The Challenge and Strength of Rock Lobster Fisheries Governance in New Zealand: Combining Grassroots Values with Centralized Leadership

Fisheries Co-ops & Beyond: Realigning Fisheries Management
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I. Introduction

Key issues in self-governance are why co-management organizations develop, and how the characteristics of the organization influence their success. Competing theories also seek to explain why co-management (or self management) organizations exist. Traditionally, it is argued that co-management regimes grow from long-lived community based regimes (e.g., Acheson & Taylor 2001; Honneland & Nilssen 2000; Lim et al. 1995; Jentoft 1989). Closely linked are the concepts of social capital and civic engagement which Putnam (1993) identifies as key to the development of democratic self-governing societies. However, it is also argued that the co-management can develop out of strong property rights regimes that provide incentives to take on co-management or self-management responsibilities (e.g., Scott 1993; Scott 1999; Yandle 2003).

Management of New Zealand rock lobster (Jasus edwardsii and Jasus verreauxi) provides a key case for understanding these issues. This is due to New Zealand’s legislative and property rights characteristics, as well as the cultural and physical history of the rock lobster industry. Because of the rock lobster’s history as a series of localized fisheries, an extensive history of local and national cooperation existed prior to the introduction of Individual Tradable Quotas (ITQs) into rock lobster management in the 1980s. However, ITQs and their associated property rights created an incentive structure which encouraged the development of strong regional and national organizations which works with the New Zealand government to co-manage the lobster fisheries. Thus, this case shows a combination of industry activity (at the

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1 A considerable amount of acronyms and specialized terms are used in New Zealand and throughout this paper. People not familiar with New Zealand fisheries management may want to read this paper with Appendix 1: Alphabet Soup at hand as a handy cheat sheet.
local and national level) and strengthening property rights as key to the development of co-management in the New Zealand rock lobster industry.

II. Overview of the New Zealand Rock Lobster Fishery

*Description of Fishery*

Current fishing methods continue to follow primarily tradition practices, with lobster potting the main catching method and one or two person boats that sell to large processors and exporters dominating the fishery. However, since the introduction of Individual Tradable Quota (ITQ) management in 1990, there is evidence in some fisheries of a shift from owner-operators to a more vertically integrated structure. The implications of this shift are described in greater detail later. Today, rock lobster is essentially an export species, primarily shipped live to the Asian markets (although some is also sold frozen to the US). It is the third largest export species, accounting for NZ$129 million in 2000 (SeaFIC 2001: 7). Total allowable commercial catch (TACC) for the 2000/2001 season was set at 2,849 metric tonnes, a sustainable catch level set by annual stock assessment (SeaFIC 2003a:2). Today, the fishery stock assessments broadly describe fisheries that are stable or recovering from previous over-fishing, although they caution that large degrees of uncertainty remain due to incomplete information on recreational catches and the degree of illegal fishing activities (NRLMG, 2002; NRLMG, 2001a).

Rock lobster is managed as part of New Zealand’s fisheries Quota Management System (QMS), which is based on an ITQ model in which the rights to catch a certain proportion of the TACC are held. These and may be bought and sold among fishers and other interested parties. (See Yandle, 2003 for detailed description.) ITQs are the primary means of regulation, although they are supplemented by input and catching methods restrictions. Within the rock lobster fishery there is one national set of regulations and TACC for packhorse lobster (*Jasus*...
verreauxi), but the dominant rock lobster species (Jasus edwardsii) is divided into eight regions (See Figure 1 in Appendix 2). These regions correspond with the regional rock lobster industry organizations (referred to as “CRAMACs”) that are key to rock lobster co-management in New Zealand.

In addition to Quota Management System (QMS), in 1999, New Zealand passed legislation allowing an additional institutional arrangement in which some fisheries management responsibilities can be delegated from the Ministry of Fisheries to various Commercial Stakeholder Organizations (CSOs). The New Zealand Rock Lobster Industry Council (NZ RLIC), which is a national umbrella organization for the associated CRAMACs, is one of many active CSOs. Today, the NZ RLIC has a variety of responsibilities including: advocacy, providing (or coordinating) stock assessment research, assistance developing management plans and other duties. Sections below describe the history and institutional development of the rock lobster industry and co-management. This is followed by an analysis and discussion of this management approach.

III. History of Rock Lobster Management

Overview

Rock lobster catching is integral to the history of New Zealand. Indeed, the Maori who first arrived in New Zealand in the 10th to 14th centuries (Reed, 1970: 23) consider rock lobster an historically and culturally important catch. After European arrival, rock lobster continued to be culturally and economically important fishery. Nationally, rock lobster was an important export species as early as the 1940s and 1950s (Annala, 1983: 101). However, development varied regionally. For example, in the Chatham Islands, rock lobster were known and fished on

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2 Indeed, Russell Mincher’s paper for this conference profiles another New Zealand CSO with a quite different history and operational structure.
a small scale as early as 1907, (Kensler, 1969: 506) but the Chatham Islands lobster boom did not start until 1965 when one boat landed two tonnes of rock lobster (Annala, 1983a: 102), heralding the short-lived “Crayfish Bonanza” (Arbuckle, 1971:21). Similar but less dramatic booms and busts occurred in other localized fisheries.

This classic pattern of boom and bust characterized much of time for which data are available (1945-2002). This is illustrated in Figure 1 (in Appendix 2), where after an initial run-up in catching during the late 1940’s and early 1950’s, several peaks and valleys are evident in both the catch and catch per unit of effort (CPUE) for the national fishery. Since the introduction of regulation to the rock lobster fishery in 1937, managerial efforts have focused on maintaining the biological and economic viability of the fishery. A variety of managerial approaches including: licensing, catching method restrictions, limited entry, ITQs, and co-management have all been used during the last 64 years.

While history of small-scale rock lobster catching probably dates back to the settlement of New Zealand first by the Maori and later by the Europeans, regulation of the commercial rock lobster industry only began in the early twentieth century. (Table 1 provides a summary of this history and related events.)

