

Privatizing the Commons ... Twelve Years Later:
A Study of New Zealand's Market-Based Fisheries Management

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Introduction

Fisheries management issues are receiving considerable attention. Over the last few decades the situation has become acute. For example, “of the world’s 15 major marine fishing regions, the catch in all but two has fallen; in four the catch has shrunk by more than 30%” (Weber 1994) Similarly, “eighteen fisheries have seen their productivity fall by more than 100,000 tons each. Together, these drops represent a fall of nearly 30 million tons or more than one-third of the 1992 catch” (Weber 1994). As these fisheries decline, harvesters have begun placing increased effort on other fisheries resources. Furthermore, fishing power and technology has advanced significantly-further threatening fisheries sustainability.¹ Fisheries management research has accelerated, as the scope of management problems becomes apparent. As a result, a large body of literature in economics, anthropology, political science, and other social sciences addresses problems and innovations in fisheries management. Much of this literature focuses on fisheries as an example of common property resource (CPR) management.

A central concern of literatures addressing common property resource (CPR) management is the characteristics of institutions used to manage CPRs. According to Charles (1992), there are three distinct schools of thought dominate the fisheries literature: Conservation, Rationalization, and Social/Community. Thinking of these in terms of the wider policy literature, these can be identified as: bureaucracy-based, market-based, and community-based regulation. Charles describes each approach as occupying one point of a triangle. Each policy approach has a distinct theoretical

¹ It is also argued that there a significant changes regionally in biological productivity based on cyclical changes in marine climate.

perspective, which is summarized in Appendix A and Appendix B. (See for example: Copes 1995, 1996; Davis & Bailey, 1996; Hahn et al , 1998; Lee, 1986; McCay, 1998; Palsson & Helgason, 1996; Scott, 1955; Terrebonne, 1995; Young & McCay, 1995.)

New Zealand's Quota Management System (QMS), with its emphasis on individual tradable quotas (ITQs), removal of subsidies, and promotion of international export is viewed as a long-standing example of the market-based approach. Also, as the earliest (1986) nation to introduce a market-based quota management system (QMS) for most of its marine fisheries, New Zealand presents a useful opportunity to study the influence that this regulatory approach has on the fishing industry and community. The length of time New Zealand's QMS has been in place means that it is possible to conduct a long-term analysis of both the strengths and weaknesses of this regulatory approach. After a review of the literature surrounding ITQs and an overview of New Zealand's QMS, this study uses a variety of sources to examine changes that occurred in the Auckland region's fishing community. This study primarily relies upon data from a panel survey (dating from the policy's inception in 1986-87, 1995, and 1999) of fishers, as well as a 1999 survey of companies.

Literature Overview

Although the market-based approach has existed within the fisheries and CPR management community for a considerable period of time, (e.g., Gordon, 1954; Scott, 1955; Kneese and Schultze, 1975) it emerged as an important policy tool during the 1980s and 1990s. A few factors may have contributed to the emergence of this approach:

economic principles and concepts spread to a variety of academic disciplines (including natural resource management), and criticism of the bureaucracy approach helped create an environment more favorable to the market-based approach. As a result, a growing number of policy analysts began to explore or advocate the use of a market-based approach rather than a bureaucracy-based approach. (E.g., Maloney and Pearse, 1979; Clark, Major and Mollet, 1988; Green and Nayar, 1988; Schlager, 1990; Pearse and Walters, 1992; Squires, Kirkley, and Tisdell, 1995)

The two countries that have the most experience with the market-based approach are New Zealand (e.g., Clark, 1994; Sharp, 1997, 1998; Mace 1993; Boyd and Dewees 1992; Dewees 1989; McClurg, 1994, Mace 1993) and Iceland (e.g, Eythorsson, 1996a, 1996; Palsson and Helgason, 1995; Eggertsson, 1996; Matthiasson, 1997). Of the two, New Zealand is usually presented as the “success story,” while Iceland is often subject to more critical evaluations. Other countries are also experimenting with ITQs, including the United States, (Buck, 1995) Canada, (Grafton, 1996; Buck, 1995) the United Kingdom, (Hatcher, 1997) and Australia (Sanders and Beinssen, 1997). Based on the experiences in these countries and the research generated by their experiences, it is possible to make some generalizations about the market-based approach. The primary emphasis is on the economic efficiency and productivity of the fishing industry, while maintaining fish stocks at a sustainable level. The primary policy instrument is a system of tradable permits often referred to as individual tradable (or transferable) quotas (ITQs). While variations on ITQs exist (e.g., leasing, measuring by tonnage vs. proportion of catch, use of ITQs as loan collateral), ITQs can be defined as:

A specific portion of the total annual catch in the form of quota shares ... ITQs divide the total allowable catch quota into smaller individual portions. ITQs are generally transferable, which means fishing vessel owners can sell their ITQ certificates or buy others' certificates (Buck, 1995)

The theory of ITQ management in fisheries has been supported by modeling² and theoretical analysis. (e.g., Terrebonne, 1995; Arnason 1991; Grafton 1995; Charles 1992, 1988) Essentially, the market-based approach views fishers as individual fishing firms that wish to maximize their returns on their investment.. Thus, while the bureaucracy-based approach focuses on inputs, the market-based approach tends to focus on outputs (the amount of fish removed). This approach has been embraced within the resource economics community, and is gaining support in corporate fishing industry. Its biggest critics tend to be supporters of the community based model (Charles, 1992)

