

# The Fish Market

*What happened when Virginia brought tradable quotas to the commons*

BY BETTY JOYCE NASH

**C**apt. Joe DelCampo of Virginia Beach started fishing for striped bass in the early 1990s. Harvests had only just begun to rebound after historically low catches the prior two decades. By 1995, this once-plentiful sportfish had recovered, thanks to a temporary fishing ban in state waters followed by annual quotas on catches.

But the quotas created a problem: They set off a race to catch as many stripers as possible before the cap was reached. That led to a surplus of stripers dockside and drove down prices. So in 1998, the Virginia Marine Resources Commission (VMRC) modified the quota system by allocating shares of the fishery to commercial fishermen, based on historical landings. Individual shares are tradable. Quota holders can sell shares outright or lease them; leases can be long-term or just for a season.

This individual transferable quota, or ITQ, enables DelCampo to time fishing trips. “In the springtime when the fish are here and I can catch them easily, I catch as many as I can,” he says. “After the fish leave, I will lease whatever quota I haven’t caught to others.”

“It’s worked well,” says Ernie Bowden, president of the Eastern Shore Watermen’s Association, “Before, we had a ‘rodeo’ fishery where everyone was fishing at one time. If the quota was caught, you had to quit even if you hadn’t caught your fish.” Bowden wasn’t particularly happy about his initial quota allocation, but his prices have since gone up, thanks in part to the new system. “Now I can catch my fish in April and May when the prices are \$4 to \$4.50 a pound,” he says.

ITQs are a subset of management tools known as “catch shares,” in which fishermen own a share of total allowable catch. But an ITQ confers property rights; owners buy and sell quota among themselves. Evidence suggests that this rights-based management, used in some fisheries since the

1970s, has raised the value and quality of the stock, sometimes at lower regulatory costs. That ensures future generations will have something to fish for and make decent money doing it.

## Fish Swim in a Common Pool

Resources without ownership — a “commons” — are easily exploited, even wiped out. Individual fishermen have little incentive to conserve while others are busy catching. As fish stocks fall, the cost of catching them rises, and fishermen overinvest in bigger, faster boats and better detection devices. This “input stuffing” contributes to commercial extinction.

“You have this resource that can yield substantial economic profits on a continual, sustained basis,” says Ragnar Arnason, a fisheries economist at the University of Iceland. Iceland’s fishing industry has operated under ITQs since 1976. “Under an ITQ, you can realize these potential gains because you’re no longer racing for the fish, no longer competing. You can catch your allocated share.”

The Atlantic Ocean surf clam and ocean quahog fisheries became the first seafood ITQ, in 1990. These types of clams lie within federally-managed waters, three to 200 miles offshore, from New England to Cape Hatteras. Hydraulic dredges, among other innovations, had fostered a clam industry along the Atlantic Coast that, by the 1970s, had nearly bankrupted the stock.

“The catch rates were very, very high,” industry consultant Dave Wallace recalls. A former vessel and processing plant owner, Wallace lives on Maryland’s Eastern Shore. “We would catch all the clams and, because the market was flooded, get low prices. Then that bed would collapse and the price would shoot up but we had no supply.”

The cycle was unsustainable. In response, from 1979 through 1989, a federal plan dictated vessel numbers and narrowed fishing times, a conventional regulatory approach. “You could work Sunday through Thursday, 12 hours a day, two or three trips a week,” Wallace recalls. Then the regulations kept tightening “to the point where we were fishing about six hours every other week. And we still had hard times.”

It took manpower to enforce these rules, including patrols on the water. Worse, the Coast Guard had to rescue, when they could, vessels that risked hazardous weather in the rush to harvest.

Something had to give. The Mid-Atlantic Fishery Management Council (MAFMC) considered an ITQ system similar to those already under way in Scandinavia and Iceland. Federal ITQs were permitted by the Magnuson Act of 1976. (Wisconsin has managed certain Great Lakes species under ITQs since 1971.) The MAFMC adopted an

ITQ and monitoring costs fell, along with the number of Coast Guard rescues, says Jose Montanez, an economist at the MAFMC.

