in New Jersey.

“We continue to have the striped bass as a no-sale game fish in New Jersey. When you look at the economics, there has been a tremendous increase in dollars on the recreational side. Seasons are extended, revenues are increased, and businesses are operating for two months longer than they used to. So for most people, game fish status for wild striped bass is currently working quite well in New Jersey.”

Mike Freeze is Chairman of the Arkansas Fish and Game Commission, but more importantly for this symposium, Mike is also the president of Keo Fish Farm, in Keo, Arkansas. Mike breeds hybrid striped bass fingerlings and sells them to fish farmers who raise them as food fish for the market. He is an expert on striped bass aquaculture and the issues that industry faces.

[Editor's Note: With annual production of approximately 12,000,000 pounds, fish farmers supply 61.6% more striped bass to the market than is available from the wild harvest. Striped bass raised through aquaculture are typically grown far away from saltwater in tanks, earthen ponds or other enclosed systems, and the industry's capacity to increase production is infinite].

- About 10,000,000 pounds of the annual crop of farmed striped bass is delivered fresh to the market. Fresh fish are killed by chilling in ice slurry, packed on ice, and shipped immediately to the market. The remaining 2,000,000 pounds of striped bass produced each year are delivered live to Asian and Latino markets.
- “If there was no wild catch of striped bass, could the aquaculture industry supply the market demand? The unequivocal answer is Yes!
- “A fair number of [fish farmers] have land on which they could build additional raceways, ponds, or cages...” But seasonal gluts of wild fish have discouraged some farms from expanding or even continuing striped bass aquaculture.
- Some environmental organizations are publishing seafood guides. Striped bass raised through aquaculture get high marks because they are not tainted with the same warnings about mercury, PCBs, and other contaminants that affect some populations of wild stripers.
- Striped bass growers are working to lower costs to the consumer and further reduce impacts to the wild resource by producing a feed that is not based on fish meal, and by using genetic selection to breed faster growing fish. The chicken and cattle industries have both successfully done this. Currently, farm-raised striped bass have a diet of about 40 percent fish meal. This is expensive and striped bass farms want to use an organic feed for cost and environmental reasons.
- The market price for farmed striped bass has continually come down from \$4.50 to \$5.00 a pound in the late 1980s, to today's prices of around \$3.50 a pound.



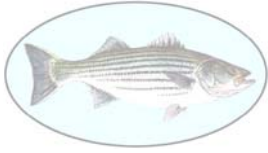
Question & Answer Highlights

Question – We’d like to know your thoughts on the best way for us to pursue game fish status for the striper up and down the Atlantic Coast. Does it need to be done state by state? Or would federal legislation -- something like Congressman Pallone’s bill -- be a better way to go?

- Dr. Russell Nelson: “In my experience, it’s hard to get something passed by the federal government. My suggestion would be to pick one state here in the Northeast where the striped bass fishery is really important – a state where you can show the maximum bang for the buck if you could get game fish status in place -- and concentrate all your efforts there. Target one state and get it done. Florida’s political leaders now realize that the real money down there is in sport fishing. Sure, there is still some lucrative commercial fishing where the resource is healthy, but the big bucks are in recreational fishing. If you can pull off game fish status for stripers in a big state like Massachusetts or New York and then be able to show that anglers and customers are being drawn away from neighboring states, you might be able to produce the same domino effect that has happened in the southeast. “In today’s climate, designing a fair compensation package and buying out commercial licenses is probably the route I would follow. ...but the real hang-up in designing a coast-wide buyout plan for striped bass is that most striper states don’t have a recreational saltwater fishing license. Licenses have been used as a way to leverage buyouts of commercial fisheries – to shift allocations of fish. It can be an easy fix – you can put a five dollar surcharge on a license for x number of years and pay back the pool of money that has been fronted to buy out commercial allocations.”

Question - What are your thoughts on the economics of a buyout?

- Rob Southwick: “From an economic standpoint and from the public’s point of view, a fair and equitable buyout is the way to go. The cost of a buyout should be based on an historical harvest by individual commercial fishermen, and that is a very good compromise because it goes back to the property rights issue, which is big in the United States. You just don’t take something from somebody without compensation. On the recreational side, the value to us is greater than the dollars going back in. “The politicians who don’t know better, or who don’t care, think that the only value you get out of a fishery is to harvest it commercially. But when they discover how many licensed anglers are in their constituencies, they have a quick change of heart. A saltwater license gives the recreational community real clout. It’s a heck of an investment because it produces the funding for buyouts and usually finds favor with the public and with the politicians. And it makes it so much easier to gain what you need for the future of the recreational fishery. When you can count the people and the dollars, you can put solid information in front of those people who make the decisions.”



Symposium Speakers Individual Presentations

Steve Williams

Thank you for the opportunity to address Strippers Forever. I applaud your initiative to establish the wild striped bass as a game fish for purely recreational fishing. I've spent the last 31 years studying and practicing fish and wildlife management. I worked 17 of those years for three different state fish and wildlife agencies, including seven years, from 1985 to 1992, right here in the Commonwealth of Massachusetts. I also served for three years as the director of the U. S. Fish and Wildlife Service in Washington, DC. At the state and federal levels, I have been constantly involved in competitive situations involving the use of natural resources. It's very obvious that as our human population expands, this competition and the conflict that so often accompanies it will continue to grow.

Today, as the president of the Wildlife Management Institute (WMI), I have the opportunity to work in an academic setting, which is very different from working for state or federal government agencies. WMI was established back in 1911. The founding members of WMI were highly respected businessmen who were part of the sporting arms and ammunition industry. They recognized that to pursue conservation goals for the country, we needed to build a scientific foundation on which to base professional wildlife management. The founders also wanted to advise and collaborate with state and federal agencies and work with them to educate the public on the importance of conservation. WMI has been doing just that for the last 95 years. Our nation's conservation history is replete with examples of limiting or eliminating the commercial harvest of fish and wildlife in order to better manage and sustain population numbers through recreational harvest. In 1910, Gifford Pinchot wrote, and I quote: "Conservation means the greatest good for the greatest number of people for the longest time." He also stated "...that conservation demands the complete and orderly development of all of our resources for the benefit of all the people instead of partial exploitation of them for the benefit of a few." So even back in 1910 folks were recognizing the importance of public resources and managing those resources for the public.