Analysts suggest that there are several positive outcome associated with this approach. First is economic efficiency and higher incomes for fishers and the fishing industry. (e.g., Beckerman 1990; Clark 1994; Clark 1993; Clark, Major, and Mollett 1988; Grafton 1996) This can help modernize the industry (e.g., Clark, Major, and Mollett 1988), help prevent overcapitalization,³ (e.g., Buck 1995; Grafton 1996) and help eliminate fishing derbies (e.g., Grafton 1996). It is also perceived as an effective means for stock conservation since it sets a limit (or a total allowable catch – TAC) for the total harvest (e.g., Boyd and Dewees 1992; Clark 1994). The system also can be adaptable since the TAC can be set yearly or

² For example, Terrebonne modeled entrepreneurial fishers with heterogeneous production and employment opportunities outside of the fishery. He found that under the open access model, fishers' income is proportional to the price that they receive for their catches. He also found a reason for fishers to support the use of ITQs, because under his model fishers received more income under the ITQ model than the open access model.

seasonally, allowing adjustments for stock changes (Squires, Kirkley, and Tisdell 1995). Finally, since the TAC and ITQs are set, fishers and processors are able to make better operational decisions and investments (Clark 1994).

However, there are also potential negative outcomes of the market-based approach.⁴ Industry consolidation and loss of small fishers are often viewed as negative results of the market-based approach (e.g., Young and McCay 1995; Palsson and Helgason 1996). Others describe a variety of social problems such as unemployment (e.g., Squires, Kirkley, and Tisdell 1995; Palsson and Helgason 1996) coupled with loss of community and damage to existing local institutions (e.g., Ostrom 1990; Schlager 1990; Palsson and Helgason 1996). Also, equity problems are created as ITQs are consolidated among the largest fishers, and new entries (fishers) to the system are restricted (Palsson and Helgason 1996).

The market-based approach also experiences some problems similar to those in the bureaucracy approach. For example, cheating is shifted to different forms such as high-grading (throwing back fish of lesser economic value), dumping by-catch (throwing back fish for which they don't have quota) and other forms of quota busting⁵ (e.g., Schlager 1990; Copes 1996a; Copes 1995; Copes 1996b; Halliday, Peacock, and Burke 1992; Turner 1997). The market-based approach also relies on an accurate understanding of the fisheries population dynamics to accurately set the TAC. If the TAC is inaccurately set, a fishery can

³ However others (e.g., Schlager, 1990) argue that ITQs encourage overcapitalization.

⁴ It is also interesting to note that many of these problems are social issues that are not addressed in the economics literature that supports this approach; or the problems are the “flip side” of what is described by market-bases supporters as a positive outcome. See Tables 1 and 2 for further illustration of this point.

⁵ Other forms of quota busting include false reporting of catch information and diverting catch to a gray or black market so that it is outside of the monitoring system

be decimated, possibly before scientists have an opportunity to discover and correct the error (e.g., Loayza 1994; Mace 1993; Sissenwine and Mace 1992).⁶

New Zealand's Quota Management System

As one of the oldest tradable quota systems in fisheries management, New Zealand's Quota Management System (QMS) provides an excellent opportunity to evaluate the market-based approach that has attracted so much positive and negative attention in the fisheries management literature. A broad overview of the New Zealand fisheries management system shows that the 200 Mile Economic Exclusion Zone (EEZ) covers an area of 1.2 million square nautical miles or approximately 15 times New Zealand's land mass. (See Figure 1.) There are approximately 1000 species in the EEZ, of which 100 are considered commercially significant. (Statistics New Zealand, 1999) In the 1996/7 fishing season, 33 species were under quota management as 185 separate fish stocks. These stocks totaled approximately 531,000 tons of quota-managed species, and 79,000 tons on species not under quota management (Clement & Associates, 1998). In 1997, the marine fishing sector accounted for 4,180 full-time equivalent jobs, and there were 2,17- domestic vessels, 59 foreign charter vessels, and 16 foreign licensed vessels. In 1995, seafood exports accounted for NZ\$1.2 billion, with the top species being squid, orange roughy, hoki, and rock lobster (Statistics New Zealand, 1999). With the exception of lobster, these are all mid to deep water species requiring large-scale fishing operations.

⁶ An excellent example of this (described in detail by Mace) is the ongoing controversy over what constitutes a sustainable fishing level for New Zealand's Orange Roughie. But one should also ask: would the situation been different if it were managed without ITQs? Is bad stewardship (or inaccurate estimates) bad stewardship under any system!

Historically, New Zealand had little widespread interest or concern with fishing or fisheries management. A small proportion of the country continued to fish professionally with a deep commitment to the industry (Makarios, 1996; Martin, 1969; Slack, 1969), and a few fishing companies such as Sanfords have long histories (Titchner, 1981). But New Zealand as a whole was more focused on other primary industries such as farming and forestry.⁷ In fact, until the declaration of New Zealand's Economic Exclusion Zone (EEZ) in 1978, New Zealand's fishing industry was small, and confined to a domestic inshore industry. There was no New Zealand deepwater fishing. Instead, these waters were fished by other nations' trawlers – primarily trawlers from Korea, Japan, and the former Soviet Union:

Management of fisheries during this time was ... characterized by fundamental changes. From 1938 to 1963 the fishery was managed under a restrictive licensing system with very tight controls. In 1963 the fishery was completely deregulated and remained that way, by and large, until 1980 when a moratorium on issuing further wet fish permits was introduced" (Clark, 1993: 340).

This minimalist approach began to change in 1978 when New Zealand claimed its EEZ. Then in 1983, with clear warnings of an imminent collapse of the inshore fisheries at hand, the Fisheries Act of 1983 was passed – introducing property rights as tradable quotas, and incorporating biological preservation and economic development into fisheries management (Clark, et al., 1988). In 1986 legislation, QMS was expanded to deepwater fisheries.

