New Zealand's Quota Management System: A History of the First 20 Years

Kelly Lock and Stefan Leslie

Motu Working Paper 07-02
Motu Economic and Public Policy Research

April 2007

Author contact details
Kelly Lock
Motu Economic and Public Policy Research
kelly.lock@motu.org.nz

Stefan Leslie
New Zealand Ministry of Fisheries
stefan.leslie@fish.govt.nz

Acknowledgements
This paper was funded by the New Zealand Ministry of Fisheries, but all opinions expressed are those of the authors. A number of people contributed to the writing of this report including James Sanchirico (Resources for the Future), Dan Holland (Gulf of Maine Research Institute), Jo Hendy and Suzi Kerr (Motu Economic and Public Policy Research), Nick Hill (Imperial College, London), Aoife Martin, Stuart Brodie, Bob Johnston, Dave O'Dea, Terry Lynch, David Foster, Brian Ashton, Simon Bell and Roland Daysh (all New Zealand Ministry of Fisheries).

Motu Economic and Public Policy Research
PO Box 24390
Wellington
New Zealand

Email info@motu.org.nz
Telephone +64-4-939 4250
Website www.motu.org.nz

Abstract

New Zealand is a world leader in the use of Individual Transferable Quota (ITQ) to manage fisheries. Although the use of an ITQ system is not unique to New Zealand, no other country has used this system to the same extent as New Zealand. This has meant that, internationally, a lot of interest has been placed on how our system works and the level of success it has achieved. Generally, the New Zealand system is considered to be a success story, yet the system has changed a number of times since its inception in 1986. Despite the level of interest in New Zealand's unique ITQ system, the current literature is unable to provide a complete account of the historic and current regulations surrounding it. This paper addresses this gap by documenting how the Quota Management System (QMS) functions and the changes it has undergone since its introduction. Reviewing these changes facilitates a deeper understanding of the system itself, as well as providing insight into its potential limitations.

JEL classification
Q22, Q28

Keywords
Quota management system, individual transferable quota, fisheries, management, New Zealand

Table of Contents

Acronyms

ACE	Annual Catch Entitlements
AFL	Aotearoa Fisheries Limited
BMSY	Biomass that supports Maximum Sustainable Yield
CAY	Current Annual Yield
EEZ	Exclusive Economic Zone
FMA	Fishery Management Areas
GMITQ	Guaranteed Minimum Individual Transferable Quota
ICE	Individual Catch Entitlement
IQ	Individual Quota
ITQ	Individual Transferable Quota
MCY	Maximum Constant Yield
MIO	Mandated Iwi Organisation
MSY	Maximum Sustainable Yield
PCH	Provisional Catch History
PMITQ	Provisional Maximum Individual Transferable Quota
POSA	Post-settlement Assets
PRESA	Pre-settlement Assets
QMA	Quota Management Area
QMS	Quota Management System
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
TOKM	Te Ohu Kai Moana

1. Preface

Individual Transferable Quota (ITQ) based systems are currently used to manage individual fish stocks in a number of countries including Australia, the United States of America and Iceland. Theoretically, the use of this type of system has a number of benefits including promoting sustainable use of the resources and increased economic efficiency.[1] Yet despite this, to date no other country has used an ITQ based management system as extensively as New Zealand, where the Quota Management System (QMS) is used to manage all significant commercial species.

The unique nature of the QMS has made it a natural case study for the use of quota based systems for resource management and generated international interest, both from researchers and policy makers, in how the system functions and its successfulness in achieving sustainability goals.[2] However, despite the high level of interest in this system, no single publication details how the system functions and documents the many changes that have occurred since its inception.[3]

This report addresses this gap by documenting how the QMS functions and the changes that have occurred since its introduction in 1986. Reviewing these changes facilitates a deeper understanding of the system itself, as well as providing insight into its potential limitations. To assist this understanding, challenges that are currently being faced by the New Zealand Ministry of Fisheries, and potential policies to address these challenges, are also briefly discussed to suggest how the QMS may evolve in the future. While this report covers the legislative changes that have occurred in the system, operational changes are not addressed. Therefore this report does not cover issues such as procedures for the monitoring and enforcement of catch levels.

Copies of legislation and schedules are not provided within this report. But both past and present legislation is publicly available online at www.knowledge-basket.co.nz and http://www.legislation.govt.nz/. These websites may be of use to the reader as sources of additional information.

The intended audience of this report is individuals who have some understanding of fisheries management, and may even have some familiarity with New Zealand's QMS, but who wish to improve their understanding of the system including how it has evolved to the system that is in place today. Each chapter discusses a different theme and, together, they cover the majority of the elements of the QMS.

Chapters can be read independently if the reader is interested in a particular aspect of the system, but a full understanding of the issues within each chapter is unlikely

[1] ITQ based systems have been championed for resource management by economists for a number of years. Thus, there is a substantial volume of literature discussing the theoretical basis for these systems, including the associated efficiency benefits. As these aspects are already well covered in the literature, they will not be covered in this document. For more information on the economic theory behind ITQ based systems see Anderson (1995) or Batstone and Sharp (1999).

[2] The QMS has also been the focus of a number of academic studies to assess the implications of an ITQ based system (e.g. Connor 2000, Newell *et al.* 2005a).

[3] Partial attempts have been made though, including Straker et al (2002).

without considering related chapters. In some cases there are strong links between chapters and when these occur references are made within the text. However, there are also more subtle links between sections, so it is important to have a general understanding of the system in order to fully understand the issues being discussed.

Information contained within this report has been gathered from a number of different sources including legislation, academic publications and official documents. This has been supplemented by input from individuals who are closely involved with the system, including some of those who were involved in the decision making process when changes occurred. Any mistakes made within the report remain those of the authors.

2. Setting Catch Levels to Ensure Sustainability

ITQ based systems, such as the QMS, can be used to ensure sustainable utilisation of fisheries resources through direct control of harvest levels. To ensure sustainable utilisation, regulators must determine the spatial scale that species are managed at (and how adjustments are made to these areas), the process for setting sustainable harvest levels, the allocation of catch between the different fishing sectors and the definition of quota. Each of these issues is central to the system and strongly influences its success in ensuring fish stock sustainability. Thus, understanding how these issues are addressed in the QMS is the foundation for understanding how the system operates. This chapter discusses how these issues are dealt with in the QMS and outlines changes that have occurred.

Before harvest levels can be identified, the management areas for each species must be selected, so this chapter begins with a discussion of the processes involved in identifying and altering management areas. Significant changes have occurred in this system. When the QMS was first implemented, management areas could not be altered, but now boundaries can be altered both with and without the approval of quota holders. A discussion of this evolution is followed by an examination of the theoretical basis for setting sustainable catch levels, the proxies required due to the imperfect information available on fish populations and the allocation of catch levels between sectors. This chapter concludes with a discussion of an exemption used for some species whereby a total allowable catch is set which does not meet the usual theoretical requirements.

2.1 Managing Multiple Biological Populations

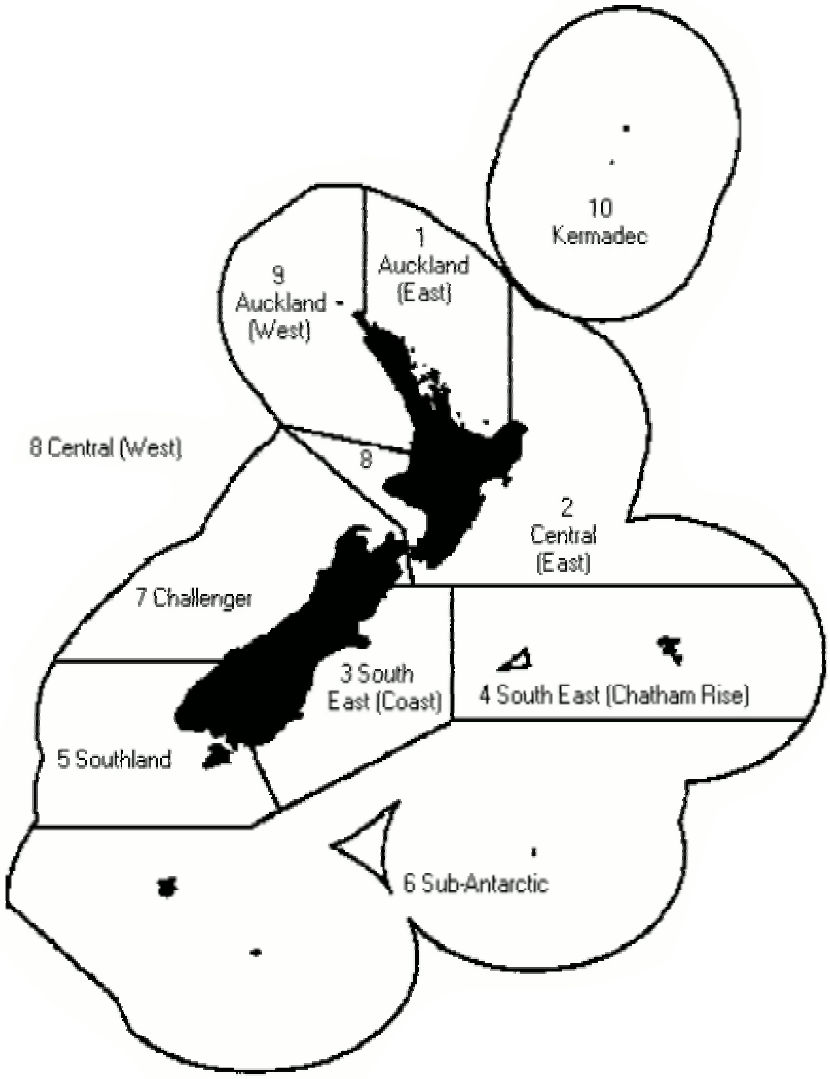
A fish species can consist of numerous geographically isolated and biologically distinct populations. This sometimes means that managing a particular species at a national level is not the optimal method. Thus, each fish species in the QMS is subdivided into separate fish stocks defined by Quota Management Areas (QMAs), each of which is managed independently to ensure sustainability of the stock.

QMAs are determined for each species based on the biological understanding of the stock distributions of the species at the time of its introduction in the QMS (Connor 2001a). The starting point for determining the QMA boundaries for each species are the 10 Fisheries Management Areas (FMAs) which define New Zealand's Exclusive Economic Zone (EEZ) (Fisheries Amendment Act 1986 S28B) (Figure 1). Due to the nature of fish populations, some QMAs incorporate multiple FMAs while others cover only part of a single FMA, leading to a varying number of QMAs per species. For example, some species, such as swordfish, have only a single QMA while others, such as paua, have eight.

By splitting fish stocks into smaller areas, it is possible to maintain more control over the population size thus ensuring that it approximates a stock level that can sustain the Maximum Sustainable Yield (MSY) (Batstone and Sharp 1999). But increasing the number of management areas also increases the costs associated with monitoring

enforcement and quota trading. So, the benefits of smaller management areas need to be considered alongside the increased costs.

Figure 1: Fisheries Management Areas (Source – New Zealand Ministry of Fisheries website[4])



2.1.1 Alteration of QMAs

2.1.1.1 Fisheries Amendment Act 1986

Through time, knowledge regarding fish populations and the nature of their interactions may change. This may mean that the QMAs used to manage a species are no longer ideal. However, when the QMS was introduced with the Fisheries

[4] http://www.fish.govt.nz/en-nz/Publications/Ministerial+Briefing+04/Fisheries+Sector/Legislative+framework.htm

Amendment Act 1986 there was no clear process set out in the legislation regarding the alteration of QMAs other than within Section 28C (2):

> *"The Minister may ... specify separate total allowable catches for separately defined parts of any quota management area and may define total allowable catches by reference to methods of taking fish or the periods within which fish may be taken."*

So the Minister was able to set different catch limits within a QMA, but was not able to alter the boundaries of the QMAs once they were set.

2.1.1.2 Fisheries Act 1996

The Fisheries Act 1996 changed this, giving the Governor-General (on recommendation of the Minister) the ability to amalgamate or split QMAs (Fisheries Act 1996 S25 (1)). Before making such a recommendation, the Minister would have to consider a number of factors including a stock's biological characteristics and non-commercial fishing interests and would have to consult with stakeholders. The proposed change also required the support of affected quota holders.[5] This support needed to be demonstrated through a public notification of their desire to have the boundaries altered and a written agreement supported by at least 75% of quota holders. This agreement would need to consider the proposed QMA boundaries, the species that comprised the stocks, quota share allocation in the new QMA and any other relevant matters.[6] Once the boundaries were altered, quota holders maintained all rights, obligations and liabilities that they held under the old QMA boundaries.

However, this system did not allow for changes in the QMAs when quota owners did not agree to an alteration. This could be important as the Minister may wish to alter the QMA boundaries based on a change in understanding, but quota owners maybe reluctant to agree if they feel that the change will alter the profitability of their business.

2.1.1.3 Fisheries Act 1996 Amendment Act 1999

The Fisheries Act 1996 Amendment Act 1999 allows the Minister to change QMA boundaries without the agreement of quota owners. This amendment allows two different methods for generating a change in the QMA boundaries. The Minister can still alter a QMA with the support of quota owners if he believes that the purpose of the Fisheries Act would be better achieved with the new boundaries, as he was able to do previously (S25A). However, if the Minister cannot obtain support of the quota owners, he can still recommend that the QMA is altered if he believes that the change is necessary to ensure the sustainability of the fish stock after considering all alternatives. To do this, he must approve a plan that outlines the new boundaries, the species involved and the allocation of the quota shares in the new QMAs and he must

---

[6] If squid QMAs are involved then this agreement must also consider whether method restrictions should be in place in the new QMA(s).

publicly notify all persons on the Quota Register involved in the relevant QMAs of his intention.[7]

2.1.1.4 Fisheries (Remedial Issues) Amendment Act 2001

The Annual Catch Entitlement (ACE) was introduced into the system in 2001.[8] Thus, Section 6 of the Fisheries (Remedial Issues) Amendment Act 2001 was passed to ensure that ACE holders were kept informed of changes to QMA boundaries. Subsequent to this Act being passed, when the Minister proposed to alter the QMA boundaries without the agreement of quota owners, he was required to not only notify the quota owners, but also other parties holding ACE in the affected management areas. When the quota owners did provide an agreement to the Minister's proposal, they were required to inform parties who held ACE in the relevant QMA.

Despite the legislative power of the Minister to alter QMA boundaries, the provisions provided under Section 25 have never been used. Only once since the introduction of the QMS have QMA boundaries been altered and this occurred through a legislative change. The Fisheries Amendment Act 1995 subdivided a paua stock (PAU 5) into 3 separate QMAs (PAU 5A, PAU 5B and PAU 5D) through the introduction of Sections 28BB – 28BD into the 1983 Fisheries Act. Individuals who owned quota in the former stock received quota that was equivalent to a third of their PAU 5 quota holding in each of the three new stocks. In the four months following the amendment, individuals could purchase or lease less than 3 tonnes of quota despite the minimum trading restrictions in the QMS (See Section 3.6.2 for more details on trade restrictions). This allowed individuals to adjust their quota holdings in the new QMAs to match their requirements. After this four month period, holders of quota in these three areas could hold less than 3 tonnes and continue to participate in the industry, but any trades completed after this time were subject to minimum trading restrictions.

2.1.2 Multiple Species Stocks

While most species in the QMS are managed independently, sometimes groups of species are considered together. These groups tend to be either groups of similar species or species that are often caught together, so they are combined in the system for administrative ease (Clement and Associates 2003). For example, two species of arrow squid (*Nototodarus gouldi* and *N. sloanii*) are considered as a single species group in the QMS due to their similarity. Other species that are often caught together such as Flatfish (which comprises eight species) are also managed together for simplicity (Sullivan *et al.* 2005). Therefore, a 'stock' in the QMS may include one or more species within a defined area (the QMA).

2.2 Maximum Sustainable Yield (MSY)

In the QMS, the Minister of Fisheries is responsible for ensuring that fish stocks are maintained at or above a level that can produce the MSY (S13 of the 1996 Fisheries

[7] If the plan is considering squid quota, the Minister must also consider whether method restrictions should apply.

[8] See Section 3.2.3 for more information on ACE and its introduction.

Act and 28D of the amended 1983 Fisheries Act).[9] This means that controls must be set so that the biomass level can support the maximum sustainable yield (BMSY). This provides the conditions to maximise the yield of the fishery without compromising sustainability. Once MSY is identified, the total allowable catch (TAC) of a species for a given year can be determined (see Section 2.4 for more details).

Although the concept of MSY is both theoretically and intuitively simple, in practice it is difficult to use MSY to determine the optimal total catch. Given the current low levels of understanding of fish population dynamics and information regarding specific species, it is very difficult to identify the true value of BMSY or MSY for any population. Therefore, it is necessary to use other measures as proxies for MSY. Two reference points are being used in New Zealand's QMS: a static measure (Maximum Constant Yield); and a dynamic measure (Current Annual Yield) (Sullivan *et al.* 2005).