In his lifetime, Pinchot had the opportunity to see firsthand the impact of unchecked resource exploitation. Commercial market hunting had devastated fish and wildlife populations by the turn of the twentieth century. But as conservation practices were introduced, the situation changed dramatically. Here are some population estimates for game animals and birds, in 1900 versus today:

	1900	Today
Wild Sheep	fewer than 10,000	more than 230,000
Black Bears	quite uncommon	more than 937,000
Pronghorn Antelope	fewer than 15,000	more than 1 million
Elk	about 41,000	more than 5.6 million

Waterfowl, heavily hunted for the market in the late 1800's, now number more than 100 million across the U.S. The recovery of each of these species was due to concerted action by dedicated

hunters and other conservationists to stop market hunting and regulate harvests while also promoting scientific population and habitat management.

To be fair, there are examples of conservation in America that date back more than 300 years. As early as 1677, Connecticut prohibited the transport of game across its borders. In 1738 Virginia stopped the harvest of female deer. In 1846, Rhode Island established the first waterfowl hunting season. And in 1850, the House of Representatives got a report that bison were being exterminated on the Great Plains and were possibly going to become extinct due to unregulated commercial harvest. Here in Massachusetts, in 1866, the state fisheries commission was established to address the decline of Atlantic salmon; five years later, the U.S. Congress authorized the president to establish a fisheries commission which is today the U.S. Fish & Wildlife Service. And in 1889, Congress passed a law to protect the salmon fisheries of Alaska from over harvest.

But effective conservation as we know it today really dates to the early 1900's when federal and state agencies and interested citizens began to pursue in earnest the sustainable harvest of fish and wildlife. In 1900, Congress passed the Lacey Act which prohibited the interstate transport of fish and wildlife taken illegally. The enforcement of this federal law and new state laws finally brought an end to market hunting. By 1900, 13 states had developed seasons and bag limits to control fish and wildlife harvests, and 20 more states had followed suit by 1910. During that time, it was sportsmen who took center stage in driving conservation. One of their leaders was Theodore Roosevelt, a lifetime angler and hunter who declared that conservation would "substitute a planned and orderly development of all of our resources in place of a haphazard striving for immediate profit." Roosevelt didn't come to this conclusion just as a political expediency; in 1886 he and another great conservationist -- George Byrd Grinnell -- founded The Boone and Crockett Club. This club continues today to be a major force in conservation and in the promotion of recreational angling and hunting and the ethical use of our natural resources. Throughout the twentieth century, hunters and anglers pushed for federal and state laws to conserve fish and wildlife habitats. Over a 70 year period, a number of notable federal conservation laws have been enacted, including the Migratory Bird Treaty Act, the Federal Aid to Wildlife Act, the Sport Fish Restoration Act, the Fish and Wildlife Coordination Act, the Endangered Species Act, the Federal Land Policy and Management Act, the Sustainable Fisheries Act, and the Magnuson-Stevens Act. Then as today, it was recreational anglers and hunters, individually and as members of organizations like Stripers Forever, who really promoted and supported sound fish and wildlife management and the importance of fish and wildlife as public resources.

The benefits of this work are obvious: those species that are managed for sustainable recreational hunting and fishing are thriving across the continent. Fish and wildlife managers have developed sophisticated tools and approaches to manage populations and the habitats on which they depend. In most parts of the country, liberal seasons and bag limits have been established in response to abundant fish and game. Managers have produced healthy fish and game in collaboration with hunters and anglers. If one takes a look at the record book entries for whitetail deer, mule deer and other species as well, it's obvious that a lot of trophy animals have been taken in the last decade.

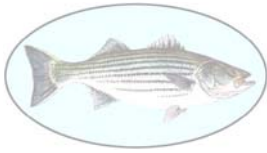
Regulated harvest is very important in the management of sustainable fish and wildlife. Many conservation organizations have been formed to add clout to the science of and the politics behind resource management. Ducks Unlimited started in 1937, Trout Unlimited in 1959. The National Wild Turkey Federation was formed in 1973, and in the early 1980's we saw Pheasants Forever, Quail Unlimited, and the Rocky Mountain Elk Foundation formed, along with

numerous other organizations which have improved the stocks of fish and wildlife and the habitats in which that thrive. In 2003, Stripers Forever joined that impressive group of conservation-minded sportsmen and women who recognize the importance of supporting recreational fishing and hunting.

As we speak, Congress is debating the reauthorization of the Magnuson-Stevens Fisheries Conservation and Management Act to regulate the commercial and recreational harvest of fish in offshore federal waters. The Angling 4 Oceans Coalition, comprising 14 conservation organizations, has taken the lead in improving the conservation and use provisions of the Magnuson-Stevens Act. The coalition is promoting four major principles that drove conservation successes in this country in the past. They are called the SALT principles: "S" stands for the use of science in fishery management decisions; "A" means allocations for recreational fishing in an equitable fashion; "L" is for licensing anglers to improve data collection and funding for fisheries; and "T" promotes the concept of fishing tackle that is less destructive to oceanic habitat.

The Angling 4 Oceans Coalition believes that the economic impact from all fishing sectors should drive the resource allocations rather than the historical catch approach currently in use. The coalition points out that recreational fishing contributes more than three times the economic impact to the economy than does commercial fishing. That impact includes sales and jobs. And salaries and earnings for recreational fishing are twice that produced by commercial fishing. I would hope Congress doesn't turn a blind eye to these significant comparisons. Nor should Congress negate the importance of fishing and the quality of life benefits it provides to recreational anglers. As the history of conservation in America shows, these benefits can only be fully realized with an equitable distribution of the public resource we know as striped bass. There is still time for your voice to be heard in congress. Floor debate on the Magnuson-Stevens reauthorization bill promises to be lively and controversial. As protectionists clash with conservationists and both clash with commercial interests, Stripers Forever should have a dog -- or a dogfish -- in this fight.

I want to conclude by reminding you of our rich conservation history. We all need to look back at the progress we've made in America since the early 1900's. In the last century, committed hunters and anglers working in concert have successfully reversed the decimation that was left behind by commercial market hunting and unchecked resource exploitation. Fish and wildlife are public resources, and fishing and hunting in this nation have been and continue to be based on equitable distribution of these public resources. I can tell you that challenges to this public trust doctrine arrive almost every day somewhere in the country. It is up to sportsmen and woman to speak with a strong and clear voice to federal and state legislators, to resource agencies, and to the rest of the public about how vitally important it is for Americans to preserve our hunting and fishing heritage. To paraphrase Sir Isaac Newton, we are "...standing on the shoulders of giants. They did not let us down; neither should we let them down for further generations."