<table>
<thead>
<tr>
<th>Years</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977 - 1979</td>
<td>Moratorium on of new permits</td>
</tr>
<tr>
<td>1980 – 1990</td>
<td>Controlled Fishery -- Fishery Licensing Authority issued limited number of fishing licences to approved commercial fishers</td>
</tr>
<tr>
<td>1986</td>
<td>QMS introduced into finfish &amp; paua (abalone)</td>
</tr>
<tr>
<td>1991</td>
<td>Introduction of rock lobster into QMS – TACCs less than catch histories</td>
</tr>
<tr>
<td>1991-1993</td>
<td>TACC Cuts in some areas</td>
</tr>
<tr>
<td>1991</td>
<td>National Rock Lobster Steering Group – 10 year plan</td>
</tr>
<tr>
<td>1992</td>
<td>Start of National Rock Lobster Management Group (NRLMG)</td>
</tr>
<tr>
<td>1993</td>
<td>CRA3 initiative to cut TACC in exchange for other management changes.</td>
</tr>
</tbody>
</table>

3 Data presented in this figure includes only the North and South Islands (i.e., it does not include the Chatham Islands) because of both the Chatham Islands’ distinctive history, and the fact that Chatham Islands rock lobster is treated as a separate stock.
<table>
<thead>
<tr>
<th>Years</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>Formation of CRAMACs and NZ RLIC, formation of SeaFIC</td>
</tr>
<tr>
<td>1997</td>
<td>NZ RLIC becomes research provider to ministry. Continues to today.</td>
</tr>
<tr>
<td>1999</td>
<td>Legislation passes allowing fishery management plans/co-management</td>
</tr>
</tbody>
</table>

**Permitted Fishing & Catch Restrictions: 1937-1980**

Annala (1983b: 6) marks regulation as beginning in 1937 with the introduction of permitted fishing (in which for the first time commercial rock lobster fishing licences were required to participate in the rock lobster fishery. Also during this time, a variety of input controls and method restrictions were introduced. These included: size limits (often varying by regions); bans on taking of egg-laden females; bans on taking of soft-shelled lobster; seasonal limits; bans on SCUBA equipment; escape gap requirements; and area closures. While the fundamentals of the permitted fishing approach remained a constant, the frequency of changes to method restrictions was dizzying. Indeed, Annala (1983b:30-31) documents approximately 60 changes to commercial and recreations catching regulations during this time period.

Concerns about the permitted fishing approach arose in the 1970s, when after a long-term run-up in catch; a rapid decline became evident (see Figure 1 in Appendix 2) leading to concerns about over-fishing and a possible stock collapse. With broad agreement from the Federation of Commercial Fishermen, the Fishing Industry Board, and the Ministry of Agriculture and Fisheries, it was decided to institute a limited entry fishery in which the number of permits issued for rock lobster fishing would be much more strictly controlled than in the past. The logic behind the decision was:

… further increases in the number of fishermen and fishing effort should be prevented in order to ensure continued yields from the fishery and maintenance of the economic well-being of the industry. The steady increase in the number of fishermen, vessels, and pots during the 1960s and early 1970s resulted in the erosion of individual incomes and increased gear conflicts. (Annala 1983a: 103)
In 1977 the Fisheries Amendment Act 1977, or the “Controlled Fisheries Act,” was passed, resulting in an immediate moratorium on the issuing of new fishing permits. Meanwhile, the Ministry of Agriculture and Fisheries (MAF) worked in consultation with industry, and held a series of 40 public meetings in the major rock lobster ports to decide how the newly controlled fishery would be administered; and the Fishing Industry Board (FIB) conducted a survey of rock lobster fishers regarding vessels, gear, methods, earnings, and opinions on management options (Annala 1983a:104). The moratorium remained in place until 1980 when the controlled fishery policy was introduced in the document “Policy Statement for the Rock Lobster Controlled Fishery” (see Annala 1983b:32-35 for copy).

Rock Lobster as a Controlled Fishery: 1980-1990

As a “Controlled Fishery,” rock lobster fishing permits were distributed by the Fishing Licensing Authority (FLA). Two types of permits could be issued: “continuous licences” were issued for multi-year periods for those who fished throughout the year and earned at least 80% of their income through fishing; and “seasonal licences” were issued for more limited periods, and had to be re-applied for annually. In issuing permits, priority was given to fishers who had a long-term documented commitment to the fishing industry and earned at least 80% of their income from fishing in general. As a result, the number of commercial rock lobster fishing permits issued nationally dropped from 1,574 vessels to 970 vessels – a drop of approximately 38% (Annala, 1983a: 107). Furthermore, new licences could only be issued if an existing licence

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4 The Fishing Industry Board (FIB) was an industry board which acted in an advisory and advocacy role for the industry. It was empowered by the government to levy the industry to pay for its activities. In 1997, the FIB was replaced by the New Zealand Seafood Industry Council (SeaFIC) which retains its levying authority, but has a substantively different organizational structure.

5 80% of income needed to be earned from fishing in general, not just rock lobster fishing. It is also interesting to note that this type of income restrictions in both the rock lobster and finfish fisheries on issuing licenses later formed part of the impetus for the filing of Treaty of Waitangi (or indigenous rights) fishery claims (Yandle, 2001).
was surrendered and the FLA decided to re-issue rather than retire the permit. Thus, through natural attrition, the FLA was further able to reduce effort in the fishery.

The controlled fishery also divided New Zealand into ten separate geographically distinct fisheries, with permits usually restricted to one region. For each region, the Fishing Industry Board organized a liaison committee consisting of fishers and processors who provided industry input into regional fishery management. A national liaison committee composed of representatives from each region also was created. As is discussed later, the formation of these regional and national liaison committees was a key step towards the development co-management in the rock lobster fishery.

*Introduction of Rock Lobster into the Quota Management System*

While rock lobster continued under controlled fishery management until 1990, the 1980s marked a key period of change in the broader New Zealand fishing industry. In 1986, New Zealand became one of the first countries to adopt market-based regulation when it instituted its Quota Management System (QMS), with its emphasis on the use of ITQs, the removal of subsidies, and the promotion of exports is viewed as a seminal and long-standing example of the market-based approach to fishery management. (See Yandle, 2001 for discussion of introduction of QMS, and Annala, 1996; Batstone & Sharp, 1999; Boyd & Dewees, 1992 for discussion of implementation and effects of QMS.)

However, rock lobster was not included in the initial roll-out of QMS. According to Sykes (2003), in the early 1980s, the Ministry of Agriculture and Fisheries originally approached the New Zealand Federation of Commercial Fishermen seeking to use paua (abalone) and rock lobster as pilot species for introducing ITQ management. However, the Federation rejected this proposal because the fishery appeared health at that time, and the Federation was wary of a
system entailing a total allowable catch (i.e., a catch limit). Thus, QMS was initially introduced in the broader fin-fisheries first, then in the mid 1980s, as pressure on stock continued to grow, the issue of bringing rock lobster into QMS was re-examined.