2.2.1 Maximum Constant Yield (MCY)

The maximum constant yield (MCY) defines a constant catch level that is estimated to be sustainable, with an acceptable level of risk, at all probable future levels of biomass (Sullivan *et al.* 2005). Thus, this catch level should be able to be harvested each year without depleting the fish stock (Newell 2004). Since this figure is constant by definition, when the fish stock decreases, the proportion of the stock that is removed through fishing actually increases. Therefore, the estimates of the MCY must be set sufficiently low to ensure that the future viability of the population is not compromised, particularly in times of low abundance (Sullivan *et al.* 2005). So while the MCY provides a static measure of MSY, it is also one that varies annually as a proportion of the fishable biomass.

2.2.2 Current Annual Yield (CAY)

Fish populations naturally vary from year to year due to a number of factors including interspecies interactions and changes in the environment, as well as human fishing pressure (Bjørnstad *et al.* 1999). Thus, to get the maximum sustainable yield from a fishery, it may be necessary to alter the total allowable catch each year to incorporate these fluctuations in population size (Sullivan *et al.* 2005). The current annual yield (CAY) is calculated yearly and it incorporates these fluctuations by applying a fixed reference level of fish mortality to the current fishable biomass (Newell 2004). So the CAY will provide a time varying estimate of the MSY, but will remain a constant proportion of the fish population (Sullivan *et al.* 2004).

2.3 Estimation of MSY

For each stock, estimates of MCY and CAY are reported, where possible, in the annual report from the Fishery Assessment Plenary (e.g. Sullivan *et al.* 2005). The Plenary Reports are produced each year following meetings of each of the 14

[9] MSY is defined in the 1996 Fisheries Act as "the greatest yield that can be achieved over time while maintaining the stock's productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock".

Fisheries Assessment Working Groups. Each of these groups covers different issues and species within the QMS and is made up of Ministry of Fisheries staff, science providers and representatives of stakeholder groups (see Sullivan *et al.* 2005 or any of the earlier reports for more details).

The bulk of the Plenary Report contains a report on most of the species managed under the QMS and key non-QMS species. These reports contain information on the fishing activity, biology and stocks and areas including any new data available on the species. Stock assessment is also included which provides estimates of the biomass, MCY and CAY where possible. Based on the stock assessment, the working groups put forward a recommendation on the status of the stocks which suggests whether the current harvest yield is sustainable or could be increased or decreased. This recommendation gives the Minister insight into whether the harvest is currently moving the stock to a level above, below or approximately at the BMSY. The amount of information that is available on each species determines the size of the species summary report in the Plenary Report and also the accuracy of the estimates of MCY and CAY.

2.4 Total Allowable Catch

Using the estimates given in the Plenary Report regarding the MSY, various other sources of information, and an assessment of risk, the Minister determines how much of the fish stock should be harvested in a given year, or the total allowable catch (TAC).[10] The Minister is required to set the TAC at a level which ensures that the fish stock will remain at a stock size that is able to sustain the MSY or will allow the stock to move towards this size (S13 of the FA96).[11] This level of catch considers the total harvest from commercial, recreational and customary fishing. Thus, while the Plenary Report provides guidance to the Minister, recommendations are not necessarily followed through and most TACs remain constant from year to year (Sanchirico et al. 2006). Some species may have the same recommendation in the plenary report for a number of years before changes are made. In other species, there may be either no new science suggesting alteration of the TAC or no new science available.

2.5 Total Allowable Commercial Catch (TACC)

Before any commercial fishing can take place, the Minister must identify the share of the TAC that can be harvested commercially -- the total allowable commercial catch (TACC) -- for each QMA and quota stock. The Minister must set this limit with regard to the level of non-commercial fishing, including both customary and recreational fishing (Fisheries Amendment Act 1986 S10 and Fisheries Act 1996 Ss20 21). Under current policy, when the Minister is allocating catch levels between fishing sectors he must first identify the allowance of customary catch. This allowance must

[10] While the Plenary Report provides guidance to the Minister, recommendations are not necessarily followed through and most TACs remain constant from year to year (Sanchirico et al. 2006). Some species may have the same recommendation in the plenary report for a number of years before changes are made.

[11] However, species listed in the Third Schedule are an exception to this (See Section 2.6 for more details).

be sufficient to satisfy all customary requirements so that it does not constrain the level of customary catch. Once the customary allowance is identified, the remainder of the TAC can then be allocated to the commercial sector, as the TACC, and the recreational sector. The allocation of catch between these two sectors is made by the Minister at his discretion. Neither of these sectors has priority in the legislation; the decision on the allowance for each sector is considered simultaneously.[12]

When the QMS was first introduced with the passing of the Fisheries Amendment Act 1986 there was no requirement for the Minister to report a total allowable catch, as it is known now. Instead, the Minister was only required to report the total allowable commercial catch, which was deemed the TAC in the 1983 Act.

Subsequent to the introduction of the Fisheries Act 1996, the Minister had further requirements placed upon him before making a decision regarding the level of the TACC. This Act restricts the Minister to setting the TACC after the TAC and to ensuring that the TACC does not exceed the TAC (S20). He must also consider the level of stock mortality that the fishing itself is causing and must consult with individuals and organisations that have an interest in the level of the TACC (S10).

Once the TACC is set for the year, fishing rights are distributed to quota owners through the QMS (See Section 3.2 for more detail).

2.6 Alternative TACs for species on the Third Schedule

Section 14 of the Fisheries Act 1996 allows the Minister to set alternative TACs for the sixteen species listed in the Third Schedule. As outlined above in Section 2.4, under Section 13 of the Fisheries Act 1996, the Minister is required to set a TAC which moves the population toward, or maintains the population at, a level that can support the MSY. However, for species listed in the Third Schedule, the Minister is able to set a TAC at a level that does not fit these requirements as long as he considers that the purpose of the Act will be better served with an alternative TAC.

Species are included in the Third Schedule if it is not possible to estimate the MSY, if a national allocation for New Zealand has been set through international agreements or if the stock is managed on a rotational or enhanced basis (e.g. scallops). In 2004, this was expanded to allow the addition of stocks that contain one or more highly migratory species (Fisheries Amendment Act (No. 3) 2004). Some of these species are covered under the Third Schedule for only some of their QMAs (e.g. Green-lipped mussels) while other species are covered for all of their QMAs (e.g. Blue shark). Only the Governor-General, by Order of the Council, is able to add or remove species from the Third Schedule if they fit the requirements listed above.

Further changes were made to this section of the Act with the passing of the Fisheries Act 1996 Amendment Act 1999 which added Sections 14A and 14B to the legislation. These sections allow some stocks in a multispecies fishery to be fished to a level below the level required to support the MSY if this would increase the value

[12] See Chapter 5 for more information on the interaction between recreational and commercial fishing sectors including a discussion of the issues relating to allocation of catch between these two sectors.

generated by the group of stocks. Following a proposal by quota holders and a recommendation by the Fisheries Minister and the Minister responsible for the Environment Act 1986, the Governor-General can apply section 14B to the quota management stocks listed in the Third Schedule. Under this section, the Minister must set a TAC that will maintain the stock above a level which will ensure the long-term viability of the population. In doing this, the Minister must be satisfied that quota owners have taken, and will continue to take, all reasonable steps to minimise the take of the stock (e.g. modifying fishing methods and areas). To use this section, 95% of the quota holders must support the proposal. To date, this section of the Act has never been used.

3. Allocation, Trade and Holding of Quota

The ways in which quota is allocated and traded and the rules over its ownership directly influence how the quota market and the fishery will operate. The management authority must determine initial allocation (to whom, how much), the nature of the right (exclusivity, quality of life, duration), ownership limits (minimum or maximum quantities, nationality of owners) and limits over transfers (divisibility, restrictions on sale, leasing options). In New Zealand, the nature of the property right, and how it is managed, has changed since the introduction of the QMS. This chapter follows these developments from an initial distribution of deepwater fish quota to established participants, through to a system that manages virtually all commercial species and where new quota are auctioned to the highest bidder.

This chapter discusses the allocation methods that were used in the implementation of the QMS and some of the problems that were encountered including the need to alter the definition of quota and a lengthy appeals process. The exclusion of Maori interests halted the entry of new species into the QMS which provided time for officials to revise the allocation mechanism used to bring additional species into the QMS, reducing the importance of previous catch history and subsequently passed as part of the 1996 Fisheries Act. Thus new allocation process outlined in the 1996 Act and subsequent amendments is discussed. Finally the chapter outlines regulations regarding quota ownership and trading including minimum and maximum holding requirements before concluding with brief remarks on how the structure of the industry has changed in response to the design of the quota owning and exchange system.

3.1 Allocation under the 1983 Fisheries Act

Identifying an acceptable quota allocation mechanism is fundamental to ensuring the success of an ITQ based system. So when the New Zealand Government wished to introduce the QMS they undertook a substantial consultation process before finalising the allocation process in legislation.[13] This process assisted in maintaining industry support for the system and included producing documents outlining the proposed system and holding a number of meetings around the country (Connor 2001a). It was decided that commitment of the fishers to and dependence on the industry would be the key determinants for allocation of quota (S28E of the amended 1983 Fisheries Act). While the same criteria was used for determining the quota allocation to fishers, the process that was used differed between deepwater and inshore species.

When the QMS was first introduced, 26 species were brought into the system, most of which had multiple QMAs (Boyd and Dewees 1992).[14]

[13] However, this consultation process lacked effective consultation with Maori despite systematically including all other stakeholders (Connor 2001a).

[14] The species that were introduced into the system initially are – barracouta, blue cod, bluenose, alfonsino, elephant fish, flatfish, grey mullet, red gurnard, hake, hoki, hapuku (bass or grouper), John Dory, ling, blue moki, oreo, orange roughy, red cod, school shark, gemfish, snapper, rig, stargazer (monkfish), silver warehou, tarakihi, trevally and blue warehou (Newell 2004).

3.1.1 Deepwater Quota

In 1983, a precursor to the QMS (Deepwater Allocation system) was introduced to control seven deepwater fish stocks (Sharp 1997). At this time, the deepwater fisheries stocks were relatively healthy and this system was implemented to prevent over fishing or overcapitalisation from occurring as it had in the inshore stocks (Clark and Major 1988). To be eligible for the individual quota (IQ), companies needed to prove that they had the ability to access the fishery but also that they had the processing investments necessary to process catch. Since some of the companies were unable to reach the relevant limits themselves, company aggregations were created to enable smaller companies to reach the threshold levels. Thus, based on these criteria, IQ was allocated to the large fishing companies (or fishing company aggregations) that were currently competing for the deepwater fish stocks (Dewees 1989). Holding IQ entitled companies to choose to harvest their entitlement in whatever way that they wished including the use of foreign chartered vessels (Sharp 1997). Although the Government was unable to authorise the trading of this quota, de facto trading and leasing of the shares was reported (Sissenwine and Mace 1992).

The quota allocated under this scheme was granted for ten years (Connor 2001a). However, in 1985 these allocations were confirmed by the Government and granted in perpetuity (Clark and Major 1988), thus bringing the deepwater species into the QMS.[15]

3.1.2 Inshore Quota

The allocation of quota for the inshore species was undertaken in a number of steps at the start of the QMS (Connor 2001b). Allocation of quota to inshore fisheries was more complex than in the offshore fisheries due to the greater need to reduce catch levels and higher number of individuals involved.

3.1.2.1 Ability to be allocated quota

Under the amended 1983 Act, quota was to be allocated to vessel holders based on their commitment to, and dependence on, the industry. Based on these requirements two key groups were ineligible for quota: part-time fishers and people who were involved in the fishing industry, but who did not own boats. Both of these groups failed to obtain any compensation for their loss and, in the case of part time fishers, often lost a major or their only source of income.

To be assigned quota in the initial allocation, individuals had to be deemed a commercial fisher. According to the Fisheries Act 1983, to be a commercial fisher an individual or company needed:

- earnings of NZ$10,000 or more from fishing and to earn more than 80% of their income from fishing; or

[15] The QMS was originally to be introduced in October 1985 for the 1985/1986 fishing season (Ministry of Agriculture and Fisheries 1984). Thus, initial quota allocation was carried out in 1985. However, due to the long appeal process for inshore species, the introduction of the QMS was delayed by 12 months, beginning in October 1986. See the next section for more details.

- earnings from fishing to form a vital part of their income; or
- to be subsistence fishers (Bess 2005).

With the new requirements, a large number of part time fishers, many of whom were Maori living in rural areas, were removed from the industry (Bess 2001).[16] This step was a start towards achieving the Government's goal of rationalising the fishing industry and reducing capacity. Although it would have been possible to include these individuals in the new system, to do so would have lead to much higher transaction costs (Connor 2001a). The Fisheries Act 1983 removed these individuals without compensation, resulting in a significant cost saving to Government (Sinner and Fenemor 2005) but also significant losses to the people involved.

3.1.2.2 Quota allocation

Commitment to and dependence on the industry for commercial fishermen in the inshore fishstocks was determined by a vessel's catch history (Connor 2001a) with the ITQ for each fish stock allocated to vessel owners based on their vessel's catch history in the 1981/82, 1982/83 and 1983/84 fishing seasons (Bess 2005) (S28E of the amended Act). The Ministry announced its intention to base quota allocation on previous catch history in 1983. But in an attempt to reduce the incentives to inflate catches, the fishing seasons considered were not announced until May 1985 (Clark and Duncan 1986).

The process for determining an individual vessel owner's catch history had a number of steps. Firstly, regional catch history review committees were established to validate the actual catch of each vessel for each of the three fishing seasons. Secondly, any notable gaps in catch history were assessed and where there were legitimate reasons for being unable to fish, these gaps were compensated for. Finally, vessel owners were notified of the catch history of each of their vessels for the three years. It was then up to the vessel owner to determine which of the three fishing years would be used to calculate their catch history. Thus, when a vessel owner had multiple vessels, the owner selected the year that would give them the best catch history over all vessels. From the selected catch history, the vessel holders' provisional maximum individual transferable quota (PMITQ) was calculated, stating the individual's largest possible entitlement.

Vessel owners who believed that their PMITQ did not represent their usual catch history could apply to have an administrative review by one of the six regional catch history review committees (Connor 2001a). These committees were reasonably informal and lacked decision-making power, but they were able to provide recommendations to the national committee and the Director General of the Ministry of Agriculture and Fisheries who was able to alter assessments (Muse and Schelle 1988). The high rate of objections was unexpected. The introduction of the QMS was delayed by a year because the vast number of reviews requested took eight months to process (Connor 2001a).[17] This delay meant that the fishing activity of some individuals had changed substantially between the introduction of the QMS in October 1986 and the final reviewed fishing year of 1983/1984. These individuals

[16] In practice, this piece of legislation was misinterpreted and this led to more individuals being removed from the system than was necessary.

[17] The QMS was expected initially to be implemented at the start of the 1985/1986 fishing season (Ministry of Agriculture and Fisheries 1984).

therefore submitted reviews to have their PMITQ reflect their commitment and dependence on the fishing industry in 1986.

Once PMITQs were identified, the Government needed to bring the levels of harvest allowed under the assigned PMITQ down to the newly proposed TAC levels (or TACCs as they are known in the later legislation).[18] This was a major issue as the catch levels were generally around 10 percent higher than the proposed TACs but in some species, such as snapper, the difference was much higher with catch levels 36% higher than the TAC (Falloon 1993). To ensure that the vessel owners were aware that the total PMITQ holdings in many fish stocks exceeded the TAC, they were also informed of their guaranteed minimum individual transferable quota (GMITQ) at the same time as their PMITQ. GMITQ represented the amount of quota that the individual would receive if the reduction in catch required to get from the total PMITQ to the TAC was spread proportionately across all of the assessed catch histories (Connor 2001a) (S28F of the amended 1983 Act). This allowed individuals to identify the possible range of quota that they would be entitled to catch once the QMS was in place.

3.1.3 Quota Buy-back scheme

Twenty-one of the species that were introduced into the QMS at this time had PMITQ allocations that exceeded the TAC (Sissenwine and Mace 1992). The Government had two options to reduce the quota holdings: either buy back the excess quota; or reduce the total quota holdings *pro rata* under Section 28D of the amended Fisheries Act.[19] The Government selected the buy back option. By buying the quota back, the Government was able to both reduce harvesting entitlements and provide compensation for individuals who were no longer allowed to fish (Sharp 1997). This allowed them to retain the support of the industry (Kidd 2000).

