



Beyond IFQs in Marine Fisheries

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IFQs
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TO THE READER

The evidence is out—fishermen not only catch fish, they can help protect them as well. Individual fishing quotas (IFQs), harvest cooperatives, and other limited access privilege programs have put fishermen in a fisheries management role and allowed them to reap what they sow. Now, new institutional “ingredients” are emerging to help further define roles for fishermen in management and research.

The Property and Environment Research Center, Environmental Defense, and the Reason Public Policy Institute have held four Capitol Hill briefings to educate policy makers on the benefits of IFQs. The first briefing and subsequent booklet, *Overcoming Hurdles to IFQs in U.S. Fisheries*, addressed concerns over the availability of processor quotas, restrictions of transferability of quotas, and time horizons on IFQs. The second briefing and booklet, *The Ecological Role of IFQs in U.S. Fisheries*, demonstrated how IFQs improve the health of fish and their habitat. And the third briefing and booklet, *Governing the Fishery with IFQs*, explored ways for fisheries governance to become more sensible and the fishing more sustainable.

Although IFQs are doing their job, there is still much work to be done. Policy makers and practitioners would do well by learning from those on the ground and in the water who are moving *Beyond IFQs in Marine Fisheries*; the topic of this booklet and theme of the fourth briefing on April 12, 2007. This briefing featured four fisheries experts: Michael Arbuckle, Pete Halmay, Paul Parker, and Mario Ramade Villanueva. This essay stems from their comments.

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Beyond IFQs in Marine Fisheries

Growing evidence from the United States and abroad indicates that individual fishing quotas (IFQs),¹ harvest cooperatives, and other limited access privilege programs (LAPPs)² have resulted in more precise control of harvests, less bycatch, fewer negative impacts on habitat, better economic performance, improved safety, and enhanced science and monitoring in fisheries where they have been adopted (e.g., Dinneford et al. 1999; Sigler et al. 2001; Woodely 2002; Jones and Bixby 2003; Gilroy 2004; and Wilen 2005). In other words, these programs have substantially reduced the negative environmental impacts of fishing, while allowing fishermen the flexibility to improve their profitability and safety dramatically. Options for improving the health and viability of both the fishing industry and the marine environment, however, do not stop with these programs. It is crucial for cooperative and contractual institutions to evolve if we are to continue to enhance fisheries management.

In fisheries where local conditions for cooperative management exist, there are other types of LAPPs emerging, including management tools such as sector-managed quota³ and exclusive territorial use rights in fisheries (TURFs)⁴ that can also improve fisheries management. Understanding these opportunities and

how they may affect the economics and the ecology of fishing is critical for fisheries policy makers and practitioners.

The briefing, which inspired this booklet, featured four fisheries experts who shared their experiences from New Zealand, Baja and San Diego, California, and Cape Cod, Massachusetts. Such experiences offer insights on how policy and fishing alliances might be structured to encourage better conservation and economic performance in U.S. fisheries.

DEVOLVING MANAGEMENT IN NEW ZEALAND

“In New Zealand, collective decision making frameworks have developed with the creation of over 20 fisheries management organizations.”

—Michael Arbuckle*
Senior Fisheries Advisor
Fisheries and Aquaculture Department
United Nations

Much has been written on the economic successes enjoyed by New Zealand’s commercial fisheries under IFQs⁵ during the past twenty years (e.g., McClurg 1997; Sharp 2005). However, the task of improving commercial fisheries management is not finished. New Zealand continues to expand the use of IFQs in its commercial fisheries, thanks to industry initiative and institutional support. Currently, 92 out of 130 species fished commercially are under quota management. And, as Michael Arbuckle (2007), former general manager in New Zealand’s Ministry of Fisheries, states, “the job of building capacity to manage across sectors, outsourcing remaining functions [non-core government functions], and devolving fisheries planning and service purchasing functions” continues as well.

Notably, as wealth from New Zealand fisheries has increased

under quota management, so has the incentive for recipients of that wealth (the quota holders) to get into the business of protecting and managing fishing rights and interests. Although IFQs are only partially exclusive in terms of fishing rights, quota owners are allocated shares of the total allowable catch in the present and the future, thereby giving them an incentive to act collectively to protect the values of their shares through improved management and research.

Collective action is channeled through private management companies formed by quota holders to improve fish stocks.⁶ Duties include developing an annual business plan, an annual management plan, and executing key functions of fishery management either internally or by contracting with service providers. A successful management plan hinges on reaching agreement among fishermen and obtaining input from other stakeholders (e.g., customary and recreational interests) on how the fishery should be managed. Once agreement is reached and the plan is approved by the Ministry of Fisheries, it is put into action.