Rob Southwick

At Southwick Associates, we track the economic impacts of fishing and hunting. In 2005, we released *The Economics of Recreational and Commercial Striped Bass Fishing*, a study commissioned by Strippers Forever. It's important to note up front that this work was based on existing data. We could have done some very expensive customized research and generated our own surveys, but when you're dealing with a controversial issue like this, we want to be sure that people realize we worked with existing data. The raw data we used in the study comes from the National Oceanic and Atmosphere Administration -- NOAA Fisheries for short -- which is probably the most unbiased source of information we have on the commercial harvest and recreational landings of wild striped bass. The recreational dollar figures in the report all come from NOAA data -- I want to make that point very clear.

In the study, we looked at all the economic impacts associated with the commercial and recreational fisheries for striped bass. For the recreational fishery, this includes expenditures for tackle and related fishing gear, travel, lodging and food, boats and guides/charter skippers. On the commercial side, the economic impacts begin with fish landed at the dock and track those fish through the processor, the wholesaler, restaurants and retail stores.

There are many fisheries out there and each has different levels of economic impacts. The information I will present to you today involves wild striped bass on the Atlantic Coast. Why do we care about the economics of striped bass? For the general public, the important point to make is that stripers are extremely popular with a huge number of recreational fishermen. Over 3 million people from North Carolina to Maine fish for stripers. There are a fair number of striped bass anglers in South Carolina, Georgia and Florida, but there are no NOAA data from those states. So it's safe to say that 3 million-plus is a minimum estimate. One out of five marine fishing trips from North Carolina up to Maine focus on striped bass, which means that stripers are a major part of the recreational fishing business on the East Coast. If you took away 20 percent of anyone's "striper market," you'll see many businesses go belly up.

So the economics of striped bass fishing are very important. The striped bass is a public resource, owned by you. Government agencies have the responsibility to manage this fishery for the public good -- to provide the maximum sustainable benefit for the maximum number of people. This is where economics come into play. The numbers are big and no matter how you look at them, it's pretty clear that the recreational striped bass fishery has about three times more landings than the commercial fishery. On a per fish basis, the economic impacts are much greater on the recreational side. Stripper anglers spend big money for travel to a fishing site, for fishing gear, for boats, for food and lodging. On the commercial side, the money spent by the consumer -- whether he is buying a fish at a restaurant or at a retail store -- ultimately supports the striped bass processors, wholesalers, distributors, etc. The economic effects of the dollars from processing, wholesale, etc. are considered in our work. The multiplier effect plays a major role here. When you buy a rod and reel or a meal at a restaurant, those providers -- the tackle shop and the restaurant -- have to go out and buy more products and supplies. Thus, the wholesalers and manufacturers and their employees all benefit from the fisherman's original expenditures.

Everyone in this country benefits one way or another from fisheries -- all types of fisheries. The jobs involved are not just in tackle shops or at commercial docks; the jobs are scattered throughout the whole economy. The big numbers in this report don't mean a whole lot unless we put them in context. I can show you what the difference is in the impact between recreational and commercial fisheries. On a per pound basis, one pound of fish landed by a recreational angler generates eight times more economic activity -- that's the ripple effect -- than one pound of fish landed by the commercial fishery. So one pound of fish landed in the recreational sector provides eight times more economic benefits for the coastal area of the US, compared to one pound of fish landed by the commercial fishery.

Most of you here today fish for striped bass and it's a good bet that you don't want to know how much you spend for every pound of fish you catch, including those you release. Back in the 1980's, when I was working for the Sports Fishing Institute, we did some work on redbfish. At that time, anglers were spending about \$75 to \$80 to catch one redbfish. Today, that cost has gone up to about \$120 per fish in some redbfish waters. Obviously, you can buy a lot more fish a whole lot cheaper in the store, but that's not the point. As a recreational fisherman, you want to enjoy your time out on the water, so you are willing to spend money in order to catch a fish. Actually, you are willing to spend a lot of money because the value is not in the fish; it is in the quality of the experience. If that wasn't important, you'd take in a movie or go bowling.

So the 3 million-plus recreational fishermen who pursue striped bass are willing to spend money. Some folks would say that a lot of those anglers are just guys with money to spend on striper fishing while those commercial fishermen are working hard to catch fish for the market. We've all heard that refrain. Back in the early 1990's, the powers that be -- or were -- in Washington tried to get at some well-heeled Americans through a luxury tax on expensive cars, boats, airplanes, furs, and the like. What happened? Sales went down and the people who made and sold those luxury products suffered.

In the case of striped bass, if we manage the resource properly and maximize the dollars that can be earned from the fishery, a lot of people -- including those who don't care to fish -- can benefit. That's the magic of economics -- in this case, striped bass economics. A pound of striped bass caught by a recreational fisherman creates eight times more economic activity than it would if harvested by a commercial fisherman. And that same pound of fish creates nearly four times more jobs -- usually higher paying jobs -- than would be the case in the commercial fishery. If striped bass were to be allocated 100 percent to the recreational fishery, there would be a significant increase in the economic benefits created by that fishery. For openers, more than 14,000 new jobs would be created from Maine to North Carolina.

Let's say Talbot's, a national retailer, decided to create 14,000 new jobs. That would make newspaper headlines because it's important. Well, the economic potential for the striped bass fishery is at least as important, but it's a lot more difficult to get the media's attention. It's not that the non-fishing public doesn't care; the problem is that they don't know the score. If we can get the word out about the importance of the striped bass recreational fishery to coastal economies, we might start getting more attention from newspapers -- from the business pages, from the Wall Street Journal. We've just got to get the word out. If we had a re-allocation of striped bass, the total economic activity would be \$1.8 billion for the gross domestic product of the US. Yes, that's the 'b' word -- for *billion*. People can't comprehend how much money that really is, so we have to put it in context. That amount of economic activity equates to the sales of a Fortune 1000 company. How many states trip over their own feet trying to attract Fortune 1000 companies?

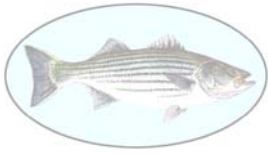
Recreational striped bass fishing is a major source of jobs. We need business people to start looking at striped bass as a key generator for coastal economies. Economic Value is another measure economists use to define what's important and what's not. The first value I talked about was called economic impact; that's your dollars, your tax revenues, and your jobs. Politicians really like tax revenue estimates, but economic value is your well being, your quality of life. You can't measure everything by your checkbook. Take air pollution for example: you might have a great job making a lot of money, but if you are slowly choking to death, a fat bank account won't help.

A lot of economists say you can't justify re-allocating a fishery just because of the economic impact, and there's some merit to that argument. But I don't buy the whole argument because jobs are still a very important consideration. What if a new management scenario did not lose jobs but moved jobs to other states? Don't you think the local public and the politicians would be concerned?