The set up of the scheme provided two incentives for individuals holding PMITQ to participate (Connor 2001a). First, it created an opportunity for individuals to have all or part of their PMITQ purchased by the Government allowing them to leave the industry while obtaining a financial benefit. Second, the PMITQ holders knew that if enough quota was not tendered back to the Government, TAC levels would be achieved through a *pro rata* reduction in assigned quota, so the quota that they received could be as low as their GMITQ.

All vessel owners were invited to participate in the quota buy-back scheme and submit bids of compensation that they would be willing to accept in return for giving up a specified amount of quota (Connor 2001a). In theory, once the tender round had been completed, the Government would determine the price that would allow it to meet its reduction targets. This price would then be paid to all individuals whose

[18] The difference between the total PMITQ allocated and the TAC is likely to have been greater than the actual difference between the total catch levels in the 1985/86 fishing season and the TACs since fishers chose their highest catch history year and individual allocations were increased through the objection process, leading to a higher total PMITQ allocation than actual fish caught in a given fishing season (Sissenwine and Mace 1992). Thus, the Government needed to compensate the industry for more tonnes of fish than it actually received in fishing reductions.

[19] Since the quota were rights to harvest a specified tonne of fish rather than a proportion of the TACC, the Government had to purchase the quota back rather than administratively reducing the TACC.

tender price did not exceed this value and the Government would acquire the relevant tendered quota. Thus, equality would be maintained between individuals who sold quota back to the Government. However, given the bid prices that were offered, it was impossible for the Government to meet their objectives. Buying back just 60% of the required reductions at the bid prices offered would have cost $NZ100 million (Muse and Schelle 1988). To avoid this, the Government decided upon a clearing price so that they could attain about 25% of the required quota and then set up another tender round. The second tender round was the quota holders' last chance to sell quota before the Government cut the PMITQ proportionally without compensation (Connor 2001a). In this round the Government set the price around 20% lower than the prices paid in the first round. Despite this lower price, there was a strong response from the vessel owners and this substantially reduced the quota holdings. In total, the buy-back process cost the Government $42.4 million but reduced quota holding by 15,700 tonnes (Sissenwine and Mace 1992).

Despite the incentives to participate, the reductions in PMITQ holdings from the second tender round were not large enough to prevent further action being required (Clark and Major 1988). As threatened earlier, the remaining cuts in PMITQ were then applied on a *pro rata* basis in the 21 fish stocks whose total PMITQ entitlements were still above the TAC by utilising Section 28N. This was only carried out on the proportion of holdings above the GMITQ to ensure that no one was left with less than their original guaranteed minimum (Connor 2001a). While these latter cuts were carried out without compensation, the individuals who lost quota during this final round had first rights to future quota increases at no cost under Section 28T of the amended Act (Ministry of Fisheries 2002).

The total reduction from historical catch levels, based on catch histories, to the TACs in the 1986/1987 fishing year was 6% (Sissenwine and Mace 1992). But these reductions were not spread evenly across the species. For the 21 species that were involved in the buy-back scheme followed by *pro-rata* cuts, harvest entitlements were reduced by 24%. More than 85% of the payments required for this process were spent on only four species with nearly 50% spent on the snapper fisheries alone (Sissenwine and Mace 1992).[20] This enabled catch reductions of 54% in these four species.

An additional appeal process was set up to assist in maintaining the fairness of the system. Quota owners had 28 days from the notification of their PMITQ (or lack of PMITQ) to lodge an appeal (Section 28H of the amended Fisheries Act). These appeals were heard by the Quota Appeal Authority, which was formed in the same amendment (S28A) and established in early 1987 (Connor 2001a). The Quota Appeal Authority consisted of three members and its sole function was to hear the appeals and make decisions regarding their outcome.[21] For the majority of species this appeal process took 3 to 4 years to complete, but some of the appeals were still being held in the mid-1990s (Connor 2001a). In total, over 2000 appeals were heard, around a thousand of which resulted in additional quota being allocated and 100 leading to reductions in quota allocations (Falloon 1993). This process lead to quota holdings exceeding the initial TACs by, on average, 10%. But there was a large amount of

[20] The four species that required the majority of the payments were snapper, rig, school shark and hapuku bass.

[21] The Quota Appeal Authority was made up of a solicitor or barrister (Chairperson), someone appointed after consultation with the Fishing Industry Board and someone independent of the Ministry.

variation across species. For example, the quota holdings for snapper increased by 36% (Falloon 1993).

Despite the long time frame involved in dealing with these claims, it was vital to be able to ensure that the initial quota allocations were carried out in a way that was considered fair because of the large economic benefits that holding quota entails.

The allocation process assigned quota exclusively to vessel owners. Therefore, individuals that were involved in generating the catch history such as skippers and crew were left out, as were fishing communities that supported the fishing fleets.

3.1.4 Injunctions through Treaty Claims

In 1987, 3 new species were introduced into the QMS (paua, jack mackerel and squid). In the same year, Maori obtained a series of injunctions which prevented the introduction of further species into the system until Treaty issues could be resolved (Bess 2000).[22]

Despite the injunction, two species were introduced during this time as their introduction had the approval of Maori and they were already partially introduced into the system prior to the injunction. As part of the Maori Fisheries Act 1989, packhorse lobster and spiny rock lobster were introduced into the QMS (Ss 49-73 of Maori Fisheries Act 1989).[23] The proposal to introduce rock lobster into the QMS was established much earlier and was passed as part of the Maori Fisheries Act 1989 as it was the only relevant piece of fisheries legislation being passed at the time. By then, problems with the ITQ allocation method used to introduce the initial species into the QMS had been identified. Thus, when rock lobster was introduced, the criteria and appeal process used during the quota allocation process was tightened up. This meant that the introduction of these species into the system became relatively easy and the appeals process associated with this fishery was completed before some of the initial QMS species, despite being introduced three years later.

3.1.5 Moratorium on Fishing Permits and Tendering Quota

Despite the settlement of Treaty claims, the introduction of species into the QMS did not recommence in 1992. Problems with the system had become apparent especially regarding the lengthy appeal process and the difficulty of assessing commitment and dependence (Bess 2005). Another problem that needed attention was the behaviour change that was observed in fishers. They recognised that catch history was the key determinant of the quota allocation process and, thus, increased their catch levels in non-QMS species. To prevent over-exploitation of the non-QMS species, a moratorium was put in place preventing the issuing of new fishing permits (Fisheries Amendment Act (No. 3) 1992). This moratorium was initially intended as an interim measure, but remained in place until the passing of the Fisheries Amendment Act (No. 3) 2004 (See the Section 3.3.2 for more details).

[22] See Chapter 4 for more information on Maori Treaty issues surrounding the QMS.

[23] While initially the rock lobster quota were granted for 25 years, the permits were later extended in perpetuity based on submissions from the industry and advice from Professor L G Anderson (an economist and academic specialist in the economics of fisheries management) (Waitangi Tribunal 1992a).

The Ministry proposed reviewing the quota allocation process, suggesting that a tendering process would avoid the problems associated with allocation based on catch history. The proposed two-tiered system received Cabinet approval in September 1992 (Ministry of Fisheries 2002). Under this system, existing fishers would have preferential rights, at least in some species, while remaining quota would be tendered openly. This would revoke the rights of the non-QMS species permit holders to have their catch history turned into quota upon introduction to the QMS (Bess 2005). However, in the twelve months following this decision, no legislative amendment was passed and industry opposition was growing. By early 1994, officials within the Ministry of Agriculture and Fisheries were again reviewing the options for allocation and Cabinet subsequently agreed to return to allocation based on catch histories (Ministry of Fisheries 2002). Despite the agreement, the system was not sustainable, and, therefore, the allocation method still required amendment.

3.2 Translating Quota into Fish

3.2.1 Quota as a fixed tonnage

When the QMS was first introduced in 1986, quota was defined as a right to harvest a fixed tonnage of a particular species in a QMA each year (Sanchirico et al. 2006). Thus, the Government needed to buy and sell quota to decrease or increase the level of the TACC (Kerr *et al.* 2003). At this time, the Government anticipated that, at least on average, future TACs would increase on the belief that better management would lead to larger stocks (Townsend *et al.* 2006). However, when the Government was faced with the potential collapse of the orange roughy fishery and consequently needed to vastly reduce the TAC, this system was deemed to be too expensive and a new system was devised (Connor 2001a).

3.2.2 Quota as a Percentage of TACC

Under the Fisheries Amendment Act 1990, quota entitled their owners to a proportion of the TACC instead of the right to catch a fixed tonnage of fish (S15). Quota holdings were standardised to one hundred million shares per fish stock and allocated to quota holders based on quota holdings at the time of transition.

With quota defined as a proportion of the TACC, the Minister was now able to alter the TACC for a given fish stock without selling or purchasing quota from the commercial sector. This change not only removed the Government's financial liability, but also shifted the burden of risk associated with the uncertainty surrounding future catch limits from the Government to the fishing industry (Kerr *et al.* 2003). Although this may have effects on investment into the fishing industry, it also provides incentives for the industry to invest in research into science and management information that will help to reduce the uncertainty surrounding stock size and dynamics (Connor 2001a).

3.2.3 The Introduction of ACE

In 2001, the system underwent further change with the introduction of annual catch entitlements (ACE) which are assigned to quota holders based on the share of total quota they hold (expressed in shares) and the TACC. Once the TACC for a given year is known, the kilogram equivalent of each quota share is calculated and transferred to the quota owner on the first day of the fishing year as ACE. This determines the tonnage of fish that the quota owner is able to catch within the next fishing year.

In one sense, the introduction of ACE was not a radical departure from the existing system. However, it allowed for clear separation between the right to harvest a specific amount in a particular year and the ownership of the resource in the future. This had distinct benefits. Prior to 2001, quota owners were leasing their quota for a fixed term which essentially meant that they were leasing the long-term right to fish for a short period.[24] By allowing the separation of the current harvesting ability and the long-term ownership of the resource quota, owners were now able to sell their current harvesting entitlement, while retaining their long-term ownership of the fishery.

Although ACE was introduced in the legislation in the 1996 Fisheries Act, technical limitations prevented its implementation for five years. In 2001, FishServe was created (Fisheries (Transfer of Functions, Duties, and Powers to the New Zealand Seafood Council Limited) Order 2001). FishServe now administers and delivers a number of statutory services surrounding the QMS including recording catch effort returns, ACE management, quota management and vessel registration (Seafood New Zealand 2005). This has meant that the maintenance of quota and ACE ownership registers are no longer the Ministry's role. FishServe was set up initially for six years but subsequently had its contract extended reflecting the benefit that outsourcing this work has had for the industry and the Ministry (Seafood New Zealand 2005).

3.3 Allocation under the 1996 Fisheries Act

In 1994, Cabinet agreed in principle to the legislation that included the allocation of new quota based on previous catch history after Maori obligations were met. This was finally passed as part of the 1996 Fisheries Act. For any new species subsequently introduced into the QMS, 20% of the quota would be allocated to Maori under the Treaty of Waitangi Settlement while the remaining quota was to be allocated to fishing permit holders in proportion to their catch history (Clement and Associates 2003). Any remaining quota ('headroom' quota) would usually be available through open public tender.[25] The 1996 Fisheries Act was more definitive in determining the allocation process, but catch history was still used to determine the provisional ITQ and ultimately the final ITQ allocation. However, the new Act did make some changes to this process, such as to the definition of catch history. Under the 1996 Act, individuals are now notified of their provisional ITQ rather than their provisional maximum ITQ as previously. So individuals are made aware of the amount of quota

[24] For additional information on trading mechanisms within the QMS see Section 3.4.

[25] In this tender process, the Crown uses discriminatory auctions. This means that successful bidders pay the price that they actually bid. The industry requested that uniform price auctions were used instead so that all successful bidders pay the same price, but the Crown rejected this request.

that they are likely to receive and no longer receive notification of the range of quota they may be allocated.

Initially the way that quota allocations were carried out under the 1996 Act depended on the characteristics of the fishery (S32). If, prior to introduction into the QMS, catch was controlled by Individual Catch Entitlement (ICE), then provisional catch history (PCH) was allocated equivalent to a fisher's ICE.[26] However, ICE only ever existed for a very small number of fisheries and the vast majority of PCH was allocated based on catch history from the default fishing years beginning on the 1st of October 1990 and 1991. Occasionally PCH was also calculated based on the first 12 months after a person was issued a fishing permit pursuant to Section 2(2) of the Fisheries Amendment Act 1994. For tuna species, the qualifying years that were used to determine PCH were identified by the Minister prior to the species' introduction to the QMS. Once a vessel holder had PCH assigned, assuming that they held a current fishing permit, this was used to allocate quota to the individual.

Under this Act, if there was any quota that was not allocated to fishers or Maori, the remainder was allocated to the Government (S49). The Government would then usually make this quota available through a tendering process.

The 1996 Fisheries Act also removed the consideration of commitment and dependence (Bess 2005). This Act instead focused on sustainability and utilisation (S8) and, thus, firmly lodged the focus of fisheries management on economic and biological (sustainability) concerns, and away from the social considerations that are represented by ensuring the inclusion of fishers with past and present association. However, to provide recognition of individuals with past association, the Fisheries Act 1983 Amendment Act 1999 created a provision to allow the descendants of deceased fishing permit holders to inherit the fishing permit and ultimately the PCH. Prior to this amendment, fishing permits were non-transferable which meant that descendants of fishing permit holders did not receive quota despite the PCH of their relative. To be eligible for the permit transfer, the deceased individual must have held a current fishing permit when they died and died after the 1st of October 1996. This exception expires on 30 September 2007 (Jones 2004).

3.3.1 Fisheries Amendment Act 2004 (No. 2)

The passing of the Fisheries Amendment Act 2004 (No. 2) again changed the way that quota was allocated. This amendment stopped the use of ICE as a tool for controlling catch of non-ITQ species, thus removing ICE as a mechanism upon which to base PCH allocation. The other mechanisms used remained in place.

[26] ICE is an annual amount of a fish stock that the permit holder is able to catch in a non-ITQ fishery that has a commercial catch limit (Bess 2005). In most respects it is similar to ACE in that it determines the amount of fish the permit holder is eligible to catch but it is not transferable and it is only able to be fished by those permit holders that it has been allocated to (Clement and Associates 2003). While ICE has been effective in minimising overcapitalisation and reduce the 'race for catch' which often occurs under competitive catch limits, it is inferior to ITQ since it is not divisible or transferable (Bess 2005).

3.3.2 Fisheries Amendment Act 2004 (No. 3)

The Fisheries Amendment Act (No. 3) 2004 reduced the dependence of the system on PCH when allocating quota. Non-QMS species generally now fall into two groups and these determine the quota allocation method used when a species enters the QMS. If the species is listed on either Schedule 4C or 4D of the Fisheries Act 1996, PCH will be used to determine the quota allocation, but only if the species is introduced into the QMS prior to 1 October 2009 (Section 29A). If a species is introduced after 1 October 2009, PCH will not be considered and the quota is automatically allocated to the Crown and Te Ohu Kai Moana (TOKM).[27] Species that are not listed on either of these schedules will not have PCH considered for quota allocation. Instead of considering PCH, when these species are introduced into the QMS, the Crown and TOKM will receive 80 000 000 and 20 000 000 quota shares respectively. Crown-held quota will usually then be made available to the fishing industry and other interested parties through the Government quota tendering process. Tuna inside New Zealand fisheries' waters and highly migratory species outside New Zealand fisheries' waters are exempt from the requirements above and despite not being listed on the schedules will continue to have their quota allocated based on PCH.

3.4 Quota Trading

The efficiency benefits associated with trade within ITQ based systems are well identified in the literature (e.g. Batstone and Sharp 1999). However, in practice allowing quota trading to occur is complicated and in the 1996 Fisheries Act itself there are nearly fifty sections dedicated to quota trading and its surrounding issues (Ss 124-173).

Under the QMS, individuals holding quota are free to sell it as they wish (Clark 1993).[28] No pre-trade approval is required nor is there any limit on the number of times that the quota can be sold (Newell 2004). The quota is divisible so that quota owners can trade parts of their quota.[29] All trades that occur must be registered before the buyer is able to use the quota (Kerr *et al.* 2003). To facilitate effective trades both centralised quota trading exchanges and brokers have been used.

3.4.1 The Quota Trading Exchange

To allow for relatively easy transfer of quota between buyers and sellers of quota, a centralised quota trading system was set up in January 1987 (Clark and Major 1988). This exchange was developed and implemented by the New Zealand Fishing Industry Board with the support of other organisations and was run by the New Zealand Fish

[27] TOKM is the corporate trustee which manages Maori fishing assets. See Section 4.7.1 for more details.
[28] However, there are some restrictions on the amount of quota that is able to be held. For more information on holding restrictions see Section 3.5.
[29] The 1986 Fisheries Amendment Act introduced minimum trade levels for buying or leasing quota of 100kg for administrative ease (Section 28S(7)). However, this restriction has subsequently been repealed. This change becomes important in developing fisheries which have low or non-existent TACCs.