With transferable quotas, fishermen can schedule harvests in the year-round enterprise. “This also minimizes inventory storage cost,” Montanez says. Before, with the six-hour window, you had to store — freeze — excess fish. This is one of the ways an ITQ enhances product value as it raises productivity: Fresh fish often command higher prices than frozen.

The ITQ has smoothed harvests. Before, everyone worked the fishery in mid-February. “It wasn’t atypical to have several thousand pounds landing in a week,” says Bowden, the watermen’s association president. The fish would bring \$3 a pound by end of the first week, \$2 per pound the second, and then, by the end of the third week, the price would hit a dollar. Though ITQs may not be a panacea, they may outperform more traditional regulations. By comparing fisheries of similar sizes from 1950 to 2003, researchers have found that ITQ fisheries appear less likely to collapse than non-ITQ fisheries, according to a 2010 study in the *Annual Review of Resource Economics* by Christopher Costello, Steven Gaines, and Sarah Lester of the University of California at Santa Barbara, and John Lynham of the University of Hawaii.

It can be hard to see improvement in short-term data, and many ITQs are recent, but, according to Arnason, positive effects likely have been underestimated. “If you look at ITQ systems over 10, 20, or 30 years, you see a bigger stock improvement.”

Trading also attracts the most efficient fishermen as quota prices guide the activity toward the common good, Arnason says. That is, if the property rights are stable and strong.

### Enforcement Matters

Arnason outlines features necessary to the success of this market: rights that are secure, exclusive, tradable, and as permanent as possible. “If there’s a likelihood someone will take your asset away, then that acts as a short time horizon and you will operate as if everything ends at the time of expiration of your asset,” he says. Enforcement is also critical. “If other people subtract some of your rights by

### State Managed Catch Shares in Ocean Fisheries

(up to 3 miles offshore)

Fishery*	First Year
VA Commercial Striped Bass	1998
MD Black Sea Bass	2004
DEL Commercial Black Sea Bass	2004
MD Summer Flounder	2005
RI Summer Flounder	2009
VA Black Sea Bass	2009

\*NOTE: Some fisheries may have limited or no trading.  
SOURCE: Environmental Defense



### Federally Managed Catch Shares in Ocean Fisheries

(3 to 200 miles offshore)

Fishery*	First Year	Fishery*	First Year
Atlantic Surf Clam, Ocean Quahog	1990	Central Gulf of Alaska Rockfish	2007
Wreckfish (FL)	1992	Bering Sea, Aleutian Islands Groundfish Trawl Sector	2008
Alaska Halibut, Sablefish	1995	Mid-Atlantic Golden Tilefish	2009
Bering Sea, Aleutian Islands Pollock Co-ops	1999	Gulf of Mexico Grouper, Tilefish	2010
Pacific Sablefish	2002	Scallop (Mid-Atlantic, Gulf of Maine, U.S. Georges Bank)	2010
Bering Sea, Aleutian Islands Crab	2005	Multispecies, Northeast	2010
Gulf of Mexico Red Snapper	2007	Pacific Groundfish Trawl (90 species)	2011

\*NOTE: Some fisheries may have limited or no trading.  
SOURCE: National Marine Fisheries Service

exceeding their catch, then it will be more expensive for you to catch your share.

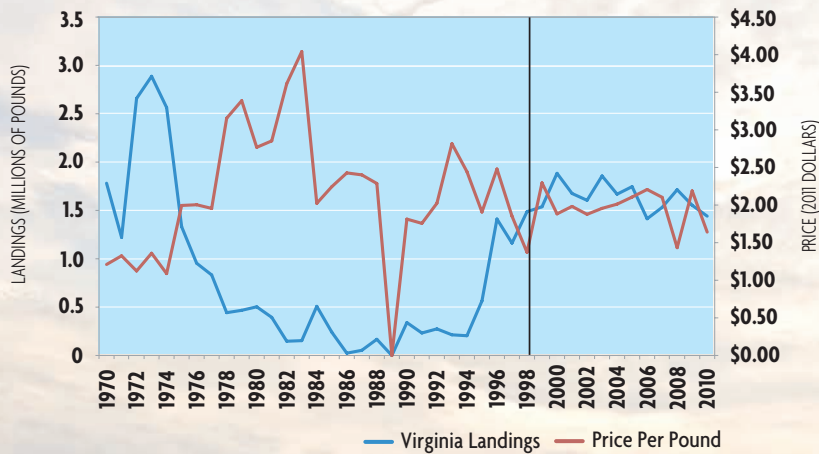
“There is still a vestige of the common pool problem. If you exceed your quota you expand your benefits,” he says. “You realize everyone will be hurt, but if you think everyone will do it, then you must do it.”