Let's look some more at the economic value factor. If we re-allocate the striped bass fishery from the current scenario to all recreational, it would be an enhancement in economic value of 30 percent; it would also greatly enhance the lives of a lot of people and be a net positive for much of the Atlantic Coast. That's the bottom line message. Currently, the value of the recreational striped bass fishery is more than 11 times greater than that of the commercial fishery. Remember that. If you're going to get into an argument with an economist -- and economists love to argue -- write down these facts (or give them the Southwick Report) and then just walk away.

I want to make a quick point on the economist perspective of raising striped bass through aquaculture. As we pointed out in the Southwick Report, we know that the lion's share of striped bass (hybrid bass) consumed in the country comes from farmed fish and we know that production is still growing. Some people tell us farm raised fish are not as good as wild fish. However, the real measure of a product's quality is not a collection of random quotes in the media; it is whether or not the product sells. I don't care what people may tell you; the ultimate measure of someone's opinion is how he or she spends their money. It's called voting with your wallet. People may tell you one thing, but where they spend their money is where the truth lies. With increasing sales, the market tells us that a farm-raised striped bass is a fine substitute for a wild striper.

People speak louder with their checkbooks; I sincerely believe that. In 2003, when the Southwick Study was done, the average annualized price per pound for hybrid striped bass raised through aquaculture was \$2.78. For wild striped bass, the price per pound at that time was \$2.75. I would say these numbers are virtually the same; three cents is not a major difference for all practical purposes. Some people insist that if it's not a wild fish, it's an inferior product that doesn't taste as good. But society as a whole has told us there is no difference in the quality of farmed versus wild striped bass and that is reflected in the market prices of both products. It is a basic economic fact that the best cars, houses and caviar command higher prices. But striped bass raised through aquaculture are just as popular with consumers as are wild stripers. That, ladies and gentlemen, is an irrefutable fact."



Dr. Russell Nelson

I'm a fisherman and as you all know, fishermen like to tell stories. So today I want to tell you a story about my life with redfish and snook in the South. The snook part of the story as I know it is historical; as for the redfish, I know that story intimately because it was the redfish that dragged me from the world of science and scuba diving and the sweet love of nature into the dreary, dark and gray world of fishery management, complete with lawsuits and politics.

The snook is a very important fish in Florida, which happens to be at the very northern extent of its range. Snook suffer periodic massive die-offs during long stretches of cold weather and often survive only in the very southern portion of the state. Mullet are distributed all over the world but are closely linked with snook as a prime prey species.

Let's go back and look at Florida in the 1880's when the state already had regulations -- particularly commercial regulations -- on the harvest of many fish. One of those fish was the mullet, a species not well known in the national food market but regionally popular in the south where lots of folks like to eat mullet roe.

In the 1880's, Florida passed laws prohibiting the use of gill or set nets within one half mile of any tributary or inlet on the coast. They also had very strict laws against the taking of mullet during the fall roe season. If a fisherman was convicted of catching mullet when they were spawning offshore, the fine would have been \$100 plus confiscation of his boat and gear. In those years, \$100 was a lot of money. By the time I came to Florida 100 years later, the typical fine for the same violation might have been \$200.

By the 1920's, Florida was one of the first coastal states to impose size limits on saltwater fish. The regulated species included flounder, sea trout, groupers, and redfish. So Florida had a very early and very strong conservation ethic. After the Second World War, the regulations in Florida started changing. The Florida Freshwater Fish and Game Commission was created with full constitutional authority for the management of freshwater fish but not for saltwater species. Snook were declared game fish in a quid pro quo trade between the recreational and the commercial industries during the 1953 legislative session. At that time there had been a general decline in a lot of regulations. Size limits on many different species had been reduced, including important commercial species like lobster. The commercial industry in Florida had been dramatically increasing its political clout through good organization and a political focus on maintaining good relations with legislators. The result was that the snook was given game fish status, and in return the ban on taking roe mullet during the spawning season was lifted, thus allowing massive harvests to develop during the fall spawning runs.

Despite its hands-off game fish status, considerable poaching of snook was still prevalent in the late 1970's (and still exists today, though to a lesser extent). Snook stocks had declined dramatically, as had the stocks of king mackerel, redfish, spotted sea trout and Spanish mackerel. But Florida's fisheries had begun to benefit from the demographic shift of people from all parts of the country. They came from states where fish and game were carefully managed and they were used to licenses, bag limits, and seasons. Plus, the fish and game they sought back home was not subjected to any commercial harvest. So the Florida legislature was being relentlessly hammered by folks who wanted to do something about the declines in the state's saltwater fisheries. The state studied the problem for a year and convinced the legislature to create the

Florida Marine Fisheries Commission (FMFC) with the authority to do direct management of marine fisheries.

The FMFC started its work in 1984, following guidelines from the Magnuson-Stevens Act in terms of fairness, equitability and the use of science, et al. But there was one curious difference: the FMFC was not legally mandated to manage for maximum sustainable yield or optimum yield. Instead, the charge was to manage for *maximum practicable stock abundance*. I don't think the people in the legislature – and most Floridians for that matter -- really understood what that meant. But those of us in fisheries work interpreted the decision to mean that you basically leave as many fish in the water as you can get away with. At that time, the FMFC operated much like the federal councils. They went to the public hearings process, looked at what little science there was available on most saltwater species, and went through the rule making process. Once a fishery regulation was passed, it went to the Governor and his cabinet.

In those days, Florida operated pretty much like a third world country when it came to political sensibility. An elected governor and six other elected officials made decisions as a group, so the FMFC regulations were tied into the governor and his cabinet. I had been working for about six years as a research biologist in Beaufort, North Carolina with the National Marine Fishery Service and had completed most of the work on my PhD. Florida was looking for a chief scientist and I applied for the job. The FMFC comprised seven individuals who were appointed by the governor and had no particular qualifications other than an interest in being stewards of the resources. Right up front they asked me if some species should only be managed as recreational fish. I was like, duh. I said yes, based on my personal bias – I had grown up as an angler – but also based on biology. Some animals like mullet and sardines and other species that reproduce quickly and in great numbers are meant to be managed commercially. But fish like the red drum, aka redfish – a critter that lives a long time and doesn't reproduce till it reaches four-plus years of age – should be managed as a recreational species. I didn't realize then that I was diving right into the middle of the so-called 'redfish wars.'