Quota Exchange Ltd.[30] The trading exchange itself was accompanied by fish brokers and trading information to give as much knowledge to potential buyers and sellers as possible (Sanchirico et al. 2006). Trading occurred for two hours every day (Clark and Duncan 1986) and quota holders had access to the central computer system through a national video-text system. However, this system was unable to meet the needs of the fishing industry in the format that it was set up in (Clark and Major 1988) and the low volume traded meant that the system was shut down later that year.

3.4.2 Lack of Central Trading Exchange

In the years following the closure of the Quota Trading Exchange, the industry continued trading quota. This was mostly carried out through bilateral trading and quota brokers facilitating the trade (Kerr *et al.* 2003). While no official statistics available, it is believed that brokers handle most transactions between small and medium size quota holders while larger companies have specialist quota managers on staff to engage in bilateral trading with other large companies (Newell *et al.* 2005b).

3.5 Leasing Quota and Transferring ACE

Although many quota holders wish to either sell or fish their quota, others would prefer to maintain their fishing rights while allowing another person to fish their quota allocation in the current fishing period. Thus, a number of quota holders lease their quota (or sell their ACE subsequent to 2001 which is effectively the same thing) to others. By doing so, they are able to gain an income from their quota even if they are unable or unwilling to catch their entitlement (Clark and Major 1988).

Leasing quota was legally complicated as individuals were leasing the long-term right to fish for a short period of time (Townsend *et al.* 2006). So in fact, individuals who held the lease were leasing the ownership right to the resource. This situation was simplified in 2001 when ACE was introduced (See Section 3.2.3 for more details on ACE). With the implementation of ACE, individuals became able to purchase the right to harvest fish for a particular fishing season without a change in the ownership of the property right.

The increased use of the Internet has provided a convenient medium for a centralised trading exchange. Therefore, over the past five years, various online systems have been established to facilitate trade.

3.5.1 ACETrader

In 2003, TOKM set up the first online ACE trading system. Although the system was set up by the organisation formed to deal with Maori fisheries claims, the trading system was available to all current and potential participants in the fishing industry. However, this site was not successful and was shut down.

[30] The Ministry of Agriculture and Fisheries, the Federation of Commercial Fishermen and the Fishing Industry Association were all involved in setting up the quota trading exchange, while New Zealand Fish Quota Exchange Ltd was set up to manage the exchange.

3.5.2 FishStock

In 2004, an online auction site (FishStock – www.fishstock.co.nz) for trading ACE was set up by FishServe (Sanchirico et al. 2006). FishStock allows quota holders to relatively easily auction their ACE for a particular fishing season.

FishStock has a number of different options available for users to enable it to meet the needs of people in the industry (FishServe 2006a). The auctions can take one of two formats. Individuals can advertise ACE that they are wishing to sell on the site and people can compete to purchase it. The reverse can also occur with people listing ACE that they wish to buy and other people can compete to sell it, just like a tender process. These auctions can consider either ACE from a single species and QMA or multiple species and/or QMAs. A number of options are available to the person listing the auction, including setting the auction's closing date, start price and buyout price.[31] The person listing the auction also has the opportunity of listing a reserve price. If no reserve price is listed, then the ACE must be sold to the highest bidder (or bought from the lowest bidder in the case of a reverse auction).

As with the earlier trading exchange, individuals must be registered with FishStock to be able to participate in an auction. However, viewing an auction does not require registration. While registration is free, FishStock charges a listing fee and commission for all auctions. Currently, it costs $16.65 to list an auction on the site whether or not it is successful and FishStock takes a commission of 2% (plus GST) of the winning bid (FishServe 2006b).

3.5.3 FishTech Ltd.

In addition to the above trading systems, a private company, FishTech Ltd., was set up in 2003 to facilitate trade of ACE between individuals. This was designed to reduce the amount that is paid in deemed values for fish stocks where differential deemed values are used (See Chapter 7 for more information on deemed values).

All individuals that choose to participate in the system temporarily transfer their ACE holdings to FishTech just prior to the completion of the fishing season. ACE holdings are then reallocated amongst members at essentially zero cost. This is organised in such a way that the total amount of deemed values to be paid is minimised. The benefit gained from doing so is then shared amongst all of the individuals involved. This system avoids the higher penalties that must be paid in fish stocks that are managed under the differential deemed values system. While some of the members may face deemed values that they otherwise would not be paying, this system is organised so that no individual will be worse off by participating in the scheme since everyone involved receives a share of the profits from the trades.

[31] The buyout price is the price that the person who listed the auction is willing to accept to complete trade before any bids are placed. Once a single bid has been placed the buyout option is no longer available.

3.6 Constraints on Holding

Under the QMS, quota holders are able to sell their quota to whomever they wish. While this provides the opportunity for an efficient market structure, it can also lead to undesirable outcomes, such as reduced New Zealand-based ownership or anti-competitive behaviour. To reduce the likelihood of these unwanted effects arising, a number of restrictions on quota holding and exchange have been put in place.

3.6.1 Foreign Ownership

To maintain domestic ownership of New Zealand fisheries, certain rules were imposed that, on the whole, ensure that only New Zealanders or New Zealand-owned companies are able to own quota. Attempts to prevent foreign ownership of quota resulted from requests made by the industry during the initial consultation process (Crothers 1988).

Under the 1986 Amendment Act, quota could not be allocated to licensed foreign fishing craft, individuals from overseas or to companies controlled outside of New Zealand (Ss 28X-28Z). In addition to this, no one, other than Government, was able to sell or lease quota to foreign parties. Individuals were only deemed eligible for quota if they were ordinarily a resident of New Zealand. For a company to be allocated quota, it had to be at least 75.1% New Zealand-owned (Clark 1993).[32] However, this regulation was difficult to enforce because of the complex ownership structures of many companies (Connor 2001b).

With the introduction of the 1996 Fisheries Act, the restrictions on foreign ownership were altered. Exemptions are now possible and this gives some foreign companies the right to own both quota and ACE (Connor 2001b). However, in order to obtain quota and ACE, overseas companies must get the approval of the Ministers of Fisheries and Finance and the Overseas Investment Commission. They will only get this approval if it can be demonstrated that New Zealand will benefit from the exchange (Ss 56- 57).[33] But if New Zealand ceases to benefit from any exemption granted, Section 58 of the Act stipulates that ownership of, or interest in, quota and ACE can be taken away from foreign companies without any compensation being offered.

3.6.2 Maximum and Minimum Holdings

Maximum holding limits were introduced to inhibit monopolistic behaviour and to ensure that "there [was] a diversity of ownership and an opportunity to enter the fishery" (Hansard debate on the Fisheries Bill, 31 July 1996). Under the 1986 Amendment Act, no one could hold more than 20% of the quota (either leased or owned) for any QMA and fish stock. However, there were two exceptions to this. First, if a species was listed in Schedule 1A of the Act, no one could own more than 35% of the entire quota available for that species, regardless of QMA boundaries. The

[32]To be defined as "ordinarily a resident of New Zealand", individuals had to have spent at least 2.5 years out of the last 3 years in New Zealand (Boyd and Dewees 1992).

[33] Initially, exemptions did not require the approval of the Overseas Investment Commission. However, following a review of the 1996 Fisheries Act by Hartevelt (1998), the approval of this commission was required (Fisheries Act 1996 Amendment Act 1999).

species listed in this schedule tended to be deep-water and mid-depth species (Connor 2001b). Second, once rock lobster was introduced into the QMS, a maximum ownership of 10% within each QMA was established (Connor 2001b).

These limits were altered in the 1996 Fisheries Act, under Section 59, to allow for a default aggregation up to 35%. From then on, individuals could hold up to 45% of the quota for species listed in the Fifth Schedule (equivalent to Schedule 1A in the amended 1983 Act). This amendment reflected the high level of investment required to participate in these fisheries.

There are three additional species-specific exceptions to the general maximum holding limits: individuals cannot hold more than 20% of paua quota in a single QMA; they cannot have more than 20% of the total bluenose quota; or more than 10% of spiny rock lobster quota in a single QMA. However, the Minister is able to consent to holdings in excess of these limits (S60). As with the foreign owned quota, the Minister can also revoke this approval or include provisions. Currently, there is no aggregation limit for holding ACE (FishServe 2006c).

Minimum holding limits for leasing and owning quota were also set in 1986. No person was able to hold quota equivalent to less than 5 tonnes of a finfish species, 3 tonnes of rock lobster or 1 tonne of any shellfish species within any QMA (S28S of the Amended 1983 Fisheries Act). The Maori Fisheries Act 1989 amended this section by introducing a 3 tonne minimum holding limit for rock lobster within each QMA.

The 1996 Fisheries Act placed limits on the minimum level of ACE held. Minimum ACE holding levels are available to be used for all species, but there is no requirement for them to be used. Thus, minimum holding levels have only been put in place for a few species, all of which are listed in the Eighth Schedule. For example, fishers from scallop, oyster and spiny rock lobster fisheries must hold a minimum of 3 tonnes of ACE and fishers from paua fisheries must hold at least 1 tonne of ACE. The Fisheries Amendment Act 2000 introduced minimum holding requirements for South Island freshwater eels requiring individuals to hold at least 4 tonnes of ACE within any of the QMAs to be able to participate in this fishery.

3.7 Ownership and Trading Patterns

In the period immediately following the introduction of the QMS, there was a rapid change in the quota ownership structure (Falloon 1993). During this time, the industry consolidated (Bess 2000) and 23% of people who were assigned PMITQ had sold it all by the end of the first year (Sinner and Fenemor 2005). Between October 1986 and April 1988, there were 15,580 quota sales involving 453,000 tonnes and 3,417 leases of quota involving 253,000 tonnes (Sissenwine and Mace 1992). The sum of these transactions is greater than the total amount of quota allocated, so some quota must have been either sold or leased multiple times during the first couple of years. This initial consolidation presumably led to a more efficient industry with the removal of less competent operators (Sissenwine and Mace 1992).

Many quota owners did sell their quota, either through the buy back scheme or after the introduction of the QMS, so that they could leave the industry. Other quota holders, however, sold their quota to larger companies, but leased it back, thus enabling them to continue fishing (Falloon 1993). At this time, some of these large companies bought large quantities of quota in order to secure their position in the industry (Sinner and Fenemor 2005).

Before the introduction of the QMS, it was suggested that there would be an increase in the concentration of the industry and that small companies would not be able to compete and be forced out. Connor (2000 and 2001b) found that most fish stocks showed an increasing concentration in quota ownership, but these were not accompanied by large changes in distribution.[34] These changes have occurred gradually, following the rapid changes of the first couple of years.

While it was initially thought that small fishing companies would be likely to leave the industry, this has not been the case. Newell and Sanchirico (2003) investigated the changing structure of the fishing industry and their findings suggest that it is the medium sized operations, rather than the smaller companies, that are leaving.

Despite an increase in the concentration of quota markets, a large number of quota and ACE holders remain in the system. Between the implementation of the system and 1998, the total number of participants in the system averaged more than 1,500 and individual fish stocks had a median of 45 quota owners (Kerr *et al.* 2003).

[34] Connor's findings of increases in concentration have been supported by other work (e.g. Newell and Sanchirico 2003; Stewart and Callagher 2003).

4. Indigenous Rights

When an ITQ based system is introduced to manage a resource, the access to its use becomes restricted (by law or by economics) to individuals holding quota. Thus, if there are individuals who have a prior claim to the use of the resource, conflict can arise. In New Zealand, the introduction of the QMS assumed that there would be no effect on Maori fishing claims, which were established in the Treaty of Waitangi. But subsequent claims and reports by the Waitangi Tribunal disputed this, leading to a significant and lengthy settlement process between Maori and the Crown.

Under the Treaty of Waitangi and subsequent fisheries legislation, Maori had the un-extinguished rights to the use of marine resources. However, the practical implications of these rights were not always appreciated. This chapter discusses the changing awareness of Maori fishing rights over time, including Maori fishing claims in the context of the QMS. The developments regarding Maori fishing claims and their impact on the QMS are discussed in detail in this chapter from the initial opposition from the Muriwhenua to the introduction of the system, through to the allocation of commercial assets to individual iwi. In addition to their commercial claims, Maori also have customary claims to fisheries resources to collect fish and shellfish for non-commercial purposes such as events on Marae. Consequently, the chapter concludes with a discussion of the legislation, both past and present, which protects Maori customary fishing rights and provides for Maori input into the management of culturally significant areas.

4.1 European Settlement and the Treaty of Waitangi

The traditional Maori diet was highly dependant on food from the aquatic environment. Apart from birds, dogs and rats, oceans and freshwater ecosystems were the only source of animal food for Maori (Waitangi Tribunal 1988). Early Maori had extensive knowledge of their fisheries and had an ownership system in place which reduced the risk of exploitation (Bess 2001). Traditionally, Maori utilised a large proportion of the open sea with fishing grounds that were up to 25 miles from the coastline and large fishing trips, which caught tonnes of fish, were a common occurrence (Waitangi Tribunal 1988). The fish that they caught were not only used for personal and local consumption, but also for trade between tribes. When Europeans started arriving in New Zealand, Maori extended this trade system and began to supply Pakeha ships in exchange for other resources.

In 1840, the Treaty of Waitangi was signed in an attempt to resolve some of the conflict between Maori and Pakeha settlers. But there were significant differences between the Maori and English versions of the Treaty. The most important difference between the two versions, with regard to fisheries, is found in the second article. While the English version grants Maori “exclusive and undisturbed possession of their lands and estates, forests, fisheries and other properties”, the Maori version guarantees Maori unqualified chieftainship over their lands, villages and treasures

(Treaty of Waitangi Information Programme 2006).[35] So Maori believed that they retained control of their resources while the settlers believed that the Crown could, from that point on, impose regulatory controls on resources within New Zealand. Both versions of the Treaty grant Maori ownership of their lands and fisheries.

4.2 Post Treaty Fisheries Legislation

There has been limited treatment of Maori fishing rights in fisheries legislation until recently. But their rights have been acknowledged to some extent in legislation since the passing of the Fish Protection Act 1877 (Batstone and Sharp 1999). Section 8 of this Act states that "nothing in this Act … shall be deemed to repeal, alter or affect any provisions of the Treaty of Waitangi, or take away, annul, or abridge any of the rights of the aboriginal natives to any fishery secured to them thereunder". Other legislation was also put in place to allow for the creation of exclusive fishing grounds for the use of local Maori and tribes, but this was later repealed and no fishing reserves were ever set up (Waitangi Tribunal 1983). Subsequently, fisheries legislation has recognised Maori fishing rights through the inclusion of sections stating that the legislation will not affect Maori customary fishing rights.

4.3 Awareness of Maori Fisheries Claims

In the past, many Maori may not have been aware of fisheries legislation, how it affected them and their customary rights. Many Maori lived in rural areas and fisheries legislation is unlikely to have had a major impact on their day-to-day lives, especially when there was plenty of fish available. Thus, Maori did not have a reason to complain about the way that their rights were affected under changing legislation, at least not until the QMS was introduced.

The 1983 Fisheries Act stated that none of the fishing regulations in the Act would affect Maori customary fishing rights (Section 88(2)). However, it was not until 1985 that this provision was actually tested.

In 1984, Tom Te Weehi (Maori of Ngati Porou descent) was caught with a number of undersized paua which he had collected for his personal consumption. He was consequently charged with breaching the Fisheries Act (Sinner and Fenemor 2005). But Te Weehi defended this charge stating that he was collecting the paua as part of his customary fishing rights under Section 88(2) of the Fisheries Act 1983. While Te Weehi was initially found guilty, in August 1986 Te Weehi's appeal to the High Court was granted and the conviction was quashed.[36] This case was the first time that Maori customary fishing rights were successfully used as a legal defence and it represents a turning point in the way that Maori viewed their customary fishing rights.

[35] The Maori version of the Treaty does not explicitly state that fisheries were included in the settlement. However, it upholds their chieftainship of their lands, villages and treasures, thus implying their continued access to fisheries (Waitangi Tribunal 1983).

[36] The Ministry of Agriculture and Fisheries sought approval to appeal this ruling but this approval was not granted.

The first Treaty claim came from a group of iwi from the far North of the North Island, the Muriwhenua, in 1985 (Bess 2001). Their objection initially focused on the then current plan to introduce large marine reserves that would prevent all fishing in the chosen areas. But during the processing of this claim, the changing focus of fisheries management and the imminent introduction of the QMS became apparent. This led the Muriwhenua to alter the focus of their claim. Instead of trying to prevent the creation of marine reserves in the area, they challenged the way in which the QMS would effectively quash Maori Treaty rights. In December 1986, as part of this claim, the Waitangi Tribunal wrote to the Ministry of Agriculture and Fisheries asking that the notification of fishers of their ITQ allocation be delayed until the Tribunal had finished assessing the claims that were currently lodged. However, because of statutory obligations and the fact that the ITQ system was already in place, this request was rejected (Waitangi Tribunal 1983). The subsequent enquiry and report by the Waitangi Tribunal on the Muriwhenua case was not completed until 1988, by which time the QMS was well established.