Discussion first took place at the national level through the National Rock Lobster Liaison Committee. Debate was centered around “New Zealand’s Rock Lobster Fishery: A Fishery at the Crossroads” (Duncan, 1985), which was prepared for the committee by the Fishing Industry Board. It outlined multiple options for fishery management, but discussion quickly centered on how and under what circumstances rock lobster could be brought into QMS. Discussion then moved to the regional and grassroots level, much of which centered on the booklet “Rock Lobster Fisheries Proposed Policy for Future Management” (MAF 1986a) which outline four policy options including: the existing system, transferable licences, transferable pot entitlements, and ITQ management. After a series of public meetings with the rock lobster industry, on October 3, 1986 the Federation of Commercial Fishermen held a vote on the four policy options. The results of this ballot (shown in Table 2) show no single policy option receiving majority support, and ITQ management receiving only 21% support (Branson, 1986).

Table 2: Results of October 1986 Rock Lobster Vote (developed from Branson, 1986)

<table>
<thead>
<tr>
<th>Policy Option</th>
<th>Votes Supporting</th>
<th>% of Total (rounded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITQ Management</td>
<td>84</td>
<td>21%</td>
</tr>
<tr>
<td>Transferable pot entitlement</td>
<td>158</td>
<td>39%</td>
</tr>
<tr>
<td>Transferable licences</td>
<td>137</td>
<td>34%</td>
</tr>
<tr>
<td>Status Quo</td>
<td>22</td>
<td>6%</td>
</tr>
<tr>
<td>Invalidated Votes</td>
<td>3</td>
<td>1%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>404</td>
<td>100%</td>
</tr>
</tbody>
</table>

In the wake of this vote, a new round of consultation was held starting in November 1986. Again, a discussion booklet – the “Rock Lobster Fisheries: Proposed Management Policy” (MAF 1986b) was released. However, this time options open for discussion were limited to a revised ITQ management system under QMS or the existing controlled fishery. In a forward to
the discussion document, the Minister of Fisheries justified this decision by noting “Transferable licences and pot limits are considered to have major shortcomings. I believe … that implantation of either of these options would not be in the long term interests of the industry or the nation” (MAF 1986b:4)

The Minister then went on to make something of an ultimatum, stating:

[The Government] does not intend, however, to impose a management system to which a substantial proportion of the industry is adamantly opposed. If after a second round of consultation with the industry, it is clear that substantial opposition to ITQs still exists, then I believe there will be no alternative but to maintain the present controlled fishery regime and to set a TAC for each controlled fishery. (MAF 1986b:4)

Thus, with the two most popular options removed, it is perhaps not surprising that the results of a second vote held on 16 April 1987 showed that “in all categories a preference for ITQs rather than a competitive TAC was clear” (Jarman, 1987:2). These results are summarized in Table 3. Overall, 71% of votes cast were for the ITQ system, 6% were for the controlled fishery with TAC, and 23% were for neither option. Sykes later described the sentiment of the day by recalling “we came into QMS reluctantly … as we got closer to 1990, there was grudging acceptance that it was going to happen and we needed to get on board to get the most concessions possible.” (Sykes, 2003). However, it should also be noted consultation with national and regional interests, as well as two votes had taken place prior to the decision.

Table 3: Results of April 1987 Rock Lobster Vote (developed from Jarman, 1987)

<table>
<thead>
<tr>
<th>Option</th>
<th>Votes Supporting</th>
<th>% of Total (rounded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITQs</td>
<td>438</td>
<td>71%</td>
</tr>
<tr>
<td>Status Quo with TAC</td>
<td>40</td>
<td>6%</td>
</tr>
<tr>
<td>Neither Option</td>
<td>143</td>
<td>23%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>621</td>
<td>100%</td>
</tr>
</tbody>
</table>

The Ministry initially planned to bring rock lobster into QMS in 1988, but Treaty of Waitangi fishery claims (i.e., rights claims by the Maori) put a temporary hold on the introduction of new species into QMS (see Moon, 1999), and rock lobster was finally brought

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6 In an appendix, a more detailed explanation for this decision was given. For transferable licences, effects of new entrants, increased effort, need for TAC, and too many license were cited; while for pot limits, Western Australia’s difficulties with pot limits and enforcement were cited (MAF 1986b:16-19)
into ITQ management as part of the 1989 Maori Fisheries Act for implementation in the 1990 fishing year. This one year delay in implementation resulted in a year of “last hurrah” intensive fishing that can be noted in Figure 1 (Appendix 2) just before the ITQ introduction.

**Rock Lobster under the Quota Management System (QMS)**

Although the introduction of rock lobster into QMS represented a period of legislative stability, a considerable amount of turbulence continued within the industry and regulatory system. This turbulence focused around both the setting of total allowable commercial catch (TACC) as well as a series of national and regional rock lobster industry initiatives on methods and approaches to maintain and improve the fishery. These events, briefly summarized below, are important for their role in developing grassroots input and thus a co-management tradition or ethic within the industry and government.

As part of the introduction of rock lobster into QMS, it was necessary to reduce the TACC for the fishery. All regions received cuts that brought their TACC below their historical documented catch, with the Southern region receiving the largest cut of 35.1% and the Chatham Islands receiving the smallest cut at 20.9% (MAF, 1990a:2). Cuts in TACC were also introduced in subsequent years, and were subject to organized discussion and contestation by national fisheries organizations.\(^7\) The extent of the initial and subsequent cuts in TACC was reached can also be observed in Figure 1 (Appendix 2).

**Management Advice and Initiatives**

In addition to discussion of TACC setting, industry was also involved in rock lobster management at the national level through two different initiatives started by Douglas Kidd, who

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\(^7\) Evidence of the degree of discussion and interaction is well-documented in letters and lobbying papers between industry organizations and the Ministry (see Ellison, 1993 and Dobson, 1991) as well as meeting minutes from internal ministry meetings where TACC reviews were conducted (MAF, 1990b).
was Minister of Fisheries during the early and mid 1990s. The first of these initiatives was the Rock Lobster Steering Committee which was convened in 1991 with the following goal:

Anticipating that some major management changes are required in this fishery, and mindful of the need to address conservation issues in a manner that provides user groups with some predictability of the management process, the Minister of Fisheries established the Rock Lobster Steering Committee to formulate a 10 year management plan for the rock lobster fishery. (RLSC, 1991: 2)

The committee formation composition (commercial fishing, recreational interests, Maori interests, conservation groups, and the Ministry of Agriculture and Fisheries) was itself important, as noted by the chairman who commented “The formation of this committee perhaps represents as shift towards a new management approach based on the direct involvement of user interests in the formulation of a forward looking fishery plan” (RLSC, 1991: i).