I was hired as a scientist and the first thing I tried to do was some modeling to give an indication of what the status of redfish stocks would be in Florida. Redfish had been the focus of the Florida branch of the Coastal Conservation Association even before the FMFC was formed and the CCA folks wanted to make it a game fish. Redfish were in bad shape, a fact confirmed anecdotally by experienced anglers and the honest commercial guys, but the State of Florida didn't spend any money on research, so it was kind of hard to prove. Just before I arrived in Florida, the FMFC was sitting in a meeting debating whether there should be a quota on redfish in the commercial sector, or whether they should be given game fish status. One of the commissioners was a commercial fisherman and processor from the Florida panhandle. In the middle of the meeting, the commissioners learned that that man's son had just been caught with a purse seine load of 75,000 pounds of redfish. Purse seining was illegal in Florida.

Well, this caused a shift in the way the Commission members looked at the status of redfish. So I began my modeling. We had landings data from the commercial fishery which was probably catching between 20 and 40 percent of the total redfish harvest in a given year, or 750,000 to 1,500,000 pounds of fish. The recreational data was spotty, but it showed that anglers were probably getting somewhere between 75 to 80 percent of the redfish harvested annually. Our modeling showed that only about one half of one percent of the redfish that reached three or four inches would survive until they were mature enough to spawn, and this bit of science proved critical in determining the management fate of redfish.

In the Spring of 1987, the FMFC voted to give game fish status to redfish. That decision was taken to the Governor and Cabinet. The commission did not have anyone on board who could clearly and confidently explain their reasoning, and the commercial guys tried to take advantage

of that. But the governor surprised everyone by reasoning that if the situation was so bleak, why not shut down the whole fishery? And that's what happened. My boss, the Director of Fisheries for the state, was fired and I got his job.

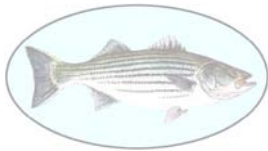
So here I was, sucked right out of the fun side of science into the nasty gray area of political conservation. The redfish "officially" became a game fish on a September night in 1988 in a swimming pool in Islamorada, where a bottle of hundred year old cognac was consumed by four people. We did shut down the fishery with the support of the recreational sector in Florida. It was a defensive move, but better than a retreat. But first, we did the modeling, got the economics figured out, and put the information in front of the commission. It was the late George Barley, a longtime commissioner, successful developer and angler who really deserves most of the credit. Barley wasn't the governor's man, but he had contributed to the governor's campaign and he was a bulldog. The governor agreed to reappoint Barley so the redfish deal could go through, but only if Barley agreed to resign after six months. As it turned out, Barley stayed longer – just long enough.

The commission developed an equitable and fair regulation which basically said that every commercial and recreational fisherman in Florida could have in possession one redfish each between 18 and 27 inches in length. It was a game fish plan in sheep's clothing. But we were not presenting it to the political people as a game fish plan, but rather as the ultimate fair redfish regulation. And I had to convince the governor and his cabinet that it was the right way to go.

So we come back to that night in Islamorada. George Barley, two other commissioners and I had just finished dinner when we got a message that the governor would support our proposed redfish regulation, but Barley had to go. So we hit the pool where George swallowed a lot of ego and a fair portion of his great old cognac and agreed that he would resign from the commission. Two weeks later I brought the proposed regulation to the governor and his cabinet. It was a real spectacle. We had CCA wearing red hats on one side supporting the rule and the commercial fishermen in green hats on the other side in opposition. There must have been 500 people in the room. I was very comfortable explaining the commission's decision to the politicians – the rationale, the economics, the ultimate value of the fishery -- plus the fact that the resource had collapsed and it was going to take extreme action to get the stock back. We also brought in people from the state's agriculture department to talk about aquaculture. The great spectacle lasted for an entire day. Then the vote was taken and the regulation passed.

So that's how redfish were declared game fish in Florida. Our success there triggered a domino effect throughout the southeast. Back in the 1980's, Texas had decided that there weren't enough sea trout or redfish in their waters to support both commercial and recreational fishing, so those two species were declared game fish. Texas didn't have much of an organized commercial fin fish industry, but Florida did, and it was in Florida where that battle was fought and won. Georgia, South Carolina, Alabama, and Louisiana passed similar regulations on redfish, and Mississippi eventually followed, keeping only a small commercial quota. And fishing for redfish in the EEZ was stopped – a very important victory for conservation.

Our success in Florida was due partly to political serendipity and partly to science. It was the right time and the right place. Many of the same elements that existed during the redfish wars in the south are mirrored in the striped bass situation today. The redfish wars were won on a state-by-state basis and the same thing could happen with striped bass. Perhaps it will if you can come up with the right bottle of cognac!



Bruce Freeman

Striped bass occur from about the St. Lawrence River in Canada southward along the Atlantic Coast down to Florida, and then around Florida into the Gulf of Mexico at least as far as Alabama. In the northern and southern extremes, stripers stay primarily in the river system in which they were spawned. There is some migration in the estuarine waters but very rarely an extensive migration along the coast. It is the middle area between northern North Carolina on the southern extreme up to Maine at the northern end where we have the major migratory movements of striped bass. It's this group of fish that I want to talk about today but with a major emphasis on New Jersey.

Of the 17 coastal states and jurisdictions – including the District of Columbia and the Potomac River Fisheries Commission – seven designate the striped bass as a game fish. The issue of game fish status has been hotly debated in New Jersey for at least 80 years. And although the striper was designated a game fish there 12 years ago, the controversy continues. Striped bass occur in New Jersey year-round. We have a unique situation in that there is striper spawning at the northern extreme of the state in the Hudson River on the border of New York, and at the southern extreme in Delaware Bay. The two spawning populations are distinct, which is unique among the coastal states. On a coast-wide basis, it is estimated that about 25 percent of the coastal migrating fish are from the Hudson, about 15 percent from the Delaware, and the majority – about 55 percent – from the Chesapeake Bay. In addition, perhaps about two percent of the stripers come from the Roanoke River and from Albemarle Sound in North Carolina. New Jersey has a major spawning run in May and June, and a much larger fall migration that lasts from September usually through December.

So we have a mixture of both resident and migratory fish. An interesting note: a tributary to Sandy Hook Bay called the Shrewsbury River was the actual location where fingerling striped bass were caught and taken by train across the continent and released in San Francisco Bay in the 1800's, creating a West Coast population of stripers that now extends from California to Washington. That Shrewsbury River population of striped bass no longer exists, so we are going to have to go to California to get our fish back.