Importantly, institutional changes have supported this fisher-led approach to management. In 1994, cost recovery legislation was introduced requiring quota holders in a fishery to pay the full costs of management and research. With this change fishers had an added incentive to challenge the cost-effectiveness of a government monopoly on services supporting fishery management and research. A modified version of the Commodity Levies Act was also enacted to allow quota owners to impose levies on themselves by majority vote for funding fisheries management and research. With this law, a majority of quota owners could bind all quota owners in a particular fishery to fund management and research initiatives.

In addition, a new Fisheries Act was enacted in 1996 (re-

placing the Fisheries Act of 1983), which established a flexible framework for achieving sustainable fisheries. For most fisheries, sustainability involves setting a total allowable catch for each fish stock, at a prescriptive target level, that can produce the maximum sustainable yield. The new act, however, provides a management regime allowing some fisheries an exemption where sustainability can be better achieved through an alternative approach.

Such is the case for the scallop fishery in Tasman Bay, located at the north end of New Zealand's South Island. Small zones within the Bay are exploited and then rested every few years on a rotational basis. Scallop populations are enhanced through improved recruitment methods. Under this approach "scallop numbers show a positive and stabilizing trend following low scallop abundances in 1996," writes Arbuckle (2000, 4). This trend coincides with the introduction of rotational fishing and improved stock enhancement.

In addition to institutional change, quota holders have sought to create transparency and competitiveness in the provision of services supporting fisheries management including the provision of stock research, monitoring, and quota registry services. According to Arbuckle (2007), this has been accomplished in various ways. For instance, fishery research and monitoring services have been separated from core government functions. Now, such services can be performed by commercial entities. A few fisheries, such as the scallop, oyster, and finfish fisheries in Tasman Bay, actually have nearly all management and research services carried out by a private company under a structured "evergreen" contract. Renewal of this multi-year contract depends on the company meeting performance parameters, such as reducing bycatch, maintaining good stock assessments, and

meeting sustainability targets. Importantly, the government remains the standard setter for fishery performance and conducts periodic audits to make sure standards are being met.

To improve the administration of IFQs, the Seafood Industry Council Ltd. (SEAFIC)⁷ has assumed responsibility for quota registry services. In terms of lowering administration costs and handling more quota transactions electronically, the private registry service “has been an unqualified success,” writes Harte (2007, 386). SEAFIC has also spearheaded continued expansion of IFQs and other policy reforms in commercial fisheries through lobbying and private investment.

How is the newly devolved fisheries management structure working in New Zealand? The answer is: quite well. The Challenger Scallop Enhancement Company serves as an illustration. Challenger is one of a growing number of private management companies formed by IFQ holders over the last fifteen years to improve the quality of management and research in commercial IFQ fisheries. With standards of performance set and audited by the Ministry of Fisheries, the company has carried out management and research with enormous success in the Southern scallop fishery in Tasman Bay, a fishery with a catch value that averages US\$10 million a year.⁸

The fishery’s quota holders formed the Challenger Company in 1994 with the primary function of operating a stock enhancement program. More functions have since been carried out. In addition to seeding scallops, the company conducts surveys, sets total annual catch, opens and closes areas to harvest, and contracts with other fishery management companies to minimize conflicts between scallop, oyster, and finfish fishermen in the bay. Challenger’s annual survey of scallop stocks is carried out with a level of precision that has increased threefold over previ-

ous government surveys (Harte 2000). Funding for surveys and other activities is based on self-imposed levies on quota holders that run as high as 17 percent of annual scallop sales.

Today there are twenty management companies that carry out similar work in other New Zealand fisheries (see SEAFIC N.d.). The range of activities that historically only government performed includes product safety, marine research, stock enhancement, management and enforcement of quotas, and resolution of gear conflicts among fisheries. Notably, a study by Harte (2007) indicates that the annual total commercial cost recovery used to fund such activities was nearly constant from 1995 to 2005. Yet the quality of fisheries management as reflected by biological understanding, stock abundance, and economic performance remained good or improved in nearly all cases (Arbuckle 2007).

PROTECTING TURFS IN BAJA CALIFORNIA

“Local management based on well organized cooperatives and area concessions overcomes the limited presence of management and enforcement by federal government authorities.”