After intensive meeting for a year, as well as an extensive period of public comment -- which included a series of regional meetings organized by the Fishing Industry Board (FIB 1991) and comment by regional fishing groups (e.g., Foggo, 1991) – the final plan was released. It recommended that rather than focusing on a nationwide management with TACC reductions as the primary management tool, strategy should be regionally focused, and use a variety of management tools (including crackdowns on illegal fishing, handling protocols, changes in size requirements, etc) as well as TACC limits to rebuild the rock lobster fishery. Finally, the committee recommended that all management approaches be looked at as evolutionary, and that a National Rock Lobster Management Group (NRLMG) with a similar composition as the Steering Committee be created to advise the Minister on rock lobster fishery management (RLSC 1991) for the duration of the ten year plan.

The Minister did indeed accept the advice of the Rock Lobster Steering Committee, and in 1992 the National Rock Lobster Management Group was created, and its existence continues
through to today. While official composition includes all groups that participated in the Rock Lobster Steering Committee, it should be noted that participation of the environmental representative is not consistent, and that in 2001 concerns were raised about the lack of direct customary Maori\(^8\) (as opposed to commercial Maori) representation on the NRLMG (NRLMG 2002: 7; NRLMG 2001b: 10-11). As is illustrated in Table 4, over the last decade the NRLMG has somewhat changed its perception of its role from providing management advice to the Minister to that of a user forum that encourages cooperation. As the group still retains its position as primary management adviser to the Minister, this change in vision has important implications for the strength and role of regional and national organizations in developing management approaches. It also reflects a series of initiatives that have taken place during the 1990s.

### Table 4: Change Definition of NRLMG Role: 1992 versus 2002

<table>
<thead>
<tr>
<th>1992 Statement of Purpose</th>
<th>2002 Background Statement</th>
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<tbody>
<tr>
<td>“The group first met on 31 July 1992 and agreed their purpose was to provide you [the Minister] with ongoing advice relating to the management of the rock lobster fishery from a group that is representative of all interests in the fishery.” (NRLMG 1993:3)</td>
<td>“The NRLMG has not only played an important role in developing a significant level of consensus among user groups, which aids in the decision-making process, but also has encouraged the development of management initiatives throughout the country.” (NRLMG 2002:6)</td>
</tr>
</tbody>
</table>

Since the early 1990s, the rock lobster industry – either at a national level or a regional level, and either independently or a part of larger fishing organizations (e.g., the Federation of Commercial Fishermen, or the Fishing Industry Board) – has engaged in a series of management efforts with the objectives of stabilizing or increasing the rock lobster stock, and enhancing long-term revenue from the fishery. While these efforts have met with mixed success, they show a consistent pattern of industry involvement in, and often initiation of, innovative management practices. Some of these initiatives are summarized below.

\(^8\) Customary Maori is the right to catch limited amount of certain traditional species (such as rock lobster) for traditional celebrations.
Supplemental Enforcement Initiative: In 1993, the Fishing Industry Board (with cooperation of the Federation of Commercial Fishermen) entered into a contract with the Ministry of Fisheries under which the Ministry of Fisheries would provide additional enforcement of commercial and non-commercial fishing law paid for by an additional levy of 0.5% placed upon rock lobster catches (Sykes, 1993). While initial reviews in 1994 were positive (FIB, 1994), the agreement rapidly fell apart in late 1994/early 1995 after the Ministry received legal opinion that the contract was inappropriate for a government agency; and industry groups expressed frustration with the government’s lack of progress in fulfilling the terms of the contract (FIB, 1996).

CRA 3 Harvest Strategy: In the early 1990s, Area 3 (Gisborne/East Coast) was facing with declining stock, and need to make serious catch reductions if the fishery was not to be depleted. Rock lobster quota holders worked together with recreational and customary Maori interests to form the CRA 3 Users Group which developed a harvest strategy that they believed would result in the best management of the fishery, and submitted it to the NRLMG and Ministry with full support from all parties (e.g., Area 3 User Groups, 1992; Hough, 1993). Although additional negotiations and modification were required for Ministry acceptance, the harvest strategy was accepted by 1993 and elements of it remain in place today.

Data Gathering Programs: A key issue in rock lobster management is the scientific information used in stock assessment and TAC/TACC setting. However, time constraints and expense restricted the quality and quantity of data available. In response to this problem, several of the regional rock lobster fishing organizations, as well as more national-level interests began developing a series of data gathering efforts including voluntary logbook programs, tag and release programs, and efforts to hire field technicians. For example, both Area 2 (Bay of Plenty) and Area 8 (Southland) commercial fishers were early starters or adopters of logbook programs, and Area 5 (Canterbury/Marlborough) has a research committee that initiated not only commercial logbook programs, and tag and release programs but also worked with the charter sector to develop a charter logbook programs. Other regions (e.g., Area 1 (Auckland/ Northland), Area 4 (Wellington/Wairarapa/ Hawkes Bay) are cooperative when approached by national organizations to participate in data gathering, but do not initiate their own programs (Sykes, 2003)

No Tag/No Sale: An ongoing problem within the rock lobster fishery is the amount of lobster taken thorough illegal catch, then often sold on illegally to the retail or restaurant market. Since the early 1990s, the New South Wales rock lobster fishery had used a tagging program to identify legally caught lobster. In conjunction with the Fishing Industry Board, leadership in the rock lobster industry decided to design tags and experiment with a similar program in New Zealand. Once the Rock Lobster Industry Council was formed (see below) the program was trialled in the New Zealand market. While the tags were a technical success (they are now used in Australia), the program met with unexpected failure due to resistance among retailers, consumers, and restaurants. In the absence of a government requirement to use the tags, the program failed and quickly closed after its 1999 trial. (Sykes, 2003)

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9 The four elements of this proposal were: shelving 50% of TACC for 3 years, closure of the CRA3 fishery for 3 months to all fishers; increased enforcement targeted towards poaching; and decreasing of the minimum catch size for male lobster from 54 to 51 mm (Branson, 1992).
10 Most notably the modification of tail length requirements being increased to 52mm
Together, these examples illustrate a pattern of activity during the 1990s where at the national and regional levels commercial rock lobster fishers and the leadership of the rock lobster fishing industry began to take on some management responsibilities within their fisheries and the industry as a whole. As this movement progressed during the mid and late 1990s, it led to: (i) the development of the New Zealand Rock Lobster Industry Council (NZ RLIC) and the regional CRAMACS; (ii) legislation passed in 1999 allowing the government to delegate certain fisheries management responsibilities to Commercial Stakeholder Organizations (CSOs).