New Jersey has had a history of striped bass fishing since the arrival of Europeans -- first the Swedes, then the Dutch and the English. Back then, our commercial catch was accomplished with weirs and haul seines; it was not a significant fishery. It wasn't until the development of the tarred cotton gill net, the nylon gill net, and most recently the monofilament gill net, that striped bass commercial catches in New Jersey increased substantially. In the teens and into the 1930's, conflicts with various types of gear led to laws that controlled the taking of striped bass. The arguments over fixed gear like pound nets versus mobile gear – particularly otter trawls – were quite heated. Legislation was passed to prohibit the use of mobile gear any closer than two miles from shore. The statutes were put in place because of the gear conflict between commercial fishermen; it really had nothing to do with striped bass.

But New Jersey was concerned about striped bass. In the late 1940's, the state put in place a minimum size of 18 inches and prohibited the taking of striped bass with nets. The feeling was

that large catches on the commercial side would continue to decimate the striped bass stocks. A bag limit of 10 fish was also imposed on recreational fishermen. Those bag limits were arbitrary, but it was felt that some controls on recreational fishermen were necessary. Bills were soon introduced in the legislature to allow striped bass taken incidentally to other directed fisheries to be retained and sold. The rationale, supported by commercial fishermen, went like this: *we are fishing our nets primarily for shad in the Spring and catching striped bass incidentally. We're not really targeting them; the stripers are mostly dead when we pull the nets and we're just throwing them away. So we should be able to sell these small numbers of striped bass and not just let them go to waste.* The commercials convinced the state to modify the law accordingly.

Well, we soon discovered that some commercial fishermen -- ostensibly fishing for shad -- were setting large numbers of gill nets where striped bass concentrated over the winter and were taking tens of thousands of pounds of stripers in those nets. The problem was that they never caught a shad, so it was a flagrant abuse of an existing law.

An outraged public forced a change in the law, making it illegal to take striped bass in New Jersey waters in nets. However, striped bass could still be sold in New Jersey, and the only legal means to catch them was with hook and line. So although stripers were taken primarily by anglers, some commercial fishermen also used rods and reels to catch bass for sale, as well as taking fish in nets set outside of state waters.

In the early 1980's, several events took place that changed the destiny of striped bass in New Jersey. It all started with the collapse of the striped bass stocks in the Chesapeake Bay. There was virtually no recruitment coming from the Chesapeake Bay, Delaware Bay, or from the Roanoke River stocks. Tagging results and chemical tests revealed that the great majority of stripers taken in New Jersey at the time were solely from the Hudson River stock. The rapid decline brought the striped bass states together to put in a coast-wide management plan. Within a year or so, the states mandated very restrictive catch regulations in order to basically reduce the striped bass fishery to almost zero. Some states placed a moratorium on stripers by not allowing any fish to be taken by recreational or commercial fishermen. The other states, including New Jersey, put in very restrictive harvest limits which severely reduced the fishery.

At about the same time, New York and New Jersey grew very concerned about the discovery that striped bass in the Hudson River were contaminated with PCB's. For about 30 years or so, General Electric had been making those man-made chemicals and releasing the residue into the Hudson at Fort Edward, just north of Albany. PCB's were being found in all Hudson River fish but particularly in striped bass, which were very important commercial fish in New York. So both New York and New Jersey prohibited the taking of striped bass for commercial purposes because of the contamination. The Food and Drug Administration had an acceptable action level for PCB's of two parts per million. If fish tested higher than that, it was recommended they not be sold commercially. Many of the fish sampled had PCB levels that were 10 times higher than the accepted level, so both states closed their commercial fisheries in the mid-1980's. And they remained closed for a number of years.

On the recreational side, there were health advisories -- on striped bass and other area fish -- which essentially recommended limits for consumption, especially for women of child bearing age and women who were pregnant or nursing. But the real concern was on the commercial side. In the market, there was no way of telling whether or not fish were contaminated unless a chemical test was conducted on each fish. That is still the case today. At the same time, there was concern that the entire seafood industry in New Jersey would suffer. People heard that striped bass were contaminated and just assumed that bluefish and everything else in New Jersey

waters was not safe to eat. Some people even refused to buy shrimp sold in New Jersey. Of course, no commercial quantities of shrimp are caught in New Jersey waters, but that didn't make any difference.

After several years went by, Senator Louis Bassano, a state legislator and ardent striper angler, introduced a bill to make striped bass a game fish. He reasoned that since there was no commercial fishery, commercial fishermen and processors would not be hurt. The debate over this piece of legislation lasted almost three years. There was a provision in the bill that allowed hybrid, or farmed striped bass, to be grown and sold, but the bill prohibited the taking in New Jersey of wild striped bass for sale and prohibited in New Jersey the sale of wild striped bass taken legally in other states. A good market developed for hybrid bass in restaurants as well as at retail. The commercial industry, of course, opposed the bill. They wanted to regain the opportunity to fish for and sell striped bass if and when the contamination issue was resolved. Hook and line fishermen who caught and sold striped bass were also opposed. And there was some opposition from restaurant owners who wanted to put wild striped bass on their menus from states that didn't have contaminated fish. As I mentioned earlier, the bill allowed for the commercial sale of hybrid bass to restaurants and retail stores, as long as the fish were properly labeled and accompanied by bills of lading.

The New Jersey Division of Fish and Game testified in favor of the bill. In the past, the agency had opposed on a number of occasions attempts to pass legislation that would make the striped bass a game fish. But this time, the fish and game folks based their decision on the recreational importance of striped bass to the state's economy. The fishery had been closed, and it was felt that there would be no economic dislocation or impact on the commercial sector. So the bill was passed and signed into law in 1991.

Now let me review some of the reactions to the passing of that statute. The recreational community was very pleased and continues to be. Striped bass in the springtime are very important to the charter and party boat industry, as well as to the small boat fishery and to anglers fishing from shore. This is especially true right now because there are tight restrictions on several other popular fishes, including flounder. The fall fishery is also of major importance to the recreational community in New Jersey, and the striper season goes right through November and December. Traditionally, when the bluefish left in October or early November, everyone picked up and went home. A number of businesses -- bait and tackle stores, motels and restaurants -- closed down. That's no longer true. Many of those businesses now generate considerable revenue during the fall period. So from that standpoint, there has been tremendous support for the striped bass legislation.

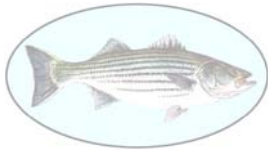
The commercial community obviously is not supportive. They would like to have a provision that would allow for the sale of striped bass taken incidentally. But based on past abuse, there has been very little public support for such a change in the legislation. As I indicated earlier, New Jersey has a very strict no-sale provision on striped bass. Some other states do the same thing, some don't. We felt that provision in the law was necessary because it would otherwise be virtually impossible for us to take any action on illegal striped bass sales if we couldn't trace where the fish came from.