4.4 The Introduction of the QMS

During the development and implementation of the QMS, the Government assumed that Maori and their rights under the Treaty would not be affected since this system was put in place to manage commercial fisheries (Clark and Major 1988).[37] Consultation that was carried out with the New Zealand Maori Council prior to the introduction of the system failed to see conflict between customary rights and the QMS. This prevailing view is clearly illustrated in Section 88(2) of the 1983 Fisheries Act which stated that "nothing in the Act shall affect any Maori fishing rights".[38]

While the regulators did not see any relevance between the QMS and Maori rights under the Treaty, iwi did (Wallace 1998). This system not only provided something tangible for Maori to claim, but also led Maori to question whether their rights were being compromised (Falloon 1993). The Crown, through the Treaty of Waitangi, had already granted Maori unextinguishable rights to fisheries resources yet now the Crown was giving the commercial property right to commercial fishers through the QMS (Waitangi Tribunal 1992a). Maori did not object to the introduction of the property rights based system for managing fisheries and they could see the distinct advantages that it had for the environment. In fact, the QMS has all of the characteristics that Maori would want to see in a fisheries management system. But they were concerned about the impact that the system had on their customary rights (Falloon 1993).

The Waitangi Tribunal report on the Muriwhenua claim concluded that a new agreement was needed and that the newly introduced QMS was "in fundamental

[37] Through the legislation, two key assumptions have been made regarding Maori and their fishing practices (Bess 2001). These are, firstly, that Maori never had a system for managing fisheries and, secondly, that their fishing activity should be limited to subsistence use. But in actual fact, Maori had a well developed property rights based system in place well before settlers arrived in New Zealand and fish played an important role in trade between tribes and subsequently with settlers (Waitangi Tribunal 1988).

[38] Interestingly, this differs from previous Acts which state that nothing shall affect existing Maori fishing rights (Waitangi Tribunal 1992a).

conflict with the Treaty's principles and terms" (Waitangi Tribunal 1988). The High Court subsequently agreed with this view (Batstone and Sharp 1999) and an injunction was put in place preventing the introduction of additional species into the QMS (Falloon 1993, Bess 2001, Sinner and Fenemor 2005).

4.5 Interim Settlement

4.5.1 Maori Fisheries Act 1989

With an injunction in place which prevented further species from entering the QMS, negotiations were carried out between Maori and the Crown to address Maori grievances. These negotiations resulted in the Crown implementing an interim settlement, which was passed into law as the Maori Fisheries Act 1989 (Bess 2001). This Act only had limited support from Maori and failed to address all of their concerns. However, it was a starting point to addressing the inconsistencies of the past (Waitangi Tribunal 1992b).

This Act is in multiple parts. Part I establishes the Maori Fisheries Commission and the transfer of assets from the Crown. Part II declares rock lobster to be included in the QMS. Part III authorises the declaration of taiapure.

4.5.1.1 Maori Fisheries Commission

The Maori Fisheries Commission was set up under the Maori Fisheries Act 1989 to administer Maori fishing rights and facilitate entry into and development of the fishing industry by Maori (Waitangi Tribunal 1992a). The Commission, under the 1989 Act, received $10 million and 10% of existing quota from the Government. The transfer of the quota was carried out in four separate transfers of 2.5% of the current TACC with the final transfer occurring by the 31st of October 1992. This settlement led to the Government actively trading in the quota market to fulfil the quota transfer requirement (Bess 2005). However, it was not possible for the Government to obtain all of the quota required. Thus, under Section 42 of the Act, they transferred the equivalent dollar value for the missing quota (TOKM 2003). When cash was transferred, the Commission decided to retain this cash in a trust to be used to purchase the quota when it became available.

At the time of the 1989 Maori Fisheries Act, the QMS was still a reasonably new system that had been introduced to increase the efficiency of the fishing industry through, at least in part, the consolidation of the industry. Splitting Maori fishing assets amongst all iwi seemed to be contrary to the purpose of this new system. Thus, Aotearoa Fisheries Limited (AFL) was set up under the 1989 Maori Fisheries Act in order to make money for Maori from the settlement assets and to acquire additional assets (Day 2004). The profit that was made from the aggregated assets was to then be allocated to individual iwi, thus maintaining the efficiency of the system while still allowing individual iwi to benefit from their assets. AFL received half of the assets transferred to the Commission and all of the profit made by AFL was transferred back to the Commission to enable it to be allocated to iwi. However, after consultation with iwi, assets were to be transferred directly to iwi. Thus, at the completion of the

transition period specified in the Act, AFL was effectively dissolved and all assets were transferred back to the Commission.

All quota held by the Commission was leased out on an annual basis with preference given to Maori fishers (Day 2004). Despite the creation of AFL, the Commission retained half of the awarded quota enabling it to be leased to individual fishers. Once AFL's assets and quota were transferred back to the Commission, this additional quota was also leased out.

4.5.1.2 Introduction of Rock Lobster into the QMS

Within the Maori Fisheries Act 1989, legislation was introduced to complete the introduction of two rock lobster species (spiny rock lobster and the packhorse lobster) into the QMS as these species were partially entered into the system when the injunction was put in place. However, the introduction of these species was not part of the settlement of Maori treaty claims. For more information on the introduction of these two species into the QMS see Section 3.1.5.

4.5.1.3 Taiapure

As part of the Maori Fisheries Act 1989, provisions were made to allow for Maori management of estuarine and coastal areas that had customary significance to any iwi or hapu for either food or spiritual and cultural reasons. The creation of these areas, known as taiapure, was the first attempt to allow for non-commercial aspirations of Maori and to provide a mechanism through which local Maori could play an advisory role to the Ministry of Fisheries. Within the specified taiapure areas, a committee recommended by local Maori becomes responsible for managing the recreational and customary fishing. While this committee is unable to change the regulations applicable to the taiapure, they have the right to recommend to the Ministry that changes to regulations are made.[39] Thus, taiapure provide a system for local Maori to have input in the management of the customarily significant marine environments (Ministry of Fisheries 2006a).

To create a taiapure, local tangata whenua must submit a proposal to the Ministry of Fisheries. This proposal must outline all the individuals who are likely to be affected by the taiapure, the species involved, the proposed management policies and objectives and the significance of the area to Maori (S177). If the proposal has the support of the Minister of Fisheries, an opportunity is provided for public submission on the proposal. The Minister is then able to make his final decision based on all the submissions that have been made and the recommendations from a judge of the Maori Land Court. Once a proposal has been accepted, the Minister is able to appoint a management committee based on the nominations provided by local Maori (Bess and Rallapudi 2006).

Under Section 183 of the 1996 Fisheries Act, no individual can be refused access to the use of, or be required to leave, any taiapure based on their colour, race, ethnicity or national origins. This ensures that non-Maori would not be excluded from coastal

[39] Until regulations are altered for this area, based on recommendations made by the management committee, the relevant fisheries regulations remain in place.

areas or discriminated against, but it has caused some conflict with Maori. Under early legislation, which has long been repealed, (the Maori Councils Acts of 1900 and 1903 and the Maori Social and Economic Advancement Act 1945) there was provision for exclusively Maori reserves to be set up (Waitangi Tribunal 1992a). This legislation was repealed in 1962 and until the Maori Fisheries Act 1989, there was no legislation allowing taiapure, or similar areas, to be created. So although the 1989 Act provided provision for Maori input into the management of culturally significant areas, it did not go as far as previous legislation which allowed for exclusive access (Waitangi Tribunal 1992a). The failure to secure exclusive access has been a disappointment for some Maori. Despite this, both Maori and non-Maori have been able to see the potential benefits of the taiapure system as it allows individual communities greater control over their local resources (Waitangi Tribunal 1992a, Option4 2006a).

Currently eight taiapure have been established in New Zealand (Anderton 2006). The first of these was set up in 1995 at Palliser Bay on the South Wairarapa coast and subsequently taiapure have been established throughout the country. But since the late 1990s, Maori have started to lose interest in establishing taiapure because of to the relatively lengthy legislative process involved in creating them when compared with establishing mätaitai (see Section 4.8.3.1 for more details on mätaitai) (Bess and Rallapudi 2006).

While the Maori Fisheries Act 1989 started the process of settling Maori Treaty claims, it did not represent a full settlement and it led to a number of legal claims being filed. Thus, additional work was required before the issue was fully resolved.

In August 1987, Ngai Tahu filed a fisheries claim against the Crown disputing the rights of the Crown to implement the QMS under the Treaty of Waitangi (Bess 2001). Ngai Tahu claimed full ownership of fisheries in their area and demanded compensation for the damage that had been done to their fisheries during the Crown's stewardship. Their claim took a long time to process and, in the meantime, the Maori Fisheries Act 1989 was passed. But in 1992, the Waitangi Tribunal produced its report on Ngai Tahu's claims which supported the iwi's right to ownership and their claim to a development right. (Waitangi Tribunal 1992a). This development right states that Maori have rights to the fish species that have been discovered and technology that has been developed since the signing of the Treaty in 1840. Despite this being found in the Muriwhenua claim, it was not until the Ngai Tahu report that the practical implications of this right were defined.[40] The Tribunal concluded that Ngai Tahu have the right to a reasonable share of the sea fisheries within twelve to two hundred miles offshore (Waitangi Tribunal 1992a). The acknowledgement of the development rights has ensured that Maori receive both inshore and deepwater quota as part of the Treaty settlement independent of whether a species was fished traditionally (Bess 2001).

[40] In the Muriwhenua's traditional area, all species that were covered by the QMS had traditionally been fished by the local Maori. Thus, there was no reason for the Muriwhenua report to assess the right of Maori to newly developed fisheries. But there are species that are fished within Ngai Tahu's tribal area which were never fished traditionally such as the deep-water species. Therefore, whether the iwi should have access to these fisheries became an issue only once the Ngai Tahu claim was being investigated.

4.6 Final Settlement of Commercial Claims

4.6.1 Treaty of Waitangi Settlement Act 1992

While negotiations were taking place surrounding the Ngai Tahu claim, New Zealand's largest seafood firm, Sealord Products Ltd., was offered for sale. This presented an opportunity to obtain the significant amount of quota required to settle Maori fishing claims. Negotiations took place between Maori and the Crown, which culminated in 1992 with a Deed of Settlement (Batstone and Sharp 1999). This Deed became the basis of the Treaty of Waitangi Settlement Act 1992 and provided a full settlement of all Maori commercial fisheries claims in accordance with the Treaty of Waitangi (Bess 2001).

Under this settlement, Maori were given $150 million for a half share of Sealord Products Ltd and in addition to the quota that they already received under the 1989 Act, they would receive 20 percent of all new QMS species when they were introduced into the system (Wallace 1998, Bess 2001, Newell 2004). It was stated in both the Deed of Settlement and the 1992 Act that these assets must be used to the benefit of all Maori despite the fact that they would eventually be allocated to individual iwi.

The passing of this Act extinguished all rights of Maori to commercial fisheries no matter what system was being used to manage the species. However, because of the mechanism used to compensate Maori, they would not get direct benefits from a species unless they were introduced into the QMS. This was not important for the most significant commercial species (as they are all in the QMS) but it meant that direct compensation might not have been gained for other species such as freshwater species.

The 1992 settlement did not have the support of all Maori. A Court of Appeal injunction against the 1992 Deed was attempted (Bess 2001) and an inquiry was carried out by the Waitangi Tribunal (Waitangi Tribunal 1992b). However, these appeals were unsuccessful and the objections from Maori towards the QMS are now largely resolved (Connor 2001a).

4.7 Allocation of Commercial Assets

Although the level of compensation for Maori was decided through the Treaty of Waitangi Settlement Act, the more difficult task of allocating this among Maori still needed to be resolved. After the Treaty of Waitangi Settlement Act 1992 was created, the Maori Fisheries Commission was restructured and the Treaty of Waitangi Fisheries Commission or Te Ohu Kai Moana (TOKM) as it is otherwise known was formed (Bess 2001). TOKM was given ownership of both the pre-settlement assets (PRESA) awarded under the 1989 Maori Fisheries Act and the post-settlement assets (POSA) awarded under the 1992 Treaty of Waitangi Settlement Act. Not only is TOKM required to manage these assets on behalf of all Maori, they must also facilitate the allocation of these assets to iwi (TOKM 2002). When this allocation

takes place, TOKM must ensure that it is to the benefit of all Maori, not just those who affiliate with a particular iwi.

Deciding on a fair allocation model took 12 years and involved extensive consultation with individual Maori, iwi and other interested parties (TOKM 2003). In November 1998, TOKM had identified what it believed was the optimum method for allocating PRESA, but was unable to report this to the Minister because of unresolved litigation (TOKM 2001a). This proposal was subsequently revisited and a new allocation strategy was published as He Anga Mua in December 2001. Within this report, it was stated that PRESA and POSA would be allocated using the same allocation method, and four possible allocation methods were suggested (TOKM 2001b).[41] These methods varied in the extent to which the assets were held in a centralised organisation and on whether population and/or coastline were used to determine the allocation of assets to tribes. Extensive discussion was then carried out with iwi to get feedback on the options and to ensure that they understood the proposal.

Following a review of the submissions received regarding He Anga Mua, TOKM reviewed its options and published a new proposal of a single allocation method in August 2002 as Ahu Whakamua (TOKM 2003).[42] This document was used to gain agreement from iwi and interested parties on the proposal (TOKM 2002). The final report to the Minister, He Kawai Amokuri, contained very slight alterations to Ahu Whakamua regarding how and when iwi would receive their allocation and was published in May 2003 (TOKM 2003).

In 2004, the Maori Fisheries Act 2004 was passed, finalising the method to be used to allocate Maori fishing assets to iwi. The allocation method in the Act follows that which was presented in He Kawai Amokuri and outlines the process of allocation of quota, cash and other assets. A number of organisations were established to centrally manage assets on behalf of iwi and to promote Maori fishing.

4.7.1 Key Organisations

The Maori Fisheries Act 2004 established six distinct entities including the additional restructuring of TOKM.

4.7.1.1 Te Ohu Kai Moana Trust

The Te Ohu Kai Moana Trust governs the allocation and management of assets.

4.7.1.2 Te Ohu Kai Moana Trustees Limited (TOKM)

Te Ohu Kai Moana Trustees Limited (TOKM) administers the rules of the Te Ohu Kai Moana Trust and holds the assets until they are allocated. The Trustees also

[41] Despite the decision to allocate the PRESA and POSA in the same manner, a key difference still remained. The PRESA quota are only able to be traded within Maori settlement groups (i.e. iwi and TOKM) while the POSA quota are able to be freely traded. While this restriction reduces the efficiency of the system, this effect is likely to be minimal due to the large number of iwi involved. The ACE that is generated from this quota though can be freely traded without restriction.

[42] See Section 4.7.2 for more details on the final allocation method.

manage Te Putea Whakatupu Trust, Te Wai Maori Trust and Aotearoa Fisheries Limited (TOKM 2006a).

Setting up Te Ohu Kai Moana as a trust company has had distinct benefits. It ensures that individual trustees are not personally liable for the assets that are held by Te Ohu Kai Moana and it benefits from the efficiency of company law. The following trusts and companies are all administered by Te Ohu Kai Moana:

4.7.1.3 Aotearoa Fisheries Limited (AFL)

While TOKM was set up as the governance body for Maori fishery interests, Aotearoa Fisheries Limited (AFL) was re-established to control the commercial side of the assets (AFL 2006) and to provide an income stream for Maori. In this role, AFL fishes the quota held in central ownership by TOKM and aims to increase the total commercial assets (AFL 2006).[43] AFL currently holds around half the total value of Maori fishing assets and is estimated to be worth at least $350 million (TOKM 2006b). AFL is entirely owned by TOKM who hold all of the voting shares but the profit that AFL generates is split two ways. Eighty percent of the income shares are held by iwi and the remaining twenty percent is held by TOKM.[44]

4.7.1.4 Te Putea Whakatupu Trust

Te Putea Whakatupu Trust was established in March 2005 to promote the educational advancement of Maori, with a focus on fisheries related activities (TOKM 2005a). Prior to the creation of Te Putea Whakatupu Trust, the TOKM Charitable Trust had already distributed more than 2,000 education and training scholarships to Maori. Te Putea Whakatupu Trust will build on the success of TOKM's scholarship programme (TOKM 2005b). It is through this trust that assets are used to help all Maori, including those who do not affiliate with a particular iwi.