Development of the New Zealand Rock Lobster Industry Council

The 1990s were a period of intense activity within the rock lobster industry. Not only did the industry enter into QMS, it also took on an active role in participating in fisheries management. This was largely encouraged by the vision outlined by the Rock Lobster Steering Committee reported in the 1991 document *Towards 2001* (RLSC, 1991), and encouraged by the NRLMG. With this background, during the mid 1990s, efforts began to formalize and institutionalize this industry role in management.

As regional groups took on more responsibility, they began to need more structure and thus formed or revitalized formal organizations. At the same time, the need for national coordination and support of regional activities was rapidly growing beyond that which could be provided by the Fishing Industry Board (Sykes, 2003). As a result, a series of discussion papers were developed and meetings took place during 1996 in which the concept of the New Zealand Rock Lobster Industry Council (NZ RLIC) and its relationship with its associated regional groups (or CRAMACs as they were called) was hammered out (e.g., Sykes, 1996a; 1996b). The

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11 For example, the Southern Rock Lobster Research & Development Committee (Foggo, 1993) which was formed to support research activities; or the Otago Rock Lobster Liaison Committee (ORLLC, 1994?) which expanded its responsibilities from its former role when it was originally developed under the Fishing Industry Board with strong ties to the Federation of Commercial Fishermen’s old port associations.
result of this work was the document *Pathways to Progress* (unauthored, 1996) which was something between a manifesto and discussion document for a meeting held on 6 June, 1996. During this meeting, the NZ RLIC was formed, with the understanding that CRAMACs would form and associate with the national organization. On 15 June, 1996, the NZ RLIC announced its formation and established working relationships with organizations such as the Ministry of Fisheries (Sykes 1996c). Thus, the NZ RLIC became one of the first examples of what are now referred to in New Zealand fisheries management as Commercial Stakeholder Organizations (CSOs).

A final key development for rock lobster co-management took place in 1997 when stock assessment research contracts became contestable (i.e., made open for bids, rather than conducted through single party contracts). The NZ RLIC approached the newly formed New Zealand Seafood Industry Council (SeaFIC) fisheries scientists (see section below) as well as the traditional service provider National Institute of Water and Atmospherics (NIWA) about creating a joint venture for providing rock lobster stock assessment research. The consortium won a one year contract based on the concept of industry and government (NIWA) scientists working together with coordination and extended voluntary access to fishing boats provided by the NZ RLIC. The consortium now regularly receives multi-year contracts, and uses CRAMACs and individual harvesters as subcontractors. (Sykes, 2003)

*Development of the Seafood Industry Council and Legal Recognition of CSOs*

While the developments taking place in the rock lobster industry were remarkable, they were not occurring in a vacuum. Indeed, they took place within the larger context of the fishing industry as a whole with the similar movements towards co-management taking place in other fisheries. Organizations such as Challenger Scallop, the Orange Roughy Management Company,
and similar organizations were forming and seeking to take on management responsibilities. As this occurred, the needs for a national organization also changed. The old 1950s/1960s model of the monolithic Fishing Industry Board was no longer appropriate. Instead, the New Zealand Seafood Industry Council (SeaFIC) was formed in 1997 based upon a model of Commercial Stakeholder Organizations (or CSOs) as the building blocks, all represented on a Board of Directors which governs overall activity. Today, SeaFIC describes its role as “to promote the healthy development of the New Zealand seafood industry. This occurs through advocacy, policy development, and the provision of scientific and educational services to the commercial seafood industry” (SeaFIC 2003b)

In September 1999, legislation was passed supporting this movement towards CSOs and co-management when the 1999 Fisheries Amendment Act was passed. It delegated certain management responsibilities to “approved service delivery organizations,” or CSOs. The explanatory notes accompanying the legislation described the extent of power sharing:

Another major reform will allow the Minister to transfer responsibility for certain fisheries services to quota owner-based organizations (known as approved service delivery organizations) that meet certain criteria specified in the Bill. In devolving responsibility, the chief executive of the Ministry will no longer be responsible for delivery of those fishery services but will take on a role of monitoring and auditing the performance of approved service delivery organizations in accordance with the standards and specifications set by the Minister. (Fisheries Act 1996 Amendment Bill 1999: ii)

Furthermore, the enabling legislation notes that the Ministry must be satisfied that: “The proposed approved service delivery organization is representative of quota owners who have an interest in those functions, duties and powers” (Fisheries Act 1996 Amendment Bill 1999: §296(B)3a). Essentially, CSOs are authorized to carry out routine management activities, including research, while the Ministry maintains the role of setting management standards, enforcement, and auditing CSO activities. A change of government leadership (from the
National party to a series of Labour coalition governments) and other factors has since considerably slowed the efforts of many CSOs to take on full management responsibilities, but the 1999 legislation (which remains in place today) provides the legal framework for considerable co-management or self-management efforts within the fishing and rock lobster industries.

IV The New Zealand Rock Lobster Industry Council as a Co-Management Institution

Today, the NZ RLIC is well-established with a relatively short but well-documented track record. Thus, is possible to understand its governance structure, as well the reasons behind its development.