New Jersey also does this with other fish. For example, we have minimum sizes on weakfish, and although other states harvest at a lower size than we do, we do not allow those fish in our markets. A bill was recently introduced in our legislature that would allow stripers caught incidentally to be sold, but the opposition was so strong that the bill was withdrawn. Commercial fishermen do not like the game fish law, but most abide by it. We had a major case in the

southern part of the state where a trucker was buying illegally caught striped bass from commercial fisherman he knew locally and then distributing the fish to Midwest markets. When we broke into the operation, the trucker had hundreds of fish in cold storage ready to be shipped, so he could well have actually shipped thousands of fish before we caught up with him.

There are still people who try to circumvent the law simply because its worth a lot of money to do so. We had some fishermen who purposely killed wild stripers taken incidentally. Their attitude was typical: if we can't have them, then no one is going to have them. We do have a law requiring that fish be released uninjured and as quickly as possible, if they can't be used by the person or persons who caught them. After we caught the law-breaking fishermen and successfully prosecuted them, the trouble stopped.

Again, the great majority of our commercial fishermen abide by the existing law, but it continues to be controversial. Bills are periodically introduced to moderate or reduce game fish status for striped bass, but to date, those bills have been withdrawn after public condemnation. We continue to have striped bass as a no-sale fish in New Jersey. When you look at the economics, there has been a tremendous increase in dollars on the recreational side. Seasons are extended, revenues are increased, and businesses are operating for two months longer than they used to. So for most people, game fish status for wild striped bass is currently working quite well in New Jersey.



Mike Freeze

I should tell you up front that in Arkansas, the striped bass **is** a game fish. Of course, there's no saltwater in Arkansas, but the striper is not fished commercially in our lakes or rivers.

I began spawning striped bass in 1978 for the Arkansas Game and Fish Commission. Then in 1983 I co-founded Arkansas Aquatics, which later became Keo Fish Farm. Initially, we raised different varieties of sport fish such as largemouth bass, bluegill sunfish and hybrid striped bass. In 1983 our annual sales of hybrid striped bass as sport fish were about 10,000 fish. But when Congress passed the Striped Bass Emergency Act that same year, there was suddenly a lot of interest in hybrid striped bass. There was a 10,000,000 to 12,000,000 pound commercial striped bass food fish market along the eastern seaboard and that market could no longer get product. So there were a lot of fish buyers out there looking for a replacement product and the hybrid striped bass seemed to fit the bill.

Now I want you to remember that number – 10,000 fish sold in 1983 -- because I want to show you how the hybrid striped bass industry has grown since then.

Currently, the U.S. production of hybrid striped bass is about 12 million pounds. When I started in 1983, our farm consisted of earthen ponds. Other early producers used concrete tanks as well as earthen ponds. California and North Carolina were the first two centers for hybrid striped bass food fish production. Since that time one of the largest tank operations has been built in California -- a company called Kent SeaTech that produces close to 3,000,000 pounds of fish annually. There is also a lot of pond production in Texas and in the Carolinas, plus raceway production in Florida. At one time there was a very large hybrid striped bass producer in Turner Falls, Massachusetts. We sold them fingerlings. But unfortunately their production costs were higher than what the market could bear.

There is still a lot of tank production but it has stabilized. Pond production keeps increasing and there's a small amount of cage production, mostly centered in southern Illinois in abandoned coal mines (deep strip pits) filled with clear water. These large, pristine, privately owned ponds and lakes up to several hundred acres in size can accommodate numerous cages and have almost ideal conditions to grow fish. Pond production is probably the most economical way to raise food size hybrid striped bass and that is why it's growing.

People often try to equate the hybrid striped bass industry with the catfish industry. It's generally known that catfish farming is basically centered in Alabama, Arkansas, and Mississippi, so folks wonder how come there isn't a lot more hybrid striped bass production in the South and why our industry is so spread out geographically. The reason is that the growing season for hybrid striped bass in southern Illinois, for instance, is longer than it is in southern Mississippi. When the water temperature gets too high, hybrid striped bass will actually quit feeding, which means that in the Deep South during the middle of the growing season, there may not be any growth at all. States like Kentucky, Illinois, and Indiana that are too far north for economical catfish production can produce cool water fish like hybrid striped bass, and that has fish farmers in those states very excited

So the production and sales of hybrid striped bass are quite spread out. The total annual sales for the fresh fish hybrid bass market are about 10,000,000 pounds. Fresh means that when the fish are harvested, they are *chill killed* instantly in ice slurry, packed on ice within a matter of minutes, and kept in cold storage until a truck picks them up for shipment. It is only a few days at the very most from the time a fish is harvested until it arrives at the fish store or the distributor.

The production of hybrid striped bass for the live market has grown steadily over the years. Currently, live sales represent 2,000,000-plus pounds annually. There are large Asian and Latino ethnic markets that will pay more for a live fish. There are historic cultural reasons for this, including the fact that certain ethnic groups may not have had refrigeration when and where they grew up. The person who prepared the food for the household went to the market and bought what the family was going to eat that day. This tradition has carried over into ethnic population centers in the United States and Canada, so there are large markets for live hybrid striped bass in New York City, Chicago, Kansas City, San Francisco, Quebec and Toronto. Live product in these ethnic population centers definitely brings a better price.

So the live market has slowly increased. But hybrid striped bass are not the only fish going into that market. There is also the tilapia, a fish from Africa that is now raised and marketed in the United States. Not many catfish go into this live market because in Asia, the catfish is supposed to bring bad luck. Until recently, a lot of live Asian carp went into the live market, but Canada and some states in this country have prohibited the live importation of Asian carp out of fear that some might escape and cause ecological damage. The closing of these live markets to Asian carp has allowed an increase in the sale of live hybrid striped bass.

The wholesale price for hybrid striped bass varies by geographical region. In 2005 in the southeastern United States, the average price for fresh (dead) fish was \$2.83 per pound, while for the live product the price at the farm was \$3.50 per pound. That is a considerable price difference. If a farmer is set up for and can go to that live market, he will probably give it a shot. But the live market is finite and can only absorb a little over 2,000,000 pounds per year.

Back in 1984, the price for hybrid striped bass fresh at the farm was \$5 a pound. There was almost no wild catch of striped bass coming in, so you had about 1,000,000 pounds of farm product selling for \$5 a pound and the demand was not being met. As the production of hybrid striped bass increased over the years, the price went down. By 1998, production had flattened out, although it has gone up a little lately as our industry tries to balance its increased energy costs. The wild catch has increased pretty much just like our farm production has. In 2003, the wild harvest was about 7,000,000 or 8,000,000 pounds.