—Mario Ramade Villanueva*
Fisheries Advisor and Liaison
Federation of Cooperatives of Baja California

In a 250-kilometer area of coastline from Isla Cedros to Punta Abreojos in Baja California, nine fishing cooperatives catch, on average, 1,300 metric tons of spiny lobster a year—valued at about US\$20 million. These cooperatives number 1,300 fishers using 230 boats to deploy 13,900 traps each season. They also catch abalone,

conch, sea urchin, sea cucumber, and harvest kelp.

What sets this fishery apart from other fisheries is that the nine cooperatives and affiliated Federation of Cooperatives of Baja California (FEDECOOP) are working together to carry out fisheries management and research largely on their own, with only limited government assistance. As an indication of success, in April 2004 the spiny rock lobster fishery became the first fishery in Latin America to be certified by the Marine Stewardship Council as sustainably managed.

How management works is equally noteworthy. Each cooperative has exclusive fishing rights inside a distinct area—rights formally ratified by the federal government of Mexico in 1992. The fishing rights or concessions are good for a period of twenty years with the possibility of being renewed or transferred after the twenty-year period is up. Each concession area has clearly defined boundaries and contains a small area open for extraction. Fishing for spiny lobster is controlled by setting the maximum number of traps. The traps are then divided among a subset of fishers belonging to the cooperative. Fishers that do not participate directly in the fishery work in processing, logistics, or administration and leadership of the cooperative.

In addition to paying for the right to use the concession, each fishing cooperative invests its own money to survey its area and maintain the health of marine resources. “We understand that if we can sustain them, we can make more money,” says FEDECOOP liaison and fisheries ecologist Mario Ramade (2007). Toward this end, cooperative technical staff set the annual catch, report on the actual catch, conduct census and assessments on stocks, and carry out activities to support repopulation. Fishing members support these activities by maintaining logbooks and conducting surveillance.

In addition, because of limited police presence, cooperatives assume the lion's share of monitoring and enforcement to deter poaching, which is viewed as a very serious matter. Each year they invest an estimated US\$1 million in manpower and in equipment such as radios, high speed boats, night vision goggles, road surveillance, and checkpoints.

All enforcement activity is done in close collaboration and partnership with authorities from the National Advisory Committee of the National Fisheries Commission (CONAP-ESCA) and the Federal Attorney for Environmental Protection (PROFEPA), who prosecutes and penalizes offenders. Notably, FEDECOOP successfully lobbied for changes in the Federal Penal Code to change the status of illegal poaching of abalone and lobster to criminal penalties, in which poachers have no option for bail.

CULTIVATING COOPERATION IN SAN DIEGO SEA URCHIN FISHERY

“The fishermen got together to create their own data collection program, hiring an industry data coordinator, developing protocols, and a data storage and sharing system.”

—Pete Halmay*

Sea urchin diver, barefoot ecologist, and member of the San Diego Waterman's Association

Like most fisheries, the sea urchin fishery is managed using a top-down, regulatory approach. The state of California sets the rules for fishing, which includes a 3¼-inch minimum size limit for landing urchins and an annual fishing season—the

fishery is closed for 120 days a year. There is no control on total annual harvests⁹ and, most importantly, the 21 licensed urchin divers in the San Diego harbor community have no guarantee that any gains produced by cooperating in research and harvesting urchins will not be captured by divers from outside the area. Under current rules, the 279 other licensed urchin divers from outside the San Diego harbor community are free to enter the fishery at any time during the season, just as the San Diego divers are free to go elsewhere.

Sea urchins lend themselves well to area-specific management strategies as they move slowly. Evidence indicates there are distinct subpopulations of sea urchins¹⁰ in well-defined areas off southern California. As such, a number of sea urchin fishermen and marine scientists believe that specific areas of sea urchins should be managed as separate management units (instead of a one-size-fits-all approach now used). They believe that the scale of management should be based on four distinct management units, three along the coast and one offshore to include the islands and offshore banks in the region.

In addition, there could be higher profits if fishermen agree to work together in catching urchins. Sea urchins are caught commercially for their gonads, which vary in size and “sweetness,” depending on a number of factors. Having a catch with optimal specimen size and quality means more money for fishermen. But fishing is carried out by individuals independently and these urchin characteristics tend to suffer due to intense competition. When specimens are not of optimal size, a fisherman feels compelled to take them lest they be taken by someone else. Fishermen, however, could adhere to a joint harvest plan designed to coordinate the catch for maximum size and quality. Equally important, they could agree to eliminate redundant

fishing effort—meaning even higher profits.