Organization and Purpose of the NZ RLIC

The New Zealand Rock Lobster Industry Council (NZ RLIC) is an umbrella organization composed of nine regional organizations or CRAMACs. Geographic boundaries for the CRAMACs are based on the nine regional quota management areas for the species *Jasus edwardsii*. While membership varies based on individual CRAMAC constitutions, in most CRAMACs, quota owners, quota holders, permit holders, processors, and exporters are all eligible for membership. Each CRAMAC then appoints a representative to the board of the NZ RLIC, and contributes to the national organization’s operational budget in proportion to the TACC for their region (i.e., areas with higher catches contribute more than areas with lower catches. Funding is collected through a levy on all rock lobster, which is collected as the point of catch landing. The NZ RLIC has a variety of representation and technical assistance responsibilities for its CRAMACs. These includes: advocacy activities, providing (or coordinating) stock assessment research, assistance developing management plans, and other duties. Table 5 summarizes research planned for 2003/4.
Table 5: 2003/4 Rock Lobster Research Program (developed from: NZ RLIC 2003: 8)

<table>
<thead>
<tr>
<th>Region</th>
<th>Intensive Catch Sampling</th>
<th>Tag &amp; Release</th>
<th>Vessel Logbook Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRA 1</td>
<td>15 days</td>
<td>2500 lobster</td>
<td>No</td>
</tr>
<tr>
<td>CRA 2</td>
<td>12 days</td>
<td>5000 lobster</td>
<td>Yes</td>
</tr>
<tr>
<td>CRA 3</td>
<td>28 days</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>CRA 4</td>
<td>35 days</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>CRA 5</td>
<td>None</td>
<td>None</td>
<td>Yes</td>
</tr>
<tr>
<td>CRA 6</td>
<td>None</td>
<td>None</td>
<td>Yes (voluntary)</td>
</tr>
<tr>
<td>CRA 7</td>
<td>15 days</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>CRA 8</td>
<td>None</td>
<td>5000 lobster</td>
<td>Yes</td>
</tr>
<tr>
<td>CRA 9</td>
<td>None</td>
<td>300 lobster</td>
<td>Yes (voluntary)</td>
</tr>
</tbody>
</table>

In addition, the NZ RLIC represents the rock lobster industry on the Board of Directors of the Seafood Industry Council (SeaFIC), which is the primary organization for the New Zealand seafood industry as a whole. A key point to note in the relationship between the CRAMACs and NZ RLIC is the duel top-down/bottom-up relationship. Information, expertise, and responsibilities flow in both directions of the organization. Also, sharing of information and discussions will occur between individual CRAMACs independent of the NZ RLIC.

Why the New Zealand Rock Lobster Industry Council and CRAMACs Emerged

A key question is why the NZ RLIC and the CRAMACs emerged when they did and in the form they did. An examination suggests two linked answers: a strong tradition among rock lobster fishers of involvement in the fishery; and a growth in the perceived property rights (primarily represented by ITQs) in the broader New Zealand fishing industry. Both of these explanations are explored below.

Within the rock lobster industry, there is a tradition of involvement and participation in the fishery beyond that of just catching the fish. Instead rock lobster fishers had a tradition and expectation of participating (or at least having input into) fishery management through institutions such as the port associations, lobster syndicates, and liaison committees. In many ways, these institutions and individual rock lobster fishers’ participation in them can be seen as examples of civic engagement and social capital which Putnam’s (1993) points to as a key
characteristic of democracy; or an example of the participation by resource users that Ostrom (1990) identifies as a key characteristic of successful self-governance.

A review of events over the last few decades shows a pattern of consistent but growing rock lobster fisher and fishing industry participation in governance activities. This includes:

- Historical existence of active port associations and the Federation of Commercial Fishermen (in which rock lobster fishers were a significant proportion of members)
- Consultation over decision to introduce controlled fishery
- The ability of the rock lobster industry to reject QMS in the early 1980s
- The extensive national-level debate, meetings, manoeuvrings, and votes surrounding the introduction of QMS in the late 1980s
- The development of the NRLMG and its changing role in promoting fishers’ activities
- Movement on the regional and national level towards developing regional management initiatives and scientific monitoring programs during the 1990s
- Development of the NZ RLIC and the CRAMACs in the late 1990s.

This development or accumulation of expertise and experience encouraged the emergence over time of the NZRLIC and CRAMACs as an institution capable of co-managing the rock lobster fishery with the government.

But this development of human and social capital through involvement and participation does not completely explain the puzzle of why this institution arose. While it answers the how and part of the why, it does not fully explain the motivation. Why was it worthwhile for individuals and groups to invest the considerable time, effort, and money to build this approach? The answer can be found in the large context of property rights in New Zealand’s fisheries management.

When QMS was introduced to New Zealand’s finfish fisheries in 1986, ITQs represented a simple right to extract a specified tonnage of fish from the national fisheries. However, over time, the property right ITQs represent has changed, growing to represent a more extensive bundle of rights. As QMS changed, so did the nature of the property rights ITQs represent. This series of changes is summarized in Table 6, and a more detailed discussion of this process is
available in Yandle, 2001. Among the most important changes were: the switch from tonnage to proportionality in 1990 placed the costs and benefits of stock changes on the quota owners, thus giving them an incentive to better manage the fish stocks, then rock lobster was brought into QMS. Next, the use of ITQs to settle the Treaty of Waitangi Maori right issues in 1992 strengthened the perception (and political reality) of ITQs as a perpetual ownership right. The switch from resource rentals to cost recovery in 1994 ended the symbolic acknowledgment of government ownership of the fisheries, and the incentive structure of paying for management costs encouraged quota owners to become more active in fisheries management and cost control. Finally, the legalization of stakeholder group management in 1999 recognized the management interests and rights of quota owners.