4.7.1.5 Te Wai Maori Trust

The Te Wai Maori Trust uses its income to fund education and research related to Maori freshwater fishing. It also promotes the protection and enhancement of freshwater fisheries habitat, especially those that have traditionally supported iwi (TOKM 2005a). By carrying out research into freshwater species, it may be more likely that these species are introduced into the QMS, thus enabling Maori to gain further financial benefits from the settlement deal. But there are also social and cultural benefits from the work carried out by this trust through the enhancement of the environment.

4.7.1.6 Te Kawai Taumata

Te Kawai Taumata was set up with the sole purpose of appointing and removing directors from Te Ohu Kai Moana Trustees Limited. There must be between 6 and 11

[43] These assets include 50% shareholdings in Sealord and Prepared Foods Ltd and 100% ownership of Moana Pacific Fisheries, Chatham Processing, Pacific Marine Farms and Prepared Foods Processing.
[44] By retaining some of the revenue in a central organisation, the commitment to using the assets for the benefit of all Maori can be met, at least in part.

people on the board, all of whom must be of Maori descent. These individuals are chosen by regional iwi groups in a manner which attempts to ensure that the best people are chosen for the task, rather than people who will try to advance the interests of large tribes.

4.7.2 Allocation of Assets

The Maori Fisheries Act 2004 outlined the process of allocation of the settlement assets given to Maori under the Maori Fisheries Act 1989 and the Treaty of Waitangi Settlement Act 1992.

4.7.2.1 Quota

Under the Maori Fisheries Act, deepwater and inshore quota are allocated through different methods. Deepwater quota are defined as fish stocks where at least 75% of the catch is caught at 300m or deeper and inshore quota is caught above 300m (S8-9 Maori Fisheries Act 2004). If a fish stock is unable to be classified through this rule, then the fish stock is classed by TOKM based on the location of fishing, fishing equipment used and any other relevant information (Maori Fisheries Act 2004 S9). Inshore quota is allocated based on an iwi's share of coastline within the relevant QMA so that iwi receive the same proportion of quota as their share of the QMA's coastline (S140). The deepwater quota is allocated to iwi based 75% on an iwi's population and 25% on its share of coastline within the QMA (S141). However, some exemptions and alternative allocation rules were also put in place to ensure that iwi were not disadvantaged.

The quota for species in the Chatham Island zone is allocated to iwi slightly differently in recognition of the dependence of the Chatham Islands on fishing (S142) (TOKM 2003).[45] While the inshore quota in the Chatham Islands is still allocated based on the coastline, the deepwater quota is allocated based on 50% population and 50% coastline. When the QMA of a species is only partially within the Chatham Island zone, the quota is divided into two portions so that some of it is assigned under Chatham Island zone regulations while the remainder is assigned as regular quota.

Due to the large amount of coastline that can be accumulated through the inclusion of harbours, special provisions have been made for dealing with these areas under Section 143 of the Act. This section defines the total amount of coastline able to be claimed within significant harbours. Schedule Two of the Maori Fisheries Act 2004 identifies the amount of quota in each of the specified harbours that can be allocated to local iwi whose territory adjourns the harbour. The quota that is allocated through this provision is deducted from the total settlement quota before general allocation of inshore quota occurs.

When quota is allocated for freshwater species, such as long-finned eels, only iwi whose territory is within the relevant QMA are eligible for quota. If a single iwi is located with the QMA, they receive the entire quota held by TOKM. When multiple

[45] The Chatham Island zone is a special 200 nautical mile zone that was identified around the Chatham Islands for the purpose of quota allocation.

iwi are involved, the proportion of quota allocated to each can be based on the population of each iwi group or by agreement across parties.

4.7.2.2 Settlement Asset Money

Under this Act, TOKM receives the settlement assets granted to Maori. However, under Section 137, it must transfer these assets to a number of entities (described above): Te Putea Whakatupu Trustee Limited receives $20 million, Te Wai Maori Trustee Limited receives $10 million, and Te Ohu Kai Moana Trustee Limited receives $5 million. Once this process is complete, TOKM must use its revenue from AFL to fund its activities. Additional money from the settlement process must also be transferred to iwi.[46] The proportion each iwi receives is determined by its size. The iwi also receive the cash that was earned by the Commission through leasing quota on the iwi's behalf.

Because some iwi are only entitled to a small amount of quota under the allocation scheme, they are will receive additional cash. Small allocations are inefficient to manage, so tribes with small allocations receive an additional $1 million to help with the management and to enable them to purchase more quota.

Other tribes receive money instead of quota. When cash was received from the settlement deal in place of quota, the Commission retained this money in a separate trust, in order to secure the missing quota. Where the quota has not yet been purchased, the iwi that would have received this quota instead receives money from the Trust.

4.7.2.3 Income Shares

Te Ohu Kai Moana Trustee Limited must also allocate 80% of the income shares that it holds in Aotearoa Fisheries Limited. These shares are to be allocated based on iwi population size which are provided in the Third Schedule.

Due to the potential for financial gain, much lobbying about the allocation mechanism took place before the Maori Fisheries Act 2004 was passed. But this lobbying did not prevent the model from going to Parliament (Day 2004) and once the Act was passed, no legal action was taken.

4.7.3 Requirements to Receive Quota

To receive quota, iwi must meet the criteria specified under Section 130 of the Maori Fisheries Act 2004. This criteria states that iwi must form a mandated iwi organisation (MIO) which will hold and manage the assets transferred to them on behalf of the iwi. The MIO must be set up as a company, trust or incorporated society whose directors, trustees or office holders have been elected or appointed in accordance with the organisation's constitution. The organisation needs to maintain a current register of all iwi members, which must contain at least the number of people listed in the fourth column of Schedule Three of the Maori Fisheries Act 2004. Until iwi have formed an

[46] This process involves a transfer of $20.7 million plus earnings to iwi.

approved MIO, the settlement assets that would be given to them are held in a trust and managed by TOKM.

Until November 2004, it was not possible for iwi to form MIOs since the new TOKM, with whom they needed to register, had not yet been established. But many iwi had made significant progress before this time towards setting up their organisations (TOKM 2006c). So far, 34 MIO have been set up and approximately 60% of the value of the settlement assets has been allocated to individual iwi (TOKM 2006d).[47] TOKM is required to have completed the allocation of all assets to iwi by 2010 (TOKM 2005a) but it is hoping to be able to complete this process by September 2007.

4.8 Customary Rights

In addition to commercial claims to fisheries resources, Maori also have customary rights which enable them to collect fish and seafood for events on Marae and for other traditional non-commercial uses. Food from the aquatic environment has played an important role in many cultural activities and constituted a large component of the traditional diet. Thus, there is a desire to ensure that this right is not extinguished. The Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 recognised both the commercial and customary rights of Maori and consequently included provision for Maori customary use and input into the management of fisheries (Lawson *et al.* 2006). Without accounting for customary non-commercial fishing, it is unlikely that many iwi would have supported the fisheries settlement (Ministry of Fisheries 2004a).

4.8.1 Customary harvest allowance

The Minister of Fisheries is required to make allowances for different fishing interests, including customary harvest, when allocating the TAC. The allowance made for customary fishing should, as a matter of policy, fully satisfy customary interests, and therefore the allowance should not constrain the level of customary catch taken. The customary fishing regulations (Fisheries (South Island Customary Fishing) Regulations 1999 and the Fisheries (Kaimoana Customary Fishing) Regulations 1998) do not provide for the Crown to place limitations on customary fishing, apart from ensuring the sustainability of a particular stock.[48]

In most cases, there is very little information on customary fishing take, although this will improve as customary regulations take effect and better reporting processes are implemented. In the meantime, the Ministry bases the customary allowance on a variable proportion of the recreational allowance, based on an assumed similarity between recreational and customary Maori interest in inshore stocks; the proportion applied depends on the importance of the species for customary use. By following this approach, the customary take is unlikely to exceed the allowance. However, information collected under the reporting requirements of the South Island Customary Fishing Regulations may be available for a large proportion of the South Island and

[47] Many iwi are not able to receive all of their entitlement yet due to a lack of agreement between neighbouring tribes over boundaries.

[48] But given the highly similar nature of these two pieces of legislation, they are jointly referred to as the customary regulations (Option4 2006b).

could be used to estimate customary take. The Ministry will therefore use the reporting framework, and will work towards estimating catch for other parts of the country based on an estimation of the frequency of hui and tangi at each Marae within a given QMA.

4.8.2 Regulation 27

In 1986, regulations were passed that provided a mechanism through which fishers could be made exempt from amateur fishing regulations provided they met certain criteria and were taking fish for approved traditional non-commercial purposes (Regulation 27 and 27A of the Fisheries (Amateur Fishing) Regulations 1986). These regulations have been used to provide for customary harvest, thus allowing individuals to collect fish and seafood without being subject to amateur fishing regulations, provided they had permission from local Maori.

However, this system caused confusion since a number of groups were able to claim tangata whenua status within an area and, consequently, authorise exemptions. Thus in 2003, substantial changes were made to the regulations to improve this process. For instance, potential fishers must acquire written permission from an authorised representative of the local tangata whenua,[49] all gear must be marked with an authorisation number and the sale or trade of any fish taken under this provision is prevented. The authorising representative may also choose to place further restrictions on the harvest such as limiting the time and place that fishing can take place. While this system enables Maori control over traditional areas, it still leaves room for interpretation about who is able to collect customary non-commercial fish. Thus, Regulation 27 is being replaced throughout the country with regulations for creating mätaitai (See Section 4.8.3.1 for more details).

4.8.3 Maori Guardianship

In order to assist in the management of their local fisheries, iwi need to appoint a representative who is able to liaise with Government officials and make decisions on their behalf. These individuals (Tangata Kaitiaki in the North Island and Tangata Tiaki in the South Island) are recommended by the local iwi that they represent, and provide a mechanism through which the tangata whenua have input into the management of their customary fishing areas.[50] Although these positions are voluntary and require a large amount of work, there were around 280 Tangata Kaitiaki and Tangata Tiaki in New Zealand in 2006 and more are expected to be appointed in the near future (Ministry of Fisheries 2006b).

The Tangata Kaitiaki and Tangata Tiaki have substantial control over the use of the aquatic resources within their area. He or she can issue permits to allow the harvest of aquatic life for customary gatherings and can also put in place additional bylaws to

[49] This permission must state: who can take the fish; how many fish of which species can be taken; the area the named parties are authorised to fish in; dates and times fishing can occur; and the purpose for, and place of, catching the fish.

[50] The Tangata Kaitiaki and Tangata Tiaki must be appointed by the Ministry, but these appointments are made based on the recommendations of local tangata whenua.

influence the use of the resource.[51] The authority of the Tangata Kaitiaki and Tangata Tiaki extends only within the area of their hapu or iwi.

Tangata Kaitiaki and Tangata Tiaki are accountable to both their hapu or iwi and the Ministry. Tangata Kaitiaki and Tangata Tiaki are appointed by their hapu or iwi to represent the group. Consequently, they are required to meet with their hapu or iwi annually to inform the group of the customary fishing occurring within their area, restrictions that are in place and any other relevant information. They must also report to the Ministry of Fisheries every three months to provide information regarding the customary fishing that they are authorising. For this reporting to occur, extensive record keeping must be undertaken by the Tangata Kaitiaki and Tangata Tiaki. The information that they gather assists in assessing the sustainability of fish stocks. If Tangata Kaitiaki or Tangata Tiaki do not follow the wishes of their hapu or iwi, or their actions affect the sustainability of the resources that they are responsible for managing, then the Minister of Fisheries can instruct the Tangata Kaitiaki and Tangata Tiaki to comply or remove them from their role (Ministry of Fisheries 2004a).

4.8.3.1 Mātaitai Reserves

In addition to permitting customary fishing in an area, a Tangata Kaitiaki or Tangata Tiaki may also apply to the Minister to have a mātaitai reserve established within their area under the customary regulations.[52] Mātaitai are reserves set up in traditional food gathering areas, thus enabling Maori to control fishing resources in these culturally significant areas.

Applications for mātaitai reserves must be approved by the Minister if they meet all the legislative conditions outlined in the regulations. For instance, management aims which are consistent with the sustainable management of the resource must be created, a special relationship between tangata whenua and the area must be demonstrated and it must be shown that the proposed mātaitai will not affect the ability of quota holders to catch their ACE (Lawson *et al.* 2006).

The placement of a mātaitai reserve can affect commercial fishing in the area, as commercial fishing is prohibited in these areas (recreational fishing is not affected). But the Tangata Kaitiaki or Tangata Tiaki can apply to the Minister to reinstate commercial fishing or alter the restrictions on recreational fishing as they see fit.

The regulations governing the creation of mātaitai have replaced Regulation 27 over most of the country and will eventually replace it entirely. To date, only six mātaitai reserves have been created and cover just 136.8 km^2. However, there are eleven

[51] These bylaws apply equally to Maori and non-Maori. However, there is one exemption to this. When a reserve is closed for general harvesting, the kaitiaki may still approve the collection of seafood to meet the needs of the local Marae (Seaweek 2006).

[52] Separate legislation was passed to enable the establishment of mātaitai reserves in the North and South Islands; Fisheries (Kaimoana Customary Fishing) Regulations 1998 for the North and Chatham Islands and Fisheries (South Island Customary Fishing) Regulations 1999 for the South Island. But given the highly similar nature of these two pieces of legislation (Option4 2006b), they are jointly referred to as the customary regulations. These pieces of legislation were drafted with extensive consultation with Maori and for those areas which are not yet covered by either regulation, consultation and debate continue (Bess 2001).

proposals currently being processed and, if all of these are successful, will cover an additional 880 km^2 (Bess and Rallapudi 2006).

4.8.3.2 Rahui

Traditionally, Maori have applied rahui (temporary bans on fishing activity) to areas in order to ensure that a resource is not exploited and the 1996 Fisheries Act provides provision for rahui to be put in place for two years.[53] Within these areas fishing is prohibited so that local fish stocks can recover from fishing pressure.

Rahui may be requested by tangata whenua through their Tangata Kaitiaki or Tangata Tiaki (Seaweek 2006). On application, these closures can be extended for an additional two years, such as occurred in Pukerua Bay in 2004 (Ministry of Fisheries 2006c). For more permanent closures, either taiapure or mätaitai are required (See Sections 4.5.1.3 and 4.8.3.1 for more details on taiapure and mätaitai respectively). Despite this limited time frame, many iwi have opted for rähui, as mätaitai do not allow for complete fish population recovery.

[53] Sections 186A and 186B of the Fisheries Act 1996 provide the provision for the creation of rähui for the North and South Islands respectively.

5. Recreational and Commercial Fishing

Within any fisheries management system, sustainability cannot be guaranteed unless the effect of all fishing sectors is considered. In systems where only one or some of the fishing sectors are controlled by an ITQ based system, it is vital that the joint effects of all sectors on the fishery are considered to ensure sustainability. But aligning the management systems used for different fishing sectors can be challenging because of the differing objectives and mechanisms that are available in each system. In New Zealand, much of the conflict between customary and commercial fishing has been resolved, or processes have been established to make decisions on areas of conflicting interests.[54] However, issues surrounding the interaction between recreational and commercial fishing still need to be resolved including, potentially, the need to create additional mechanisms to facilitate this management interaction.

Currently, identifying or directly controlling the level of recreational fishing in New Zealand is not possible. This chapter begins with a discussion of this issue before moving onto the interaction between recreational and commercial fishing sectors. Each year, the Minister has to determine the allocation of catch between the recreational and commercial sectors and this requires implicit decisions about the relative importance of each sector. The benefits of each sector are discussed briefly here before some of the issues surrounding the process of allocating catch between recreational and commercial fishing sectors are explained. Finally, recent attempts by the Ministry involving the recreational and commercial sectors are outlined, including the new Shared Fisheries Policy which is currently being developed.

5.1 Lack of Information on Recreational Fishing

Within the New Zealand system, the Minister of Fisheries is charged with ensuring the sustainable utilisation of fish stocks. This means that he must not only set total catch limits for each fish stock, but he must also allocate the total catch levels between customary, recreational and commercial fishing sectors. Under current policy, priority is given to ensuring that there is sufficient allowance for customary harvest (see Section 4.8.1). The remaining catch is then allocated between the commercial and recreational fishing sectors.[55] To be effective, the approximate harvest level of each sector is required.

For the customary and commercial sectors, it is relatively simple to obtain information on catch levels due to the reporting that is required by individuals participating in the system. However, recreational fishers do not need to get a license to participate. Consequently, there is no compulsory, automatic reporting system to provide information on the location, species and amount of fish that recreational

[54] See Chapter 4 for more details on customary fishing and indigenous treaty claims for fisheries resources.

[55] As outlined in Sections 2.4 and 2.5, the TACC levels are set based on the TAC with consideration given to the amount of fish caught non-commercially. But this does not imply that recreational fishing has priority over commercial fishing. The TACC and the allowance for recreational fishers are considered simultaneously.

fishers are catching. Instead, regulators must rely on voluntary surveys to provide estimates of recreational catch levels. These surveys have large differences in their estimates, even when the surveys are carried out a few years apart (Kearney 2002).