Enforcement issues have led to tweaks in Virginia’s striped bass ITQ program over its 13-year life. In 2007, the program began measuring quota by fish weight rather than by numbers. That mitigated a practice known as high grading, according to Joe Grist of the VMRC, in which fishermen discard smaller fish in favor of larger ones.

Still, fishermen can falsify records or under-report catches. But even with 421 participants in the Chesapeake Bay and its tributaries’ fishery, and 32 in the ocean striper fishery, Grist says, “We know these watermen.” Fishermen report catches monthly and so do dealers. The Virginia Marine Police spot-check. In 2010, a poaching case went to federal district court, and resulted in fines, license revocations, and even prison time.

Monitoring does cost taxpayers time and money, and effort varies from fishery to fishery. In the clam fishery, Montanez says, some enforcement costs fell because “we didn’t need to micromanage.” The fishery is managed

## Virginia's ITQ Stabilized Striped Bass Landings and Prices



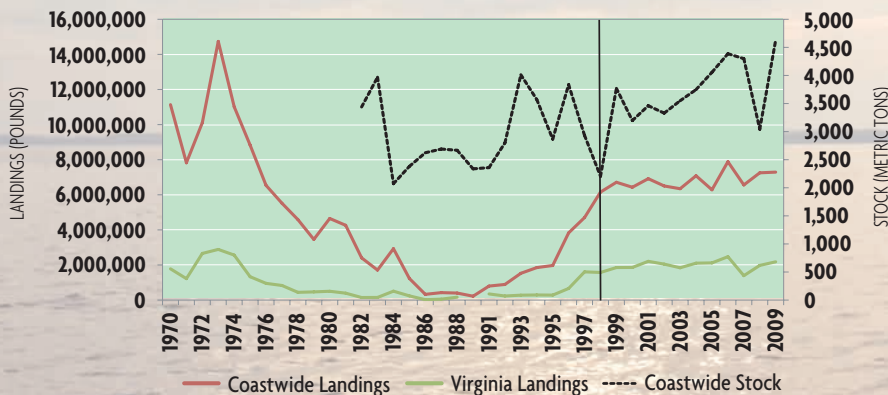
NOTES: Commercial striped bass fisheries were closed in coastal states at various times between 1986 and 1990. Virginia's fishery closed from June 1989 to November 1990. In 1995, the stock was declared restored.

Price data averaged from quarterly surveys of Virginia seafood dealers. Mandatory harvest reporting started in 1993; prior values provided by the National Marine Fisheries Service.

The vertical line indicates the starting year for Individual Transferable Quotas (ITQs) as 1998.

SOURCE: Virginia Marine Resources Commission

## Striped Bass Landings, Stock Assessment



NOTE: The vertical line indicates the starting year for Individual Transferable Quotas (ITQs) as 1998.  
SOURCE: Atlantic States Marine Fisheries Commission

dockside today through dealer records and vessel logbooks, cheaper than Coast Guard and National Marine Fisheries Service (NMFS) manpower. But because ITQs are relatively new and because fisheries differ in species, size, and scale, cost data are often scarce and inconclusive.

### Angles and Obstacles

An ITQ adds value to the fish and the fishery, but there are reasons why some watermen object to the ITQ concept. First and foremost, a fisherman who wants quota may not get all he wants. (In the striped bass fishery, however, you can buy quota even today, if you have a commercial fishing license and find a willing seller.)

To reduce fishing effort and keep stock healthy, VMRC limited the commercial fishery in 1996 to those earning at least half their annual income in seafood sales. That had reduced fishermen's numbers even before the ITQ started in 1998, says Rob O'Reilly of the VMRC. That, in turn, made granting shares easier.