Over the last 15 years, the scope QMS has expanded and changed in some details (e.g., switch from tonnage-based quota to proportion-based quota; and from resource

⁷ Indeed, between two prominent New Zealand history books there is no discussion of fishing or the fishing industry, but over 30 index references to farming (Barber, 1989; Sinclair, 1997). But this ignores the native

rental funding to cost recovery funding; introduction of Maori rights), but the fundamental principles of the system have remained constant. The QMS can be seen as having two primary goals – maintaining (or building) healthy fisheries, and doing so in a manner that encourages an economically efficient industry. Within these two broad goals, wide ranges of more specific objectives have been articulated (e.g., Clark, 1993; Clement, 1997).

As might be expected, New Zealand's QMS has attracted considerable attention from both the policy and CPR communities. Literature on QMS is primarily descriptions of how QMS worked (e.g., Clark et al, 1988; Sissenwine and Mace 1992; Batkin, 1996; Annala, 1996) or economic analyses that highlighted the success of QMS in conserving resources and encouraging economic performance (e.g., Clark, 1993; Sharp, 1997; Batstone and Sharp, 1999). (Exceptions to this are Renee, 1998; Duncan, 1993; Wallace, 1998.) Other articles focus on specialized issues such as: enforcement (McClurg, 1994), stock assessment (Mace, 1993; Annala 1993;), and more recently the development of co-management organizations (e.g., Harte, 1998; Hughey et al, 2000). Literature on the socioeconomic effects of QMS has been limited primarily to the rural Northland and/or Maori communities (e.g., Fairgray, 1986; Cassidy, 1995). The exception to this is Dewees' continuing research on the social consequences of QMS (e.g., Dewees, 1989; Boyd & Dewees, 1992; Dewees, 1996a Dewees 1996b; Dewees, 1998). This paper is a continuation of that effort: extending the panel data survey for Auckland region fishers to include 1986-87, 1995, and 1999; as well as national data on the characteristics and composition of the industry over the same time period.

Maori population who have a long fishing tradition but until recently were not actively considered in national fishing policy.

Changes in the Fishing Industry

As one of the first nations to adopt an ITQ system, New Zealand provides an important case for studying the effects of this management approach, not only from a biological and industrial perspective, but also from a more social perspective. For example: has the character of the industry changed; have attitudes towards the management approached changed; is the approach perceived as work?. The following is a preliminary effort to explore those changes.

*Historic Auckland Region Surveys*⁸

Assessment of the effects of the implementation of QMS has been an ongoing project. The first survey was conducted over a nine-month period in 1986-7. Subsequent surveys were conducted in 1995 and 1999. The initial list of commercial fishers and fishing company managers came from an unstratified random sample of 100 fishers on the list of provisional quota holders in the Auckland region. (see Dewees, 1989 for a detailed explanation). Subsequent surveys were based upon the list of 62 fishers and company managers in the initial survey. Small-scale fishers (those with one or two boats under 20 meters) dominate the sample, with a limited number of large vertically integrated companies based in the Auckland region. Table 1 presents summary results of the surveys. These results represent a preliminary analysis of the data.

Table 1: Response to Auckland region survey in 1987, 1995, and 1999.

| | 1987 | 1995 | 1999 |
|--------------------------------------------------------|----------|----------|----------|
| Number interviewed | 62 | 52 | 40 |
| Number (%) who own Quota | 49 (79%) | 34 (65%) | 19 (48%) |
| Positive ITQ Effects (% of subjects mentioning) | | | |
| Conserve fish stocks | 53 | 50 | 60 |
| Provide asset/security | 42 | 27 | 13 |
| Reduce effort | 23 | 13 | 5 |
| Improve quality | 0 | 19 | 3 |
| ITQ Problems (% of subjects mentioning) | | | |
| Highgrading | 66 | 25 | 3 |
| Enforcement | 40 | 21 | 28 |
| Company control | 26 | 46 | 30 |
| Resource allocation | 6 | 33 | 53 |
| Complexity | 0 | 35 | 63 |
| Percent Agreeing with Statements | | | |
| Fishing industry better off | 58 | 76 | 63 |
| ITQs compatible with beliefs | 56 | 73 | 48 |
| ITQs conserve stocks | 56 | 68 | 63 |
| Fishing is safer with ITQs | 39 | 50 | 13 |
| My economic situation improved | 48 | 45 | 50 |
| More secure about retirement | 73 | 64 | 28 |
| Difficult for young to enter | 95 | 98 | 85 |

Survey results suggest some noteworthy trends over the lifetime of QMS. First, there has been a pronounced decrease in both the number of participants interviewed and the percent of those interviewed who owned quota. The decrease in participants has been steady (roughly ten every survey wave). But the reduction in ownership in quota ownership is more precipitous, starting at 79% in the first wave, then 65% in the second wave and 48% in the third wave. The decrease in the number interviewed is not surprising. Indeed, of the original 62, five had died or were too sick to be interviewed, and 12 could not be located – even on regional voter rolls. However, the decrease in the

⁸ Please Note: this a preliminary analysis in which significance testing is not provided. Basic statistical tests such as chi-square and proportion testing proved inappropriate for such low N work. Future analyses will include more sophisticated significance testing.

proportion of quota owners from 79% to 48% may be indicative of an aggregation in quota ownership suggested in the literature.

When examining opinions, there is no consistent pattern of trends in opinion emerging from the survey. However, a variety of changes warrant attention. Indeed, out of the sixteen questions summarized above, consistent trends emerged in eight. In other questions, trends were either inconsistent (e.g., “Improves Quality”) or showed stability over time. (e.g., “My economic situation improved”) Among those questions showing clear trends, the most positive results are in enforcement. Highgrading has dropped from being mentioned as a problem from 66% of participants to 3% of participants.⁹ Similarly 28% of 1999 participant and 21% of 1995 participants mentioned enforcement problems, compared to 40% in the 1987 survey.