With the underlying uncertainty regarding the estimates of recreational catch levels, it is difficult to determine whether recreational harvest levels are within the level identified by the Minister. This is not an issue from a sustainability viewpoint if the recreational harvest level is lower that the recreational harvest level identified by the Minister, but if the harvest level is above the allowance set the Minister, the sustainability of the fish stock may be compromised (Teirney *et al.* 1997).[56]

The Ministry of Fisheries is unable to directly manipulate the total level of recreational catch because this sector is regulated through input based controls such as daily catch limits and restrictions on fishing equipment and locations. So while the Ministry can reduce recreational fishing effort through the alteration of the regulations, quantifying the effect that these changes have is difficult. For example, reducing daily catch limits may decrease the recreational harvest in an area, but it is not clear by how much.[57]

Despite these difficulties, the Ministry must determine a way to share the harvest between sectors while maintaining sustainable fish stocks in the future and allowing the effective utilisation of the resource.

5.2 Determining Sector Priority

When fisheries resources are allocated between the recreational and commercial fishing sectors, decisions need to be made, at least implicitly, about each sector's rank. As well as this, when TACs are reduced, decisions need to be made about which sectors should have their entitlement reduced and, if multiple sectors face reductions, by what proportion. In order to make these decisions, there needs to be a priority ranking between the different sectors. Based on current legislation, commercial, recreational and customary fishing are all considered simultaneously when TACC levels are set (See Chapter 2 for more details). However, while customary rights are considered to take priority because of the obligations set out in the Treaty of Waitangi (Ministry of Fisheries 2006d), the priority ranking between recreational and commercial fishing is not so clear (Sinner and Fenemor 2005).

Both recreational and commercial fishing generate a number of benefits for society. The combination of monetary and non-monetary benefits associated with each sector makes it difficult to determine which group would generate the most value from additional fish or conversely from which would a reduction in catch allowance provide the lowest cost to society.

[56] However, if the recreational catch is significantly lower than the recreational allowance, the allowance of the commercial sector could have been increased allowing greater utilisation of the resource without compromising sustainability. So there are economic consequences when the recreational catch levels are lower than the allowed catch levels.

[57] Many recreational fishers do not know the daily catch limits and this further limits the Government's ability to control recreational fishing (Hawkey 1994).

5.2.1 Benefits of Recreational Fishing

A significant number of New Zealanders from a wide range of ethnic and social backgrounds (Hawkey 1994) participate in recreational fishing each year (Gibbs and Stokes 2006). Recreational fishers get a variety of benefits from participating in this leisure activity. Not only are they able to provide fresh fish and shellfish for them and their families, but many also derive significant enjoyment and satisfaction from fishing. Because of the important role that recreational fishing plays in the life of many New Zealanders, it has significant cultural value. Consequently, many New Zealanders consider that being able to participate in recreational fishing is their birthright.

In addition to the cultural significance, recreational fishing also has a number of economic benefits. There are a number of communities that rely on good fishing spots to attract visitors throughout New Zealand (Ministry of Fisheries 2006c). These visitors create jobs in retail, entertainment and service industries which may not have otherwise existed. Through these flow-on effects and direct expenditure on equipment and services, recreational fishing is thought to generate an annual expenditure of $973 million for the 5 major recreational species alone (Option4 2000).

5.2.2 Benefits of Commercial Fishing

The commercial fishing sector provides substantial economic benefits for New Zealand and is a major export earner. For instance, in 2004, the commercial fishing industry generated $1.2 billion of export earnings. It also provides substantial employment. In 2004, it directly employed over 10,000 full time equivalent people and, it is estimated, that it indirectly employs another 15,000 full time equivalent people (Ministry of Fisheries 2006e). The economic benefits of the fishing industry are spread across the country; a number of small towns' and communities' economies are reliant on earnings from people involved in the industry.

Balancing the monetary and non-monetary benefits of recreational and commercial fishing is challenging. Different groups within the fishing industry have their own views on which sector should take priority (Gibbs and Stokes 2006). While TOKM and commercial fishers believe that commercial fishing should receive priority over recreational fishing (TOKM 2000), groups representing recreational fishers believe that recreational fishing should have priority (e.g. Option4 2000). In 1989, Colin Moyle, the Minister of Fisheries at the time, stated that non-commercial fishing would receive priority over commercial fishing when a species was not able to support both sectors (Option4 2006c). This policy was not, however, ever formalised in legislation (Office of the Parliamentary Commissioner for the Environment 1999, p.66) and, more recently, Option4 was informed that this was not Labour Government policy (Option4 2000).[58]

5.2.3 Ministerial Discretion

The responsibility for sharing the total catch between recreational, customary and commercial fishing rests with the Minister of Fisheries. While quota holders have rights to a proportion of the TACC under current legislation, the Minister is able to

[58] Option4 is a recreational fishing lobby group. See Section 5.3.2 for more details on Option4.

use his discretion to determine what proportion of the TAC is allocated to commercial fishers each year (i.e. the level of the TACC) and the recreational fishing sector. While this enables the Minister to respond to new information regarding the sustainability of the fish stock, it also means that there can potentially be large changes in TACCs from year to year, making it difficult for the industry to plan for the future. This is especially pertinent when the Minister of Fisheries changes. A new Minister could have a different view of the relative importance of the recreational and commercial sectors than the previous minister, potentially causing significant changes in the amount of harvest allocated to each sector. In practice, shares have not changed much year to year and most allocation decisions made following a TAC adjustment have been done proportionately.

5.3 Legislative Management of Recreational and Commercial Fishing

The interaction between the recreational and commercial fishing sectors provides a challenge for policy makers. Not only is a clear mechanism for allocating catch between these two groups necessary, but it is also important to ensure that a level of trust and cooperation between the two sectors is maintained. This is particularly difficult to achieve because both sectors have naturally conflicting objectives: they both want higher catch levels for themselves at the expense of the other sector. The legislation under the 1996 Act did not assist in encouraging cooperation between the recreational and commercial fishing sectors, but subsequent projects have focused on improving this relationship.

5.3.1 1996 Fisheries Act regulations

Under the 1996 Fisheries Act there is provision for areas to be put aside for non-commercial fishing only.[59] Section 311 of the Act gives the Minister power to close areas to commercial fishing or to prohibit a commercial fishing method or methods for a particular stock in order to better provide for recreational fishing when commercial fishing has an adverse effect on recreational fishing.[60] However, by putting these restrictions in place there cannot be any conflict with customary fishing or the principles of the Treaty of Waitangi.

But Section 311 has rarely been used in practice. To date, only two marine 'parks' have been set up which are closed to commercial fishing, and with the support of locals, these areas also have restrictions in place on recreational fishing (Bess and Rallapudi 2006). The limited utilisation of this provision is likely to be due to the potentially large financial repercussions of putting a commercial fishing ban in place rather than a lack of public interest in commercial fishing free areas. Under this legislation, if there are large losses to the commercial sector, they may seek

[59] This is in addition to the regulations providing for the creation of taiapure, mätaitai and rähui areas, which can also prevent commercial fishing in selected areas (See Sections 4.5.1.3, 4.8.3.1, 4.8.3.2 for more information on taiapure, mätaitai and rahui areas respectively).
[60] Improved recreational fishing can also be provided for by increasing the share of TAC which is allocated to the recreational sector (i.e. reducing the TACC).

compensation for the non-commercial areas that are set up (Ministry of Fisheries 2000).

The inability to use current legislation and the increased conflict between different fishing sectors have led to further efforts to revise the methods available to manage recreational fishing and the interrelationship between different sectors.

5.3.2 Soundings

In 2000, Soundings was produced by the Ministry of Fisheries in conjunction with the New Zealand Recreational Fishing Council. It outlined three possible new methods for managing fisheries in order to address the issue of allocation between recreational and commercial fisheries (Ministry of Fisheries 2000). The first method retained the status quo for determining allocation between the two groups. Current legislation would be used and the Minister would continue to determine the allocation of fishing rights between the two groups.

The second method used a fixed proportion to allocate harvest levels between the two groups. The Minister would set a TAC and the remaining catch (after allowing for customary harvest) would be split between recreational and commercial fishing based on pre-determined proportions. These proportions may have differed between fish stocks and may have varied over time.

The final method focused on the use of recreational management, which would encourage cooperation with other sectors including Government and commercial fisheries. Under this system, it is likely that a proportional system would have been used to allocate fishing harvest between recreational and commercial fishing. Fisheries plans and recreational involvement in management were also encouraged under this proposal (See Section 8.2.1 for more details on fisheries plans). Inherent in all of the proposed methods was the idea that neither recreational nor commercial fisheries had priority over the other.

The Soundings document received a number of mixed responses and led to the creation of a recreational fishing lobby group called Option4 (Ministry of Fisheries 2006f).[61] Option4 strongly rejected all of the options outlined in the Soundings report and suggested instead that recreational fishing should have priority over commercial fishing because of its social, cultural and economic value to society. Submissions from Option4 members made up over 98% of the submissions on Soundings (Careering Options Limited 2001). But in addition to the large number of Option4 submissions, there were also 939 other submissions from a range of individuals and groups. Most submitters agreed that the issues set out in the Soundings report were important, but varied in their opinion of the proposals. For example, a submission by TOKM wanted commercial fishing rights to take precedence over recreational fishing rights to maintain the value of the Treaty settlement. To do otherwise would break the agreement that was set in place when Maori fishing claims were settled (TOKM

[61] As mentioned above (see footnote 54), Option4 is a recreational fishing lobby group that was set up to lobby the Government regarding recreational fishing rights. Option4 does not claim to represent all recreational fishers and cannot be confused with the New Zealand Recreational Fishing Council. However, many Option4 members are also members of the New Zealand Recreational Fishing Council.

2000). In contrast, other individuals believed that the public's right to collect fish and seafood for consumption should take priority.

The first proposed method of retaining the status quo received the least amount of support in the submissions while the second method which advocated proportional share received the most. This suggested that people would like the system to be changed. However, there was not overwhelming support for one method in particular, so none of the proposed changes were made.

In the three years following the Soundings report, two Ministerial consultative groups from the recreational sector were held (Ministry of Fisheries 2005a). These groups reached agreement on the objectives for recreational fisheries management, the need to revise spatial management tools and the development of an amateur fishing information strategy. However, despite this progress, no agreement could be reached on a method for allocating the TAC between recreational and commercial fishers. Due to this lack of agreement, the Minister of Fisheries abandoned the reform process in December 2003.

5.3.3 Shared Fisheries Policy Development

Although the review of recreational fishing issues was abandoned in 2003, the issues that prompted this review had not gone away. Many inshore fisheries were still facing competing demands from the commercial, recreational and customary sectors and resources were still being used to lobby the Minister and to take legal action, resources which could be better used for fisheries management and enhancement. It was clear that until these conflicting demands for access to fisheries were resolved, the management of fisheries would continue to be undermined and commercial investment limited. Thus, in late 2005, the Government announced a Shared Fisheries Project.

The Shared Fisheries Project aims to improve the management of shared fisheries (Ministry of Fisheries 2006g).[62] Through the development of new policy, the Shared Fisheries Project will attempt to increase the value of shared fisheries, taking into consideration that the value of a fishery to New Zealand needs to include both its pecuniary and non-pecuniary benefits to society (Ministry of Fisheries 2006h).

Currently the Shared Fisheries Project is in the development phase, with a discussion document released in November 2006. So while the remainder of this chapter will outline the options presently being discussed, the format that the Shared Fisheries Policy will take when implemented may be quite different to what is outlined below. However, by including the options that are being considered, this report will provide both insight into the possible future of the system and also document options that are being considered at this time.

The public discussion paper (Ministry of Fisheries 2006h) covers a range of issues and aspects of fisheries management, summarised below.

[62] These are fisheries where customary, recreational and commercial fishers have significant interest and share the available catch (Ministry of Fisheries 2005a).

5.3.3.1 Improving information on catch and value

As outlined above, while there is good information on the catch of the commercial fishing sector, information regarding recreational catch levels is limited. This needs to be improved with better survey procedures implemented. Special interest could be paid to the role of charter fishing boats as this may be a cost effective way of increasing knowledge about where recreational fishing occurs. Additional analysis may also take place to attempt to quantify the relative values of fish caught by the recreational and commercial fishing sectors allowing the maximum value to be achieved.

5.3.3.2 Setting of TAC

Currently, the TAC is set to manage stocks at a level that is able to provide the MSY, allowing the greatest amount of fish to be harvested at a sustainable level each year. However, while commercial fishers are interested in the amount of fish that they are able to catch, recreational fishers may prefer larger and/or more abundant fish. Thus, the Shared Fisheries Policy includes proposals to alter the way that the TAC is set and determining optimal rebuild times for depleted fisheries. If implemented, these would be applied on a case-by-case basis if they would lead to higher value being obtained from the fish stock.

5.3.3.3 Prioritising TAC allocations

To date, the Minister of Fisheries is able to determine the proportion of the TAC that is allocated to each of the three fishing sectors. However, this process is not transparent and provides little certainty for the future. Consequently, the Shared Fisheries Project aims to address this uncertainty by proposing that the rights of recreational fishers are protected with a guaranteed minimum tonnage for recreational fishing and the priority status that is currently given to customary fishing is formalised in legislation.

5.3.3.4 Setting and Adjusting Recreational and Commercial Allocations

Initial baseline allocation methods need to be identified for each of the fish stocks in order to determine how the TAC should be allocated between sectors, thus providing transparency and certainty for each of the sectors. Three mechanisms are identified in the discussion document for setting the baseline allocations.[63] First, allocations are identified by an independent panel or individual based on evidence and submissions. Second, allocations are identified based on a valuation study of the commercial and recreational sectors. Third, allocations are set after a negotiation process between representatives from the recreational and commercial sectors.

Once allocations have been set, mechanisms need to be developed to establish how adjustments to the allocations will be made. In the long term, direct negotiation between the recreational and commercial sectors would be ideal, but given the current level of information and representation of these groups, this is not currently feasible. Instead, three mechanisms have been suggested. First, any adjustments that are made

[63] Due to the cost of these processes, it is likely that they would only be carried out for a limited number of stocks.

to the TAC result in proportional adjustments to the existing allocations. Second, allocations are adjusted based on estimates of marginal value. Third, adjustments are made proportionally, but the adjustments take into consideration the valuation data in order to ensure that allocations lead to the greatest value from the fish stock.

5.3.3.5 Management of Specific Local Areas

While there are already tools for managing particular areas, such as mätaitai, providing additional mechanisms to manage fish stocks on a small scale may help to increase the value of shared fisheries. Three proposed additional management tools have been suggested. First, a coastal zone could be developed to allow for non-commercial fishing only within an area. Second, sector representatives could introduce initiatives to protect specific areas such as multi-party agreements to limit catches or amateur fishing havens. Third, fisheries plans could be developed to cover all shared fisheries within an area (See Section 8.2 for more details on fisheries plans).

5.3.3.6 Compensation for Industry

If the any of the above proposed changes were put in place and, consequently, introduced significant costs for industry, compensation might need to be considered. This could occur through the existing method of leaving redress to the courts or else compensation could be identified through a cost and benefit approach identified by the Government.

5.3.3.7 Recreational Fisher's Participation in Management

Due to the large role that recreational fishers have in shared fisheries, their involvement in the management of the fisheries is warranted. Thus, the Shared Fisheries Project proposes that an Amateur Fishing Trust be created to provide professional input from recreational fishers into fisheries management. This would provide effective input from the recreational fishing sector into fisheries management and work with the current amateur fishing organisations that are operating around the country.

The consultation process and, subsequently, the implementation of the outcomes from the Shared Fisheries Project is likely to be a long process taking several years. Not only does this project require consultation with stakeholders, but any proposals which are recommended are likely to require further detailed development if they are to be put into place (Ministry of Fisheries 2006h).

6. Recovering Costs from the Industry

The introduction of an ITQ based fisheries management scheme provides individuals with exclusive harvest rights to a fishery. This allows fishers to focus on providing the best fish for the market, thus resulting in better quality fish, lower costs and ultimately higher returns (Clement 2000). But there are both pecuniary and non-pecuniary costs associated with running the system. Not only are there costs associated with its management and enforcement, but there are also societal costs because of its exclusive nature. Consequently, regulators must decide whether the economic benefits that quota holders obtain through their exclusivity should be captured by the industry or paid to the Government. By allowing the industry to keep this rent, the industry can be recapitalised (Clark and Major 1988). However, since these individuals are obtaining a benefit from a previously common resource, perhaps they should, at least partially, fund the system that provides them with their benefits. In New Zealand, many quota holders received their quota without cost based on previous catch history. Thus, there may be an even stronger argument for ensuring that quota holders contribute to the cost of managing the QMS.