Table 6: Timeline of Events Influencing ITQs as Property Rights: 1986 – 2000

<table>
<thead>
<tr>
<th>Event</th>
<th>Description</th>
<th>Influence on Perception of Property Rights</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980 –1990 Controlled Fishery</td>
<td>Rock Lobster as a controlled fishery</td>
<td>Rock lobster fishers have extremely limited property rights as number of fishers is severely limited. Rights are non-transferable.</td>
</tr>
<tr>
<td>1986 Fisheries Amendment Act</td>
<td>Quota Management System (QMS)introduced</td>
<td>ITQs defined as a perpetually held right to harvest a specific amount of fish, while government retains ownership</td>
</tr>
<tr>
<td>Ongoing -- Security of ITQs as asset and as loan collateral</td>
<td>ITQs not well accepted as loan collateral by banks. 1996 law provided registry for liens, but loans still difficult to get.</td>
<td>Perception of ITQs as strong property right (or as an ownership right) is undermined by difficulty in obtaining loan financing.</td>
</tr>
<tr>
<td>1989/90 Switch from Tonnage to Proportional Allocation</td>
<td>Government stops entering market to change TACC. Instead, tonnage ITQ owners have rises or falls with TACC changes.</td>
<td>ITQ owners bear the risks and benefits of changes in TAC. Large companies and industry leaders saw these changes as improving property rights, small fishers saw as weakening rights.</td>
</tr>
<tr>
<td>1991 – Rock Lobster Enters QMS</td>
<td>Rock lobster enters QMS</td>
<td>Fishers in rock lobster fishery have same rights and incentives as other New Zealand fishers</td>
</tr>
<tr>
<td>1992 -- Treaty of Waitangi Settlement</td>
<td>Maori granted 10% of quota; plus half of Sealord Products (NZ$150 million); plus 20% of all new fish stocks brought into QMS.</td>
<td>Government’s use of ITQs as partial settlement of Treaty of Waitangi claims increased perceived strength of ITQs as a property right.</td>
</tr>
<tr>
<td>1994 -- Switch from resource rentals to cost recovery</td>
<td>Quota owners pay for part of the cost of management, rather than a “rental fee” for the privilege of fishing in New Zealand waters.</td>
<td>End of resource rentals symbolized a reduction of Government property rights and an increase in ITQ owner property rights. Incentive structure of cost recovery encouraged quota owners to become more actively involved in fisheries management.</td>
</tr>
</tbody>
</table>
This strengthening of property rights coincided with events in the development of rock lobster co-management, in a mutually supportive process in which strengthening property rights and engagement in management re-enforced each other over time. The result was the still evolving co-management approach that we see today in the RLIC and the CRAMACs.

V Examining the Effects of Rock Lobster Co-Management

Perhaps the most documented aspects of fisheries management are the well-known measures of outcome, such as catch or catch per unit effort (CPUE). Both these measures are presented in Figure 1 (in Appendix 2), in conjunction with the key events in the rock lobster fishery. This shows that since QMS and the later development of co-management, catch levels have been brought reduced through TACC reductions; and CPUE has increased – indicating an increased return for effort in the fishery. Similarly, scientific stock assessments (e.g., NRLMG 2002; NRLMG 2001) appear consistent in their assessment that the stocks are safely managed – given the degree of uncertainty surrounding recreational and illegal catch. However, QMS and the development of co-management are so intertwined that it is difficult to tease out of the outcomes the roles of QMS versus co-management.

More directly observable is the effect that co-management through the NZ RLIC and the CRAMACs has had on the process of management. Here, there is clear evidence of increased participation of the fishing industry and individual fishers in the management process. At the national level, this paper has documented how the NZ RLIC acts as an advocate, research
provider, and coordinator of activities for the regional CRAMACs, and the regional CRAMACs themselves either undertake activities independently or participate in nationally coordinated efforts. This improvement in management process in itself has value, as research has indicated that resource user participation in rule-making and management activities increases compliance levels and thus the robustness of self-management regimes (e.g., Ostrom, 1990; Ostrom et al., 1994). It is reasonable to expect that a similar effect would be seen in co-management regimes.

VI Discussion

Examination of the history and development of co-management in the New Zealand rock lobster industry provides an opportunity to learn lessons from the past, assess the current situation, and make some tentative conclusions about what may be applied to other fisheries.

Historical Lessons

Perhaps the most well-documented historical lesson is that the development of co-management in the form of the NZ RLIC and the CRAMACs was a long-term (multi-decade) process that involved both the development of social capital and management experience within the industry, and a quite remarkable expansion in property rights within the New Zealand fishing industry as a whole. The combination of these two factors contributing to the development of co-management is important for both confirming academic theory, and for providing a road map for future development. While we must be hesitant about drawing broad policy conclusions from a single case, the continuing development of co-management throughout New Zealand’s fisheries (see Yandle, 2003; and Mincher 2003 – Russell Mincher’s contribution to this conference) suggests that the presence of property rights in addition to social capital development are key requirements for the successful development of co-management and self-management. Thus, long-term policies encouraging the growth of these underlying factors may
be more useful to sustained success than the immediate implementation in a vacuum of legislation or regulation allowing co-management or self-management regimes.

**Ongoing Challenges**

The accomplishments of the New Zealand rock lobster industry (and the New Zealand fishing industry in general) in developing and introducing co-management are remarkable. However, the story is not yet finished. Indeed, leadership within the industry would be the first to raise issues that pose significant challenges for the future maintenance and success of this management approach. In this regard, Daryl Sykes (Chief Executive of NZ RLIC) suggests that the following two issues warrant particular attention (Sykes, 2003):

- **Separation of Commercial Catching Rights from Commercial Quota Ownership Rights:**
  When rock lobster was first brought into QMS, most fishers held both quota ownership rights (ITQs) and caught their own fish – they were owner-operators. Over the past decade or so, a transition has been underway where the ownership of ITQs are held by one individual (or company) while the catcher is another individual who holds annual catching rights (or Annual Catch Entitlement – ACE). Sykes argues that this arrangement has the potential (already starting to be seen in some fisheries) to reduce the long-term incentives that drives many owner-operators to be proactive in fisheries management and participate in activities such as voluntary data gathering. Off-the-water ITQ owners may “lack the intuitive understanding of the fishery. They’re more concerned with financial outputs than fishing”; while those fishing on ACE believe that they will not receive benefits from the long-term improvements in the fishery – “I still have to pay for my ACE every year, so what’s in it for me?” (Sykes, 2003)

- **Failure to Define All Extractors’ Rights:** When the rock lobster fishery as a whole – with the commercial, recreational, and customary Maori sectors – is examined, there are differences in how well-defined the rights actually are. Commercial rights are the most well-defined through ITQs and TACC. However, the recreational fishers’ and customary Maori fishers have less well-defined rights; even though they may often take much larger proportions of the total allowable catch. In addition, illegal catch in four regions is estimated to be higher than the TACC (Sykes, 2003). In this situation, it can be difficult for the commercial sector to justify making a significant investment in management activities such as scientific research or ITQ shelving, etc. when they believe that the proportion of the benefit that they will receive for these activities will be substantially reduced by the other sector’s take of future increases in stock. Unless this uncertainty is dealt with through increased enforcement and better definition of other parties property rights, there may be reduced incentives to continue participating in these management activities.
These concerns are real, and have the potential to undermine current and future success of this management approach. But they do not undermine the entire management approach. Instead, they should be viewed as a sign that, as it has been, New Zealand rock lobster co-management is an evolving institution that will continue to change (and hopefully grow) over time as it meets new challenges.