However, more of the trended results suggest a growing discontent with QMS. For example, fewer participants mentioned positive results such as quota being an asset or reducing effort in the fishery; and dramatically more mentioned resource allocation problems (from 6% in 1987 to 53% in 1999) and complexity issues (from 0% in 1987 to 63% in 1999) Results also show that fewer agree that QMS increases safety (from 39% to 13%) or provides retirement security (from 73% to 28%). In spite of these trends, participants are consistent in their agreement that the fishing industry is better off under QMS, and that it conserves fish stocks. Perhaps the best explanation of these results is that while participants feel that QMS does not help them individually, it is a positive force for the industry and the resource.

Finally, it is worth noting the lack of consistent trending between the three waves of the survey. Of the reported results, over half reported inconsistent trending over time,

and most of these initially showed optimism (in the comparison of the 1995 and 1987 results) then pessimism (in the comparison of the 1995 and 1999 results). For example, the percent of participants who agreed that “QMS was compatible with their beliefs” rose from 56% in 1987 to 73% in 1995, then fell to 48% in 1999. Similarly, the percent of participants who agreed that “fishing is safer” with QMS increased from 39% in 1987 to 50% in 1995, then decreased to 13% in 1999. An explanation for this is the increased expense and complexity that occurred within QMS between 1995 and 1999. Examples might include the 1996 Fisheries Act which included penalties that many fishers described as “draconian,” a rapid increase in cost recovery fees (in part brought on by increased environmental requirements in the 1996 law), and a growing frustration with the failure to reach a final distribution of the Treaty of Waitangi Settlement (Maori fishing right settlement) that was signed in 1994. Another possible explanation specific to the Auckland Region surveys is that the sample was dominated by the small scale fishers who are in a difficult environment including pressure on the snapper fisheries from recreational fishers (snapper is one of the dominant commercial fisheries in the region – particularly for small-scale fishers), cutbacks in snapper TACs, competing for facilities such as docking space.

1999 Auckland Region Survey Detailed Analysis

An interesting aspect of the 1999 Auckland regional survey is the degree to which the population of the survey is splitting into distinct groups. Table 2 (below) shows three distinct groups of participants. First, a distinction can be made between those who own

⁹ However, this may also represent an acceptance among fishers of highgrading as a standard practice.

quota and do not own quota. Second, a distinction can be made between those who are still active in the fishing industry and those who are not. Both the “active” and “inactive” categories in this group contain a mix of quota owners and non-owners. (For example, a person may have retired from fishing and thus be considered “not involved” but still own and lease out quota). These grouping show some differences in opinions and outlooks between quota owners and non owners; and between current and former fishers.

Table 2: Responses to 1999 Auckland Region Survey by Ownership and Activity

| | Quota Owners | Non Quota Owners | Currently Fishing | No Longer Fishing |
|--------------------------------------------------------|--------------|------------------|-------------------|-------------------|
| Number interviewed | 19 | 21 | 26 | 14 |
| Positive ITQ Effects (% of subjects mentioning) | | | | |
| Conserve fish stocks | 58 | 62 | 69 | 42 |
| Provide asset/security | 21 | 4 | 15 | 7 |
| Reduce effort | 5 | 5 | 4 | 7 |
| Improve quality | 5 | 0 | 4 | 0 |
| ITQ Problems (% of subjects mentioning) | | | | |
| Highgrading | 5 | 0 | 4 | 0 |
| Enforcement | 42 | 14 | 33 | 14 |
| Company control | 21 | 38 | 27 | 36 |
| Resource allocation | 63 | 43 | 58 | 36 |
| Complexity | 68 | 57 | 65 | 57 |
| Percent Agreeing with Statements | | | | |
| Fishing industry better off | 63 | 62 | 65 | 57 |
| ITQs compatible with beliefs | 37 | 57 | 46 | 50 |
| ITQs conserve stocks | 53 | 71 | 62 | 64 |
| Fishing is safer with ITQs | 11 | 14 | 15 | 7 |
| My economic situation improved | 53 | 48 | 50 | 50 |
| More secure about retirement | 37 | 17 | 23 | 36 |
| Difficult for young to enter | 79 | 90 | 81 | 93 |

Perhaps the largest difference of opinion exists between current quota owners and the non-owners who chose to sell out of QMS. The differences tend to be more and larger than those between active and inactive fishers. Perhaps the difference is best characterized as owners are more optimistic on longer-term issues than non-owners; but

they express more immediate frustration with the management of QMS. For example: 21% of owners mentioned that QMS provided an asset, compared with 4% of non-owners, and 37% of owners agreed that QMS made them more secure about retirement compared with 17% of non-owners. However, on more immediate issues, the owners are considerably more pessimistic than non-owners. For example, a higher percentage mentioned problems such as enforcement (42% vs 14%); resource allocation¹⁰ (63% vs 43%); and complexity issues¹¹ (68% vs 57%). There was also a smaller proportion of quota owners agreeing with statements such as “ITQs are compatible with my beliefs (37% vs 57%) and “ITQs conserve the stocks I/my company fish for” (53% vs 71%).

A notable exception to this was 38% of non-owners mentioning problems with company control compared to 21% of owners. This may be because non-quota owning fishers must lease quota from processing companies in order to fish, and are usually then required by contract to sell their catch to these companies at prices set by the processing companies. Some fishers refer to this situation as the processing companies being the “lords” while the fishers are the “serfs” or “peasants.” Overall, however, the pattern of the quota owners being more optimistic in the long term, but more pessimistic in the short term remains. There are several possible explanations for this. One is that, as suggested by the property rights literature, ownership is shifting perspectives to a longer time horizon. A competing explanation might be that those with the least confidence in the system have voted with their feet by selling their quota.