Though DelCampo of Virginia Beach didn't do the

paperwork to get quota the first year of the ITQ, he entered a lottery the following year and eventually bought up to the limit, 2 percent of the Chesapeake Bay striped bass quota. (Ocean striper quota is capped at 11 percent per owner.) Ownership caps prevent domination by a few firms.

Naturally, distribution of initial allocations is a touchy issue. Shares in an ITQ are almost always granted according to historical participation in the fishery, known as grandfathering. Arnason says that grandfathering of rights promotes stewardship and long-term investment among fishermen. In a 2010 National Bureau of Economic Research working paper, Arnason and co-authors Terry Anderson and Gary Libecap, economists at Stanford University's Hoover Institution, argued that grandfathering increases the fishery's net value because it rewards efficient investments and encourages owners to work together for the fishery's future productivity.

But systems need careful design from the start. Economist Sylvia Brandt of the University of Massachusetts at Amherst compared outcomes of the surf clam ITQ with

those of the ocean quahog in a *Regulation* magazine article. She found that because the initial allocations in the surf clam ITQ were based partly on vessel numbers, the surf clam fishery participants put more boats out on the water during the transition period so they could get more quota. She cautioned researchers to consider such possible strategic behavior when designing and evaluating ITQ policy.

The prospect of job losses also creates tension over ITQs in fishing communities; lawsuits against share-based systems in the 1990s prompted a federal moratorium in 1996, which expired in 2002. The Magnuson Act, reauthorized in 2007, requires NMFS to end overfishing and includes the tool of market-based management. Today opposition is back: A rider on the 2011 congressional budget bill cut funding for any new share-based systems in 2011.

At the state level, commercial fishermen in North Carolina generally oppose legislation that would allow ITQs, says Louis Daniel, the state's director of marine fisheries. In Maryland's striped bass fishery, the harvest using a specific gear-type is managed through an ITQ, but with limited rights. If fishermen want to lease or sell quota, they must transfer the whole lot, says Michael Luisi, of the Maryland Department of Natural Resources Fisheries Service. But Maryland is working with fishermen to develop alternatives to the arcane rules that currently govern the striped bass fishery. Maryland is also exploring the idea, with watermen, for the blue crab fishery.

Some fishermen philosophically oppose the restriction of the open ocean only to historical participants and to those who are able to buy their way in. Many also fear young people won't have money to buy into a fishery. But fishermen already may pay tens of thousands of dollars to obtain the required fishing permit, notes fisheries economist Kate Quigley of the consulting firm CapLog in Charleston, S.C.

Still, the individual quotas limit a catch, while permits don't.

Fishermen also worry that a few big operators may buy all the shares, though some states, such as Virginia, limit ownership to a percentage of the total allowable catch to avoid this. Those who lack sufficient historical landings to get a healthy initial allocation also are likely to oppose ITQs; they might fare better under traditional management. "They can race to fish — and maybe do all right," Quigley notes. "Under catch shares, they are cut out, unless they buy more shares, which can be expensive."

DelCampo initially opposed the idea. He realized, though, that the old quota system was not only dangerous, because he was forced to fish regardless of weather, it also glutted the market. Now, he chooses when to fish based on weather, price, and availability. The ITQ also stabilizes his profession. "If you are a fantastic fisherman, and fill your box each and every trip, you make a living," he says. "But when you are ready to retire, all you are left with is your boat and your gear — that's it. When I retire, I can't sell a fish I've already caught, but I can sell the quota I've accumulated over the years, or lease it to other people for my retirement income."

But the quota is good only as long as the stock remains. And that's the point — to sustain the resource.

The world's appetite for fish seems insatiable and could haul the resource all the way to extinction. Varying types of share systems — especially those with tradable permits — may offer a buoy to the fish and the fishermen.

"We need property rights in the ocean in the same way we needed them on land, to make fishing more efficient," Arnason says. "ITQs are one step along the way." These systems that codify property rights have potential to manage the resources within the places — air, public lands, waters — that are common to all, but owned by none. **RF**

## READINGS

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