Fishermen could also work together to better understand population dynamics of sea urchins. The California Department of Fish and Game, the agency responsible for managing sea urchin fishing in state waters, was under severe budget constraints and could not assemble the needed resources to collect data on local urchins. As a result, there is still much to learn about sea urchins. Pete Halmay and fellow divers, mostly from the San Diego Waterman's Association (SDWA), have already organized themselves for the collection of a wide assortment of data using a “barefoot ecology” program. Under the program, marine scientists supervise the collection of both fishery dependent and fishery independent data.

The types of data include catch per unit of effort, urchin density, growth rates of urchins, kelp (urchin food) type and condition, water temperature, quality and price of sea urchins harvested, oceanographic and topographic factors that may affect ocean productivity, food availability, and urchin recruitment and survival. The data are already helping marine scientists develop a sophisticated stock assessment model that will be used to reconstruct the history of urchin abundance and exploitation and determine the impacts of environmental factors, among other things.

Halmay (2007) notes that for the current group of divers to continue to collect data and work together—and for other local fishermen to join the group—there must be significant changes in management. Thus, exclusive area access makes sense for local San Diego divers to expand on the current cooperative efforts because it would allow them to capture gains from improved understanding of urchins and more coordinated harvests.¹¹ In addition, Halmay and others would like to form a cooperative,

which would have specific management and research duties in collaboration with the state.

Along with pushing for exclusive access and the right scale of management for local fishermen and the state, San Diego sea urchin divers and the SDWA are exploring ways to protect urchin habitat, including the introduction of a set of rotating fishing zones, and ways to improve their business, such as translocating and feeding urchins to smooth out supply, direct marketing, and cooperative harvesting. If they are successful, there will be important ecological and social goals achieved (in particular the maintenance of an active fishing community in the historic port of San Diego). For this to happen, however, more leeway needs to be given to the urchin divers, who are currently restricted both by the non-exclusivity of their fishing grounds and by state regulations, which make innovation difficult to implement.

SELF-MANAGING SECTOR QUOTA OFF CAPE COD

“Days at sea is an expensive way to manage so we worked together to create a sector [quota] that we enforce on our own.”

—Paul Parker*
Executive Director
Cape Cod Commercial Hook
Fishermen’s Association

For well over a decade, the approach in New England’s groundfish fishery has been to limit the amount of cod a vessel can land each fishing trip and the number of days a vessel can spend fishing each year. Both of these limits have been reduced substantially in recent years. Yet the legendary cod fishery on George’s Bank remains severely depleted. Meanwhile, the

tighter restrictions are making it harder for fishermen to survive financially. For example, smaller trip limits for cod force fishermen to take more fishing trips each year even while days at sea are limited, which raises the cost of fishing. They also cut into a trip's returns by preventing catches of other, more abundant groundfish. Once the trip limit of cod is reached, fishermen must stop fishing.

“The principal problem remains severely depleted fish stocks,” says Paul Parker (2007) of the Cape Cod Commercial Hook Fishermen's Association. But the one-size-fits-all strategy of restrictions applied to 1,400 permit holders from Canada's border to Cape Cod is pushing fishermen and their local communities to the brink of financial ruin. Parker is working with other local fishermen to implement a management alternative called sector management. Under sector management, fishermen form groups that have annual catch limits. They then decide together how to fish and collect information to meet those limits. This system establishes hard catch targets for cod, which helps rebuild stocks. It is also a step toward freeing fishermen from some of the despised regulations. The goals of sector management are to promote stewardship of cod and other groundfish, increase accountability among cod fishermen, enhance fishing opportunities for other groundfish, preserve traditional fishing communities, and provide a working model of community management for others to follow.

One sector has already been authorized by federal managers—the George's Bank Cod Hook Sector. It emerged in response to another round of tighter federal regulations. Local fishermen, mostly from Chatham and Harwich, felt the restrictions were likely to drive them out of business, so they formed a sector and secured a cod quota from the New England Fisheries Manage-

ment Council to manage as a group. The sector represents a small day boat fleet of 58 boat owners. The largest boat measures 42 feet. The sector's quota allocation, about 12.5 percent of the overall catch target for George's Bank cod, is based on the combined historical catch of the group's participants. Eligible hook and line fishermen are not required to join but if they choose to do so, they must remain in the group the entire fishing season. Fishermen in the sector do not face cod trip limits but they must count against the sector quota all legal-sized cod landed. They also face limits on days at sea but trading is allowed between group members (not with outsiders) to provide more flexibility. In addition, those in the sector may fish in closed areas to the extent authorized by federal regulators.