¹⁰ “resource allocation” refers to issues such as being able to buy or sell quota, the price at which quota is available, and whether quota is available to lease.

¹¹ “complexity issues” refers to issues such as problems processing paperwork, time and money spent on complying with reporting requirements, difficulty in understanding and complying with rules, or obtaining information necessary to comply with rules.

Differences between current and former fishers also exist, and to a certain extent fit the pattern seen with non-owners vs owners. Current fishers express a more positive longer-term view of the fishing industry than former fishers. A higher proportion mentioned conservation of fish stocks as a positive effect (69% vs 42%) and agreeing with the statement that “the fishing industry is better off” with QMS (65% vs 57%). However, the current fishers also express greater frustration with the day to day aspects of QMS. For example, a higher proportion mentioned enforcement problems (33% vs 14%); resource allocation (58% vs 36%); and complexity issues (65% vs 57%). An explanation for this pattern may be that the current fishers are broadly more optimistic than those who left fishing, but due to their greater exposure to QMS, they express greater frustration with more routine aspects of the management approach.

Finally, it is worth noting that all four groups consistently raised concern about the future of the fishing industry in terms of the recruitment of new fishers. An overwhelming majority of participants (79% of quota owners, 90% of non-quota owners, 81% of current fishers, and 93% of former fishers) agreed that QMS makes it more difficult for young people to enter the fishing industry.

Comparison of 1999 Auckland Small Scale Fishers and North Island Company Surveys

In addition to the 1999 Auckland survey, an additional survey was conducted to obtain information on the opinions of company managers in both the North and South Islands of New Zealand. This survey was based on the Auckland panel survey, with a few questions removed as inappropriate for the corporate setting.¹² Table 3 (below) presents a comparison between the small-scale fishers in the Auckland survey (all

current fishers who are not company managers) and companies based in the North Island.¹³

Table 3: Responses by 1999 Auckland Region Small-Scale Fishers and North Island Fishing Company Managers

| | Small-Scale Fishers | Company Managers |
|--------------------------------------------------------|---------------------|------------------|
| Number interviewed | 23 | 17 |
| Positive ITQ Effects (% of subjects mentioning) | | |
| Conserve fish stocks | 70 | 47 |
| Provide asset/security | 9 | 18 |
| Reduce effort | 4 | 0 |
| Improve quality | 4 | 6 |
| ITQ Problems (% of subjects mentioning) | | |
| Highgrading | 4 | 0 |
| Enforcement | 39 | 12 |
| Company control | 30 | 6 |
| Resource allocation | 70 | 18 |
| Complexity | 70 | 53 |
| Percent Agreeing with Statements | | |
| Fishing industry better off | 61 | 94 |
| ITQs compatible with beliefs | 39 | 94 |
| ITQs conserve stocks | 57 | 94 |
| Fishing is safer with ITQs | 17 | 35 |
| Difficult for young to enter | 78 | 94 |

With three exceptions¹⁴ these results show the company managers as consistently more satisfied and optimistic about QMS than the small-scale fishers. These managers particularly show this in their responses to the broader, more philosophical questions.

For example dramatically more agree that the “fishing industry is better off” under QMS

¹² For example, agreeing or disagreeing with “my retirement is more secure” under QMS

¹³ Since the North Island company survey covers a larger geographic area than the Auckland fisher survey, this cannot be considered a perfect analysis of the differences between companies and small scale fishers in the Auckland region. But, given the fact that the number of companies in the Auckland region is too small to allow an exclusive comparison, it does allow a basic comparison of the general differences in opinions between small scale fishers and companies. An important caveat to this analysis is that the Auckland region’s fisheries are considered by many to be under greater stress than most other fishing regions, so the small scale fishers in this survey may be more pessimistic than those in a national sample.

¹⁴ The percent of respondents mentioning conserved fish stocks as a positive effect, the percent mentioning reduced effort as a positive effect, and the percent who agree that QMS makes it more difficult for young people to enter fishing

(94% vs 61%) and that QMS “is compatible with my beliefs” (94% vs 39%). Company managers also consistently show lower levels of concern over problems with QMS – especially in categories such as resource allocation (18% vs 70%), enforcement (39% vs 12%), and complexity (53% vs 70%). These results appear to illustrate a greater satisfaction with QMS for company managers versus small-scale fishers. This would suggest that (as predicted by the literature) QMS has created a setting in which the larger scale companies are favored over the small scale fishers. In other words, QMS may indeed be more favorable to the larger companies compared to smaller fishers.

Analysis and Conclusions

This preliminary analysis focuses on a small part of New Zealand’s Quota Management System: the evolution in the opinions of Auckland region fishers and company managers towards QMS as a management approach. Attrition from the survey and the proportion of remaining participants who own quota suggest that ITQ-based systems like New Zealand’s QMS do indeed encourage what might be described as an industry consolidation predicted by the literature. This process appears to result in a variety of effects – both positive and negative. There is broad agreement that the fishing industry as a whole is better off under QMS, and that QMS preserves the fish stocks. Since these are the two main goals of QMS, it does speak positively for the approach.

However, survey participants also expressed a body of concerns that warrant careful attention. Over time, there is a decline in the proportion of survey participants agreeing that QMS provides retirement security, and that QMS is compatible with their belief systems. There is also a decline in the percent of mentioning that QMS provides an asset or security. Since one of the fundamental principles of an ITQ-based system is

that quota is seen as a long-term asset worth investing in, this suggests that there may be a weakening in the “currency” of QMS. Furthermore, survey participants are consistent in expressing concerns over the complexity of QMS and the barriers young people face entering a QMS-managed fishery. It is unclear whether these concerns show a coming weakness in the industry or a growing professionalization in the industry.