In a larger context, there is a growing interest world-wide in the role that co-management and self-management can play in fisheries and natural resource management. This is evident by the conference this paper is written for, as well as larger discussions of the issue among researchers, fishers, and fisheries management. But as this case illustrates, understanding how and why these regimes develop, as well as analysing the extent to which they succeed can be extremely complex. There appears to be enormous potential in this management approach, but we must be careful that we understand when and how it works, before apply it to a wide range of activities and institutional settings. While this study (and others) emphasizes the role of civil society and property rights in the development and success of these regimes, a more comprehensive understanding of these mechanisms is still needed to fully understand the totality of this approach.
Works Cited


____. 1996. “New Zealand’s ITQ system: have the first eight years been a success or a failure?” *Reviews in Fish Biology and Fisheries* 6: 44-62.


Fisheries Act 1996 Amendment Bill 1999


## Appendix 1: Alphabet Soup

<table>
<thead>
<tr>
<th>Term</th>
<th>Acronym</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catch Per Unit Effort</td>
<td>CPUE</td>
<td>Measurement of the amount of effort or input it takes to extract a certain amount of product from the fishery (e.g., amount of kg per potlift).</td>
</tr>
<tr>
<td>Commercial Stakeholder Organizations</td>
<td>CSOs</td>
<td>Organizations composed of commercial fisheries interests (usually ITQ owners) that can be delegated certain fisheries management responsibilities.</td>
</tr>
<tr>
<td>Customary Maori Rights</td>
<td></td>
<td>The right of the Maori to catch limited amount of certain traditional species (such as rock lobster) for traditional celebrations.</td>
</tr>
<tr>
<td>Fishing Industry Board</td>
<td>FIB</td>
<td>A board that acted in an advisory and advocacy role for the industry. It was empowered to levy the industry to pay for its activities. In 1997, the FIB was replaced by the New Zealand Seafood Industry Council (SeaFIC).</td>
</tr>
<tr>
<td>Fishing Licensing Authority</td>
<td>FLA</td>
<td>A government organization active at the time of controlled fisheries (1980-1990) that determined what could remain active in the rock lobster fishery.</td>
</tr>
<tr>
<td>Individual Tradable Quotas</td>
<td>ITQs</td>
<td>The right to catch a defined amount of a certain fish species. ITQs may be bought, sold, traded, etc.</td>
</tr>
<tr>
<td>Ministry of Agriculture &amp; Fisheries</td>
<td>MAF</td>
<td>The ministry responsible for fisheries management until the early 1990s. Replaced by the Ministry of Fisheries.</td>
</tr>
<tr>
<td>Ministry of Fisheries</td>
<td>MFish</td>
<td>The current government ministry responsible for fisheries management. Replaced the Ministry of Agriculture and Fisheries.</td>
</tr>
<tr>
<td>National Institute of Water and Atmospherics</td>
<td>NIWA</td>
<td>An independent government agency that is the primary provider (via a competitive bid process) for fisheries stock assessment research.</td>
</tr>
<tr>
<td>National Rock Lobster Management Group</td>
<td>NRLMG</td>
<td>A multi-sector group (commercial, govt, recreational, environmental, science) that provides rock lobster management advice to the Minister of Fisheries.</td>
</tr>
<tr>
<td>New Zealand Rock Lobster Industry Council</td>
<td>NZ RLIC</td>
<td>The national-level CSO for the rock lobster fisheries. Provides advice, advocacy, stock assessment and coordination for CRAMACs.</td>
</tr>
<tr>
<td>New Zealand Seafood Industry Council</td>
<td>SeaFIC</td>
<td>Replaced the Fishing Industry Board (FIB) in 1997 as the primary advisory and advocacy group for the fishing industry as a whole. All CSOs are members (including NZ RLIC) are members.</td>
</tr>
<tr>
<td>New Zealand Federation of Commercial Fishermen</td>
<td>NZ FCF</td>
<td>National organization that traditionally represents smaller fishers and owner-operators. It was closely tied to the old port associations, and was active in the debates over introduction of QMS. Has lost power since the formation of CSOs and SeaFIC.</td>
</tr>
<tr>
<td>Port Associations</td>
<td></td>
<td>Local/regional fisher associations based from home ports with historical roots dating back to turn of the century.</td>
</tr>
<tr>
<td>Term</td>
<td>Acronym</td>
<td>Explanation</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>---------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>These associations were nationally</td>
<td></td>
<td>represented through the Federation of Commercial Fishermen. Some rock lobster sections of port associations evolved into CRAMACs.</td>
</tr>
<tr>
<td>Quota Management System</td>
<td>QMS</td>
<td>The regulatory system used to implement ITQ management in New Zealand fisheries. Was introduced for finfish &amp; paua in 1986, and for rock lobster in 1990</td>
</tr>
<tr>
<td>regional management area</td>
<td>CRA _</td>
<td>Geographic boundaries for management regions of rock lobster as defined under QMS. These boundaries are also used to define the areas that various CRAMACs co-manage.</td>
</tr>
<tr>
<td>regional rock lobster organizations</td>
<td>CRAMACs</td>
<td>Regional CSOs that take on responsibility for co-managing various aspects of the rock lobster fisheries. All CRAMACs are members of the NZ RLIC</td>
</tr>
<tr>
<td>Rock Lobster Steering Committee</td>
<td>RLSC</td>
<td>1991-1992 committee that wrote Towards 2001 recommending more regional management and formation of NRLMG</td>
</tr>
<tr>
<td>Total allowable catch</td>
<td>TAC</td>
<td>The maximum amount of a certain fish stock that can be extracted in a given year (includes customary, recreational, and commercial catch)</td>
</tr>
<tr>
<td>Total allowable commercial catch</td>
<td>TACC</td>
<td>The maximum amount of a certain fish stock that can be extracted in a given year by commercial fishers. This is then divided into ITQs.</td>
</tr>
<tr>
<td>Treaty of Waitangi</td>
<td></td>
<td>An 1840 keystone document in New Zealand history and law which guaranteed certain property rights to the Maori. Subsequent modern lawsuits and settlements concerning violations of these “treaty rights” have had tremendous impacts on fisheries management and used ITQs as currency for settling disputes.</td>
</tr>
</tbody>
</table>