So today, you're got more than 20,000,000 pounds of farmed and wild product combined going into the market. As fish farmers produce more product, the price has dropped. If the price were to get too low, it would no longer be economical to raise hybrid striped bass. But we certainly haven't reached that point yet. At today's prices, which are hovering at about \$2.50 to \$2.55 per pound, farmers are making a good profit. There are a lot of producers who have expanded their operations, but some are struggling to move all their product into the market. A fair number of hybrid striped bass fish farmers have land on which they could build additional raceways, ponds or cages, but right now they are unsure of their future markets.

Here's a logical question: if there was no wild catch of striped bass, could the aquaculture industry supply the market demand? The unequivocal answer: Yes, we could. But the fact is that

our production has stagnated to a point where if our industry is going to continue to grow, it must either find an additional market or take some of the market away from the wild catch commercial fishing industry. To increase market share, our industry is looking at how to reduce production costs. We are going to do that just like the chicken and cattle industries did -- through genetic improvement and better feed conversions. We are going to try and create a cheaper feed with less fish meal in it. That would allow us to get the cost of our product down and still keep our same profit margin. If we can do that, regardless of whether there's a large wild catch or not, its going to open up a tremendous additional market for us. Instead of competing with just wild striped bass, we'll also be going up against some other fish that sell for lower prices. Our projections show that without any increase in the market, we will have a very modest production bump in 2006 of about 761,000 pounds.

Our production has been hovering around the 12,000,000 pound mark for quite some time now. As I said before, almost all product today is sold either live or dead on ice. I used to think that fresh product was gilled and gutted, but now if you put a knife into a whole fish, you reduce the shelf life. So fresh fish is not gilled and it's not gutted. Fish are taken off feed prior to harvesting so there is nothing in the body cavity that might reduce shelf life.

If our industry wanted to sell filets of hybrid striped bass, what would it cost to put them into the market place? The answer is \$7 a pound, and at that price we're not sure if we can be competitive with other fish filets. Fish farming, whether for hybrid striped bass, catfish, or whatever, is really just agriculture. We are facing some of the same production cost increases -- fuel and electricity for example -- that traditional agriculture has to deal with. Our profit margin has been shrinking and so our industry is looking for some way to expand our market. Again, we have to somehow get the production costs down or our market is going to get smaller.

The production of hybrid striped bass is not limited to the United States. At Keo Fish Farm, we spawn about 120 million fry a year and we ship product to Taiwan, Israel, Italy, and Mexico. Israel was our best customer for a long time before that country started spawning its own fish. Until 2005, our industry had never been impacted by hybrid striped bass coming back into the United States. Now we are beginning to get a very small amount of product coming in from Mexico. But what really concerns us is Taiwan. Product coming in from Taiwan has increased dramatically and we think the amount imported is going to get even larger. Once again we're getting outside pressure to decrease our production, not just from the wild fishery, but in the form of aquaculture imports from other countries.

Recently, Congress passed country of origin and labeling legislation -- C.O.O.L. -- and then decided not to implement it on poultry, beef, or most other major food items. But they did keep the regulations on fish. So if you go to a supermarket to buy hybrid striped bass, the label has to say where that fish came from. We're hoping mandatory product labeling will reduce the impact of imports on our domestic sales, especially in the retail market.

Production facilities in the United States are the same as those in foreign countries. In Taiwan and Israel, intensive systems -- raceways or tank cultures -- are used. A lot of fish can be packed into such intensive systems. Land is extremely expensive in Taiwan and not a square inch is wasted. There is a new, very remote cage facility down in Mexico. The owners wanted us to truck fingerlings to them, but by the time we got to Tijuana on the southern California border, we would have been only half way there and the freight costs were going to be astronomical. So we flew fish down to them for a year before they figured out that flying the fish wasn't economical either. Interestingly, Mexico is trying to raise hybrid striped bass in full-strength seawater. Those

fish may survive and grow, but perhaps not as fast as they do in a brackish or freshwater environment.

The price of imported hybrid striped bass is a major concern. Fish coming from Taiwan into California are hitting the supermarket at \$2.25 a pound; our U.S. hybrid striped bass sell for \$3.50 a pound. At the farm, our U.S. producers are getting \$2.60 per pound while the same fish from Taiwan are coming in at \$1.20. We're not too worried about Israel because their fish are entering the U.S. markets at \$4.55 a pound.

Striped bass aquaculture in Taiwan is amazingly efficient. They freeze the fish in 40,000 pound solid blocks of fish and ice, put them on a slow boat from China (it only costs eight cents a pound to transport them from Taiwan to California), and then take that great big block of frozen fish and slowly thaw it. Finally, they sell those fish as fresh fish, as if they just came from a farm. Our industry is going to have to deal with these frozen imports from Taiwan for a long time.

Whenever the wild harvest of striped bass picks up, the sales of farmed hybrid striped bass drop. The fish markets say they can actually get the wild product cheaper, and that makes sense. A commercial fisherman sometimes catches a whole boat load of fish. If his fellow fishermen do the same, there is a big glut of striped bass. So the fish buyers will offer them less and the fishermen have to take the lower price. What else can they do with the dead fish they've already caught?

Like all of you, striped bass farmers are very concerned about what's going to happen if the federal government decides to lift the 16 year moratorium on fishing for striped bass in the Exclusive Economics Zone (EEZ) between three and 200 miles offshore. The market for hybrid striped bass is finite. We've been trying to get up above 12,000,000 pounds in sales. If additional wild striped bass product starts coming in, I predict some fish farmers will either go out of business or be forced to change to another species of fish. [Editor's Note: On September 8, 2006, the National Oceanic & Atmospheric Administration announced that the EEZ would remain closed to commercial and recreational striped bass fishing].

There is a rather surprising bright spot on the horizon. If you look at the websites of environmental organizations like Oceans Alive or the Monterey Aquarium, you'll see they are publishing seafood guides which recommend seafood according to its ecological compatibility. In other words, you are not going to hurt the environment by buying the seafood they recommend. Most of the environmental sites I have looked at list striped bass and some say that farm-raised striped bass is the product they want you to buy. Others will say "striped bass, farm-raised [and] wild, are both recommended buys." But the listing for wild stripers is often highlighted and then footnoted with contaminant warnings about mercury, PCB's, or other chemicals. We may be able to use some of these environmental recommendations to promote farm-raised hybrid striped bass. You have to be very careful when you do that, though, because when you start telling people they shouldn't eat a certain species of fish, they sometimes go overboard and don't eat any seafood. So we are going to try to promote the fact that farm-raised hybrid striped bass are economically friendly and that the industry raising them is not hurting the environment.