Finally, there is some evidence for the split between “classes” of fishers described by some of the literature critical of ITQ-based management. Broadly speaking, our results identify a split between companies and small-scale fishers, and between quota owners and non-owners. This split shows the companies and quota owners being broadly more optimistic than their small scale or non-owning counterparts. These results suggest a disenfranchisement of the smaller, more traditional fishers, and raises questions about how the characteristics of the fishing industry will change in the long term.

Based on these results, we propose that market-based regulation is neither the panacea nor the curse that some characterizations suggest. Instead, it is a policy tool with an important mixture of strengths and weaknesses that create important and long-lasting changes on the fishing industry, fishing community, and regulatory community associated with it. Nations or fisheries considering quota-based management systems need to carefully set management goals and reflect on the set of changes and challenges they are likely to face if they adopt a market-based management approach.

**Appendix A: Characteristics of each approach to fisheries management
(Imperial & Yandle 1998)**

| | <u>Bureaucracy-Based Approach</u> | <u>Market-Based Approach</u> | <u>Community-Based Approach</u> |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary Emphasis | Stock protection and maintaining fisheries at sustainable levels | Wealth generation for the fishing industry | Community control over the fishery |
| Competing Objectives | <ul style="list-style-type: none"> - Conservation - Resource maintenance - Administrative efficiency - Accountability | <ul style="list-style-type: none"> - Market efficiency - Productivity - Resource maintenance - Accountability | <ul style="list-style-type: none"> - Fisher control - Community welfare - Distributional equity - Other social/cultural benefits - Resource conservation |
| Resource Ownership | Government: Property rights held by state | Fishers: Property rights allocated through ITQs to boat owners/fishers | Community: Property rights held by community or group of individuals within community |
| Vision of Fishers | Components of predatory fleet | Individual fishing firms acting in economically rational manner | Members of cohesive community |
| Policy Tools | Focus is on regulating inputs: <ul style="list-style-type: none"> - Licenses - Gear restrictions - Seasonal restrictions - Closures | Focus is on regulating the outputs using primarily ITQs <ul style="list-style-type: none"> - % of TAC - Tonnage | Mixed inputs and outputs selected by self-regulation or co-management <ul style="list-style-type: none"> - Gear limits - Seasonal restrictions - Location restrictions - Rotating pressure - Ownership of fishing grounds |
| Cheating Behavior | <ul style="list-style-type: none"> - Illegal gear - Fishing during closures or in closed areas - Violating catch limitations - Reporting false catch information | <ul style="list-style-type: none"> - Quota busting (high grading and discarding) - Off loading - Leakage from monitoring system (e.g., reporting false catch information) | <ul style="list-style-type: none"> - Violating communal rules (e.g., gear limits, etc.) - Outsiders violating the fishing rules |
| Enforcement Focus | Fines or license revocation for violating rules of gear, closure, etc. | <ul style="list-style-type: none"> - Fines or forfeiture of quota for reporting violations or quota-busting activities | <ul style="list-style-type: none"> - Social sanctions and agreed upon penalties. |

**Appendix B: Perceived outcomes of each fisheries management approach
(Imperial & Yandle 1998)**

| | <u>Bureaucracy-Based Approach</u> | <u>Market-Based Approach</u> | <u>Community-Based Approach</u> |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition of Success | Rules limit total catch so that MSY is not exceeded | Quota is set so that MSY is not exceeded and market is able to operate efficiently | A community is able to maintain the fishery at a socially and biologically viable level. |
| Potential Positive Outcomes | <ul style="list-style-type: none"> - Centralized government control over resource allocation - Resource protection - Stability of the rules governing the fishery - Low administrative costs - Accountability - Equitable - Preserve small fishers | <ul style="list-style-type: none"> - Economic efficiency and higher incomes for fishermen - Eliminates capital stuffing and derbies - Stock conservation by allocating quotas - Accountability with respect to the quota - Fleet/industry modernization - Stability for fishermen and producers | <ul style="list-style-type: none"> - Locally managed - Preserves community culture and values - Preserves small-scale fishers/producers - Often minimal environmental impacts - Rent-seeking behavior with respect to negotiating fishing rights is viewed in positive terms |
| Potential Negative Outcomes | <ul style="list-style-type: none"> - Rent-seeking behavior w/respect to regulations - Agency capture by fishers, industry, or conservation groups - Inefficient - Capital stuffing and derbies - Lack of adaptability - Administrative costs of monitoring and enforcement - Scientific uncertainty with respect to whether the regulations will prevent over-harvesting | <ul style="list-style-type: none"> - Rent-seeking behavior w/ respect to quotas - Agency capture by fishing industry - Equity problems - Loss of small fishers/producers - Industry consolidation - Administrative costs of tracking quota allocations and setting new quotas - Loss of community - Scientific uncertainty with respect to whether the quota has been set correctly | <ul style="list-style-type: none"> - Subject to capture by community leaders - No external accountability - Economically inefficient - Unsafe fishing practices - Does not cope well with dramatic changes in technology, practices, stock, or culture |

Figure 1: Map of New Zealand's Quota Management System (Clement, 1997)