How the quota is met is left up to the group. The sector has a board of directors that oversees the sector and appoints a manager to handle day-to-day business. An operations plan and agreement defines the group's approach for meeting the sector quota. It specifies participating fishermen and boats, cod quota, monthly quota targets, individual days at sea, enforcement provisions, disciplinary measures, and catch monitoring and reporting to members and fishery administrators. Participants are legally bound to the plan and agreement. The sector also provides an annual report to the New England Fishery Management Council and National Marine Fisheries Service tracks and reports members' catches and violations to regulators. An important provision by the government is that if the overall target for the Georges Bank cod is exceeded by others the group's quota will not be reduced (Pinto da Silva and Kitts 2006).

The sector, according to Parker (2007), has been able to meet its quota and bycatch has been reduced. The early successes have led to authorization of another sector—the Georges Bank

Fixed Gear Sector. The two sectors are among eight local groups seeking opportunities to manage fisheries in the Northeast at the community level.

CONCLUSION

Technology, markets, regulations, and the marine environment are constantly changing. Thus, finding the ideal institutional adaptation in each fishery, whether a cooperative, corporate structure, or area-based grouping of fishermen will always be a moving target. Legislation and regulation, to the largest extent practicable, should allow for access privileges to evolve and adapt to a world of changing circumstances.

In New Zealand, IFQs, industry initiative, and institutional change have combined to expand IFQs and produce fisher-led, cost-effective fisheries management and research. In the case of Baja, California, exclusive area rights to fish have been awarded to cooperatives on the basis of twenty-year concessions. These cooperatives not only conduct management and research of spiny lobsters and other benthic species, they invest their own resources to guard against poachers. Sea urchin fishermen in San Diego have already demonstrated the ability to collect valuable data themselves under strict scientific supervision. The questions are: Will they be allowed to capitalize on their findings with a more flexible management approach and will they be given some reasonable degree of exclusive access to protect their investments from outsiders? Sector quotas in New England are a relatively new tool that offer a way to control cod catches better, while allowing fishermen more operational flexibility to meet financial goals. There is momentum, as evidenced by more sec-

tors wanting to join in the approach. Time will tell whether this tool can be fully integrated into all sectors of the New England groundfish fishery.

The four cases presented here clearly demonstrate that fishermen are not merely “food gatherers.” In fact, with the help of policy makers who have supported individual fishing quotas and other limited access privilege programs, fishermen have improved the health of fish stocks and improved the economics of the fishery at the same time. Yet there is still much work to be done. Policy makers and practitioners would do well by learning from those on the ground and in the water who are moving *Beyond IFQs in Marine Fisheries*.

NOTES

* Speaker at luncheon seminar, “Beyond IFQs in Marine Fisheries,” Thursday, April 12, 2007, the Longworth House Office Building, Washington’ D.C.

1. An IFQ assigns a percentage of a scientifically determined, annual total allowable catch (TAC) for the whole fishery to each quota holder. For example, a holder who has 1 percent share in a fishery with a TAC equal to 100 tons would be allocated a maximum of one ton of fish to catch for the season. Usually, IFQs are transferable on both an annual and long-term basis.

2. The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 establishes guidelines on the use of LAPPs in U.S. fisheries. See NMFS (2007).

3. Sector managed quota is a group of fishermen voluntarily joining together to manage the group’s combined quota allocation.

4. TURF is an acronym coined by the fisheries economist Francis Christy (1982).

5. In New Zealand IFQs are referred to as ITQs, or Individual Transferable Quotas, highlighting the ability to sell or lease them.

6. These companies provide other functions for quota holders such as product marketing and representation in reforming fishery policy.

7. SEAFIC is an industry owned company with its shares held by commercial stakeholder organizations (CSOs) that include private fishery management companies. As shareholders, these CSOs form the bulk of the membership of the

council. Online: www.seafood.co.nz/n392,67.html.

8. In the case of Challenger, the management plan was put into action by an individual contract between the management company and each combination of vessel operator (skipper), quota owner, quota leaseholder, and processor participating in the fishery. Contract adherence is accomplished, in part, by agreed damages specified in the contract for such violations as breach of catch limits, closed fishing areas, or other provisions, such as catch and landing reporting obligations.

9. The 1980s were the period of peak harvests, followed by a period of declining harvests in the 1990s. The last five years have seen the lower harvests stabilize to about one-fourth what they were in the 1980s.

10. They may be loosely connected by dispersed larvae.

11. At the moment, the SDWA is trying to figure out how the fishery might be subdivided into smaller areas that mimic the “natural units” of the sub-populations to the extent possible.

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