Works Cited

- Annala, John H. (1993) "Fisheries Assessment Approaches in New Zealand's ITQ System". In *Proceedings of the International Symposium on Management Strategies for Exploited Fish Populations*. G. Kruse et al., ed. Fairbanks: University of Alaska Press.
- _____. (1996) "New Zealand's ITQ system: Have the first eight years been a success or failure". *Reviews in Fish Biology and Fisheries* 6: 43-62.
- Arnason, Ragnar. 1991. "Efficient management of ocean fisheries". *European Economic Review* 35: 408-17.
- Barber, Laurie. (1989) *New Zealand: a short history*. Auckland, New Zealand: Century Hutchinson, Ltd.
- Batkin, Kirsten M. (1996) "New Zealand's Quota Management System: A Solution to the United States' Federal Fisheries Management Crisis?" *Natural Resources Journal* 36: 855-880.
- Batstone, C.J. and B.M.H. Sharp. (1999) "New Zealand's Quota Management System: The first ten years." *Marine Policy* 23(2): 177-190.
- Beckerman, Wilfred. 1990. *Pricing for pollution: market pricing, government regulation, environmental policy*. London: Institute for Economic Affairs.
- Boyd, R. O., and C. M. Dewees. 1992. "Putting theory into practice: Individual Transferable quotas in New Zealand's fisheries". *Society and Natural Resources* 5: 179-98.
- Buck, Eugene H. 1995. *Individual Tradable Quotas in Fishery Management*, Congressional Research Service, Washington, DC.
- Cassidy, M. (1995) "Providing for Maori Rights and Interests in New Zealand's Fisheries". Presented at: Third Australian Fisheries Managers' Conference.
- Charles, Anthony T. 1988. "Fisheries Socioeconomics: A Survey". *Land Economics* 64, no. 3: 276-95.
- _____. 1992. "Fisheries Conflict: A Unified Framework". *Marine Policy* : 379-93.
- Clark, Ian. 1993. Individual transferable quotas: the New Zealand experience. *Marine Policy* 17, no. 5: 340-352.
- _____. (1994) "Fisheries management in New Zealand". In *Managing Fisheries Resources: Proceedings of a symposium co-sponsored by the World Bank and Peruvian Ministry of Fisheries held in Lima Peru*,. Eduardo A. Loyaza, ed. World Bank Discussion Papers Fisheries Series, no. 217. Washington, DC: The World Bank.

Clark, Ian, Philip J. Major, and Nina Mollett. (1988) "Development and Implementation of New Zealand's ITQ Management System". *Marine Resource Economics* 5: 325-49.

Clement & Associates, Ltd. 1997. *New Zealand commercial fisheries: the guide to the quota management system*. Tauranga, New Zealand: Clement & Associates, Ltd.

Copes, Parzival. 1995. "Problems with ITQs in Fisheries Management with Tentative Comments on Relevance for Faroe Island Fisheries". *Nordiske Fiskersamfund I Fremtiden (Nordic Fishing Communities in the Future)*. ed. Samal Trondur Finnsson Johansen. Copenhagen: Nordic Council of Ministers.

———. 1996a. *Adverse impacts of individual quota systems on conservation and fish harvest productivity*, 96-1. Institute of Fisheries Analysis, Simon Fraser University, Burnaby, BC.

———. 1996b. *Social Impacts of Fisheries Management Regimes Based On Individual Quotas*, 96-2. Institute of Fisheries Analysis, Simon Fraser University, Burnaby, BC.

Davis, Anthony, and Conner Bailey. 1996. "Common in custom, uncommon in advantage: common property, local elites, and alternative approaches to fisheries management". *Society and Natural Resources* 9: 251-65.

Deweese, Christopher M. (1989) "Assessment of the implementation of individual transferable quotas in New Zealand's Inshore Fishery." *North American Journal of Fisheries Management* 9, no. 2: 131-39.

———. (1996a) "Fishing for Profits: New Zealand Fishing Industry Changes for "Pakeha" and Maori with Individual Transferable Quotas." Presented at: Social Implications of Quota Systems in Fisheries Workshop. Vestman Island, Iceland: 25-26 May 1996.

———. (1996b) "Industry and Government Negotiation: Communication and Change in New Zealand's Individual Transferable Quota System." 333-341 In Meyers, R.M. et al., ed. *Fisheries Resource Utilization and Policy: Proceedings of the World Fisheries Congress, Theme 2* New Delhi: Oxford and IBH Publishing Co.

———. (1998) "Effects of Individual Quota Systems on New Zealand and British Columbia Fisheries." *Ecological Applications* 8(1): S133-S138.

Duncan, Leith. (1993) "ITQs: A Critical Appraisal." In *Proceedings Of the Mini-Symposium On: Justice and the Environment: Common Property, Indigenous Rights, and Inequities of Access*. Department of Economics, University of Auckland. 1-40

Eggertsson, Thrain. (1996) "No experiments, monumental disasters: Why it took a thousand years to develop a specialized fishing industry in Iceland". *Journal of Economic Behavior and Organization* 30, 1-23.

Eythorsson, Einar. (1996a) "Theory and practice of ITQs in Iceland: Privatization of common fishing rights". *Marine Policy* 20 (3), 269-281.

_____. (1996b) "Coastal Communities and ITQ Management. The Case of Icelandic Fisheries". *Sociologia Ruralis* 36(2), 212-223.

Fairgray, J.D.M. (1986) "Individual Transferable Quotas Implications Study: Second Report: Community Issues.", Wellington, New Zealand: New Zealand Ministry of Agriculture and Fisheries, Fisheries Management Series 20.

Grafton, R. Quentin. 1996. "Experiences with individual transferable quotas: an overview". *Canadian Journal of Economics* 24(special issue): S135-S138.

Green, G. and Nayar, M. (1988) "Individual quotas in the southern blue fin tuna fishery: an economic appraisal". *Marine Resource Economics* 5, 365-387.

Halliday et al. 1992. "Development of management measures for the groundfish fisheries in Atlantic Canada". *Marine Policy* 17: 411-26.

Harte, Michael. (1998) "Guarding the Consensus: Stakeholder Participation in the Management of New Zealand's Fisheries Resources." *Public Sector* 21(4): 2-9.

Hatcher, Aaron C. (1997) "Producers' organizations and devolved fisheries management in the United Kingdom: collective and individual quota systems." *Marine Policy* 21(6): 519-33.

Hughey, Kenneth F.D. et. al. (2000) "Stakeholder Groups in Fisheries Management." *Marine Policy* 24: 119-127.

Imperial, Mark T. and Tracy Yandle. 1998. "Marching Towards Leviathan, Embracing the Market, or Romancing the Commons: An examination of three approaches to fisheries management. Paper presented at: Association for Public Policy Analysis and Management Twentieth Annual Research Conference, New York, NY October 29-31, 1998.

Loayza, Eduardo A. 1994. *Managing Fisheries Resources: Proceedings of a symposium co-sponsored by the World Bank and Peruvian Ministry of Fisheries held in Lima Peru, June 1992*. World Bank Discussion Paper Fisheries Series, no. 217. Washington, DC: The World Bank.

Mace, Pamela M. 1993. "Will private owners practice prudent resource management?" *Fisheries* 18, no. 9: 29-31.

Makarinos, Emmanuel. 1996. *Nets, Lines and Pots: A History of New Zealand Fishing Vessels - Volume 1*. Wellington: IPL Books.

- Maloney, D.G. and Pearse P.H. (1979) "Quantitative rights as an instrument for regulating commercial fisheries" *Journal of the Fisheries Research Board of Canada* 36, 859-866.
- Martin, E. R. 1969. *Marine Department Centennial History: 1866 - 1966*. Wellington: New Zealand Marine Department
- Matthiasson, Thorolfur. (1997) "Consequences of local government involvement in the Icelandic ITQ Market". *Marine Resource Economics* 12, 107-126.
- McClurg, T. (1994) "Two Fisheries Enforcement Paradigms: New Zealand before and after ITQs". In *OECD Documents: Fisheries Enforcement Issues* Paris: Organization for Economic Cooperation and Development.
- Palsson, Gisli and Agnar Helgason. (1995) "Figuring Fish and Measuring Men: the individual transferable quota system in the Icelandic cod fishery". *Ocean and Coastal Management* 28 (1-3), 117-146.
- Pearse, P.H. and Walters, C.J. (1992) "Harvesting regulations under quota management systems for ocean fisheries". *Marine Policy* 16, 167-182.
- Rennie, Hamish G. "Geographical Problems in Implementing ITQ: New Zealand's Quota Management System." Paper Presented at: Crossing Boundaries: The Seventh conference of the International Association for the Study of Common Property, Vancouver, Canada, June 10-14, 1998.
- Sanders, M. J., and K. H. H. Beinssen. 1997. "Uncertainty analysis of a fishery under individual tradable quota management: Applied to the fishery for blacklip abalone *Haliotis rubra* in the Western Zone of Victoria (Australia)." *Fisheries Research* 31: 215-28.
- Slack, E. B. 1969. "The Fishing Industry in New Zealand: A Short History". *Fisheries and New Zealand: Proceedings of a Seminar on Fisheries Development in New Zealand*, Ed. E. B. Slack Wellington: Victoria University of Wellington.
- Schlager, Edella. 1990. "Model Specification and Policy Analysis: The Governance of Coastal Fisheries." Dissertation, Indiana University .
- Sharp, Basil M.H. (1997) "From regulated access to transferable harvesting rights: policy insights from New Zealand". *Marine Policy* 21(6), 501-517.
- _____. (1998) "Fishing". In *The Structure and Dynamics of New Zealand Industries*, ed. Michael Pickford and Alan Bollard 53-86. Palmerston North: The Dunmore Press Limited.

Sinclair, Keith, ed. (1997) *The Oxford Illustrated History of New Zealand*. New York: Oxford University Press.

Sissenwine, M. P., and P. M. Mace. 1992. "ITQs in New Zealand: The era of fixed quota in perpetuity". *Fishery Bulletin* 90: 147-60.

Squires, Dale, James Kirkley, and Clement A. Tisdell. 1995. Individual Transferable Quotas as a Fisheries Management Tool. *Reviews in Fisheries Science* 3, no. 2: 141-69.

Statistics New Zealand. 1999. *New Zealand Official Yearbook 1998: 101st Edition*. Wellington, New Zealand: GP Publications

Terrebonne, R. Peter. (1995) "Property Rights and Entrepreneurial Income in Commercial Fisheries". *Journal of Environmental Economics and Management* 28, 68-82.

Titchener, Paul. 1981. *The Story of Sanford Ltd: The First 100 Years*. Auckland: Sanford Ltd.

Turner, Matthew A. 1997. "Quota-Induced Discarding in Heterogeneous Fisheries". *Journal of Environmental Economics and Management* 33: 186-95.

Wallace, Catherine. (1998) "Tradeable Quota in Practice: Decision making, Institutions and Outcomes - the New Zealand Experience over 11 years." In Eide , Arne & Terje Vassdal (eds) Proceedings of the Ninth International Conference of the International Institute of Fisheries Economics and Trade, Tromso, Norway, Vol II, IIFET, College of Fisheries Science, University of Tromso, Norway, p637-648.

Young, Michael D., and Bonnie J. McCay. 1995. "Building equity, stewardship, and resilience into market-based property rights systems". *Property rights and the environment: social and ecological issues*. eds. Susan Hanna, and Mohan Munasinghe, 87-102. Washington, DC: The World Bank