Since the QMS was introduced, the New Zealand Government have wanted quota holders to contribute to the management costs associated with the system. However, the method for collecting funds from the industry has changed significantly in the last 20 years. This chapter covers these changes from the use of a resource rental in 1986 through to the current system where quota holders and fishers pay levies to fund all costs attributable to the commercial fishing industry. It also briefly discusses some of the conflict between the industry and the Ministry of Fisheries regarding the resource rentals and levies and concludes by outlining the settlement of under-recovery and over-recovery of costs in 2004.

6.1 Resource Rentals

When the QMS was first introduced, fishers of QMS stocks were required to pay a resource rental to the Crown for the use of the resource. This was designed to allow the Government to recover some of its costs associated with fisheries management. The resource rental was also used to prevent speculation in quota markets (Boyd and Dewees 1992, Sissenwine and Mace 1992). When the system was introduced there was concern that individuals would purchase quota as they expected the value of it to increase rather than to participate in the fishing industry. Therefore, in an attempt to prevent this from occurring and ensure that quota holders caught the fish that they were entitled to, resource rentals were charged on the amount of quota held rather than the amount of fish caught.[64]

The money that was collected from the resource rentals was to be placed into a specific revolving fund which would cover industry management costs, the financial cost of altering TACC levels and management related research (Batstone and Sharp

[64] This practice implies that fish are abundant enough for all quota to be caught without dissipating the rent. But because of assessment errors, a failure to decrease TACs and economic conditions, this may not be accurate (Sissenwine and Mace 1992).

1999). It was even suggested that this fund might, in the future, pay a dividend to the Government (Crothers 1988). However, this fund was never established and rentals were paid straight into the Government's consolidated fund.

6.1.1 Initial Resource Rentals

To maintain the industry's support of the QMS, resource rentals were set low on introduction. For the majority of species, the resource rentals were initially set at $3 per tonne of quota.[65] However, when foreign owned vessels were used, resource rentals were charged at a double rate to encourage the use of domestic vessels. When operations used both domestic and foreign owned vessels, the appropriate resource rental was paid based on the vessel that was used to catch the fish and all uncaught quota was charged at the domestic rate (Clark and Duncan 1986).

6.1.2 Altering Resource Rentals

Although resource rentals were introduced at low levels, the Government planned over time to increase the rentals so that the value of annual traded quota became zero (Clark and Duncan 1986).[66] Resource rentals were to be eventually set so that the economic profit from holding quota would be zero, or as close to zero as possible. Although it was difficult to determine the correct level of rentals to achieve this, economists suggested that the quota trade price reflected the economic profit gained from holding it. But the fishing industry disagreed, arguing that the quota prices at the start of the system were not a valid representation of the economic rent gained, especially since when the system was introduced a number of high value trades took place as individuals positioned themselves in the market place and sought quota to cover bycatch (Clark and Major 1988).

The 1986 amendment (which introduced the QMS) provided for substantial movement in the level of resource rentals from year to year, allowing for an increase from the original low level. Under this amendment, as long as the Minister considered the value of quota, the impact on net commercial returns and the relevant changes in the TACC, he was able to alter the resource rental rate up to 20% per year (S107G of the amended Fisheries Act 1983). However, since the legislation was drafted listing fixed resource rentals in a Schedule without an adjustment formula, altering resource rentals required an amendment to the fisheries legislation (Sinner and Fenemor 2005). This provided the fishing industry with the opportunity to contest each decision to increase resource rental rates.

In 1990, resource rentals were used as a bargaining tool to retain industry support. At this time, the Government was facing a large financial cost of reducing the TAC in the orange roughy fishery. To avoid this, quota was redefined as a proportion of the TACC (See Section 3.2.2 for more details). As compensation to the industry, the Government agreed to freeze the resource rental rates for five years and redistribute resource rental income to the industry (Sissenwine and Mace 1992).

[65] However, the species that were individually listed on Schedule 1B of the Act had higher resource rental levels. For example, resource rentals for hoki and orange roughy were set at $8.25 and $100 respectively.

[66] Fishers were informed of this intention prior to the system's introduction (Ministry of Agriculture and Fisheries 1984).

From the beginning of the QMS, there was doubt about the legality and practicality of the resource rental scheme (e.g. Clark and Major 1988). The fishing industry was never convinced that the Government was entitled to benefits from holding quota. They argued that some of the benefits obtained from the quota holdings were due to earlier investments made by the fishing industry. Thus, they should be entitled to retain at least some of the benefits (Hawkey 1994). There was also doubt about the legitimacy of the Government charging rent for the use of something that it did not own. This doubt was not only expressed by the fishing industry but also within Government itself by MAF (Sinner and Fenemor 2005).

Once Maori began to claim ownership of New Zealand's fisheries under the Treaty of Waitangi, the ability of the Government to claim rentals was further put in doubt, especially when quota were given to Maori as part of the settlement package (Sinner and Fenemor 2005). Thus in 1994, with the passing of the Fisheries Amendment Act 1994, resource rentals were replaced with cost recovery levies.

6.2 Cost Recovery

Cost recovery enables the Crown to recoup some of the costs associated with managing commercial fisheries.[67] When the system was introduced, the Crown and the fishing industry had different views regarding what costs should be able to be recovered. The Ministry of Fisheries wished to recover costs that would be avoidable if the commercial fishery did not exist. In contrast, the industry wanted to pay only for the costs that were attributed to the industry itself. While these were similar concepts, there were subtle differences between the two. In particular, under the industry's definition, it was required to pay lower costs. However, the Ministry proceeded with the attributable costs approach and, as a result of this, many of the services that the Ministry of Fisheries carries out are not funded by the commercial industry despite the benefit that it may receive. For example, the industry is not required to fund the Ministry's preparation of advice to the Minister on sustainability although they directly benefit. Instead, the Government funds this, along with any other joint costs between commercial and non-commercial fishing (Batstone and Sharp 1999).

The cost recovery levies were set by the Minister with considerable flexibility. Under Section 107EA of the amended 1983 Fisheries Act, cost recovery could be used to recover the costs associated with management, enforcement, research, conservation services and other matters that are related to fishing and are in the spirit of the Act. Levies could be charged to any group of individuals within the fishing industry such as quota holders, fishing permit holders, vessel owners and licensed fish receivers at the Minister's discretion.

Failure to pay the cost recovery levy could lead to significant consequences for the individual. If cost recovery levies were not paid within two months of the due date,

[67] While the money is used to fund some of the activities carried out by the Ministry, the cost recovery levies are not given directly to the Ministry of Fisheries. The Ministry of Fisheries is funded from the Crown's consolidated accounts. The industry is then invoiced for the services attributable to it and the money raised is returned to the Crown.

the individual's fishing permit was suspended preventing them from fishing (Section 107L of the amended Act). When individuals hold multiple fishing permits, the Director-General could suspend as many of them as they deemed appropriate.

6.2.1 Fisheries Act 1996

The Fisheries Act 1996 maintained the spirit of the 1994 amendment. Costs were still recovered for both fisheries and conservation services and from a range of different types of industry participants (S262). However, there were some small changes under this new Act, including the revision of the Second Schedule of the 1983 Act. Cost recovery levies were outlined in the Tenth Schedule of the 1996 Act and in many cases the levies were altered and/or the species for which levies were applicable were changed. These changes included removing the higher costs associated with the use of foreign owned vessels and introducing levies on aquaculture. One of the most significant changes that occurred was that the Conservation Minister under the 1996 Act set the total conservation levy that was to be paid by the commercial fishing industry. The Minister of Fisheries was then required to identify how much each sector of the fishing industry would pay; previously, the Minister of Fisheries had also set the total conservation levy.

6.2.1.1 Research costs

Since the 1996 Fisheries Act, non-core fisheries services have been contracted out by the Ministry of Fisheries. This includes the tendering of research services, which started in 1997 (Batstone and Sharp 1999).[68] While the Ministry of Fisheries initially funds this research, much of the cost associated with it is recovered from the commercial fishing sector through the cost recovery programme. The proportion of research costs related to a given fish stock recovered from the commercial fishing sector depends on the proportion of the total catch that was captured by the commercial fishing sector.

Since quota holders were being charged for the research carried out, there was more reason for quota holders to take an interest, especially as research costs constituted the largest item in the cost recovery levies (Stevens 2005). The fishing industry also realised the impact that the research has on future TACC levels and ultimately the profitability of the industry. This has lead to some companies directly purchasing research in addition to the research that is funded by the levies to the Ministry. For example, the Orange Roughy Management Company invested in their own research, as well as through funding research by Government levies (Clement 2000). They directly commissioned research in a number of areas including stock assessments, environmental studies and age and growth studies.

However, there has always been conflict surrounding the role of industry in funding research. Environmental organisations worry about the conflict of interest that could be occurring, suggesting that the industry is influencing the type of research that is taking place and indirectly censoring the findings (e.g. Wallace 1998). But within the fishing industry there are also concerns; some members of the industry suggest that

[68] The contracts that are tendered by the Minister are fully contestable. However, the majority of the work is carried out by NIWA.

the return on the investment in fisheries research may not be worth the money spent. Investments could be better targeted to get more value for money (Stevens 2005).

6.2.1.2 Under-recovery and over-recovery of costs

The 1996 Fisheries Act introduced further items for consideration by the Minister when setting cost recovery levies. Section 265 states that when the Minister is setting cost recovery levies, he must not only consider the cost of the service that the levy is meant to be financing, but he must also consider cost recovery in previous years. Cost recovery levies were based on budgets that were generated prior to the start of the fishing season and, therefore, did not reflect the actual costs for that year. This meant that fishers in some fish stocks were paying more than was required and others were paying less. However, the 1996 Fisheries Act ensured that the Minister considered the difference between what was paid and what was actually required in previous years.

6.2.2 Fisheries Act 1996 Amendment Act 1999

The Fisheries Act 1996 Amendment Act 1999 enabled substantial improvements to be made on the earlier cost recovery regime by clearly defining who was paying for what services while still providing enough flexibility to allow for variation in the amounts that were recovered from the industry (Wyatt 2000). Section 262 of the amended Act clearly defines whether or not a cost can be recovered. This amendment has meant that the fisheries and conservation services can have their costs recovered or not according to the following:

- If a service is requested by an individual they must pay a fee for the service.
- Services provided in the public interest cannot have their costs recovered.
- Costs of services that are provided to manage the harvesting or farming of fisheries resources are to be attributed, where possible, to the individuals who benefit from the resource.
- Costs of services provided to protect the aquatic environment or biological diversity are to be attributed, where possible, to the individuals who caused the risk or adverse effect.
- Costs cannot be recovered by the Government for services that are provided by another organisation if the organisation was delegated responsibility for the service. However, the delegated organisation is able to set its own fees for these services.

A new subsection was introduced into the Act, which made it explicit that the Minister did not need to consider the level of deemed values in an industry when he was recommending the implementation of an additional levy (S266 (3)).

6.2.3 Fisheries Amendment Act 2004

Despite the increased clarity provided by the 1999 amendment, tension arose between the Government and industry regarding the under-recovery and over-recovery of fishing and conservation service costs. To resolve this dispute, a $25 million dollar settlement was negotiated and this was passed as the Fisheries Amendment Act 2004. This amendment updates the obligations of the Ministry regarding under- and over-recovery of costs, addressing the payment discrepancies covering the period from October 1994 (when cost recovery levies were introduced) to September 2002.

Although the amendment was passed to address concerns about the past, it has altered the way that the cost recovery levies have been set since October 2003.

The 2004 amendment identified the amount that quota holders in each fish stock are entitled to be credited or are required to pay back to the Government (Schedule 9A). Starting in the fishing year commencing on 1 October 2003, the earlier discrepancies were addressed. For stocks that were listed in Part A of Schedule 9A, the amount identified in the schedule was credited against the levies payable for the 2003 fishing year. If the amount owed was greater than the levies, the remaining balance was to be credited in the subsequent fishing years until the settlement sum reached zero. For stocks that were listed in Part B of Schedule 9A that owed money, the levies for the 2003 fishing year were increased by the amount listed. Thus, the discrepancies surrounding earlier payments were settled.

While this process settled the claims that industry had on earlier cost recovery levies, it also created a number of aggrieved individuals. Historical overpayment of cost recovery levies was addressed by crediting present quota holders. But the individuals currently holding quota in each fish stock may not have held quota in the past. Thus, the individuals who received compensation through this settlement were not necessarily those who paid the higher than required cost recovery levies. Those individuals who sold their quota prior to the 2004 settlement received no compensation.

6.2.4 Fisheries Amendment Act (No. 3) 2004

In the Fisheries Amendment Act 2004, all compensation awarded to quota holders of spiny dogfish quota was allocated to the quota holders in a single stock. However, the Fisheries Amendment Act (No. 3) 2004 reallocated the compensation to this fishery amongst all spiny dogfish fish stocks.

7. Catch Balancing

While ITQ based systems focus on individual species management, many species are caught simultaneously. Individual fishers can target multiple species at once while in other cases a different species may be captured unintentionally. So within this type of system, mechanisms must be established that allow fishers to deal with either excess catch of species for which they hold quota or the unintentional catch of species for which they do not hold quota. But these mechanisms need to be carefully designed so that they do not encourage over fishing and lead to the TACC being exceeded and, therefore, prevent sustainability goals from being achieved.[69] So a balance needs to be reached where fishers have access to mechanisms through which they can cover unintentional catch, but which do not encourage them to intentionally exceed their fishing entitlements. In the New Zealand system, a number of different catch balancing mechanisms have been used and at times fishers have had a number of options available to them. This chapter outlines the most common mechanisms and how the mechanisms available have changed over time.

This chapter chronologically outlines changes that have occurred in the catch balancing mechanisms available to fishers. A large number of mechanisms were available in the QMS initially, but then, in 2001, the system was simplified to using a deemed values system and allowing a small amount of quota to be transferred from one fishing year to the next. This chapter, therefore, discusses, the most significant and commonly used mechanisms found in the system prior to 2001 and the post-2001 bycatch mechanisms. Finally, the chapter concludes with a discussion of regulations that are used to reduce the risk of the TACC being exceeded.

7.1 Catch Balancing 1986-2001

Under the 1983 Fisheries Act, it was illegal to catch fish without holding the relevant quota first. There was, however, a defence available to commercial fishers under Section 105A of the amended 1983 Fisheries Act.[70] If fishers were able to prove that they did not intend to take the fish, that the fish were caught as an inevitable consequence of lawfully taking other fish and the said fish were returned to the sea or surrendered to the Crown, they were able to defend themselves against any proceedings lodged against them.[71] However, in addition to proving that it was an inevitable consequence, the fisher had to balance the fish that they caught with one of a number of mechanisms. These mechanisms were needed to ensure that fishers had an incentive to retain any additional fish that they caught rather than dumping the extra fish into the ocean and not reporting this catch. However, these mechanisms also

[69] Another related issue is that of highgrading whereby fishers discard lower quality fish so that they do not contribute to their quota allocation. This ensures that they have the highest quality, most profitable fish to sell. Highgrading, is, however, illegal in the New Zealand system under Section 72 of the 1996 Fisheries Act (or previously Section 28ZB of the 1983 Fisheries Act).
[70] This amendment was introduced by Section 50 of the Fisheries Amendment Act 1990.
[71] Some species were unable to be returned to the sea by Section 28ZB(1) of the amended 1983 Fisheries Act and, thus, needed to be surrendered to the Crown for this defence to be utilised.

had to ensure that there was little or no profit from catching additional fish so that the level of bycatch and overfishing would be reduced.

Five such mechanisms are discussed in detail in the following section.

7.1.1 Surrender Catch

The initial method that was set up to prevent overfishing involved fishers surrendering all fish that were caught without quota to the Government (Sissenwine and Mace 1992). Fishers could still potentially benefit financially from landing their extra fish (Falloon 1993). Those fishers who caught fish in addition to their quota were required to give their extra fish to a processor. The processor then had to pay the Government the pre-determined price for all surrendered fish. However, if the price set by the Government was below the market price for the species, the processor gave the difference to the fisher, providing some monetary benefit from landing.

7.1.2 Leasing or Buying Additional Quota

The simplest way of balancing what was caught with the quota held was to lease the extra quota required to equate the actual catch and entitlement once in port. With the ability to trade quota and lease it for the short term, fishers were able to increase their entitlement to catch certain species by leasing quota and were able to lease out quota that they did not catch.

In the early stages of the QMS, it was also possible to fish on behalf of another person who owned quota. This provided distinct benefits as the formal transfer of quota, either through leasing or through selling the quota, was not required. This was likely to have been popular amongst the smaller quota owners.

7.1.3 Borrowing and Banking

Within the QMS, there was provision to transfer a small amount of quota between fishing seasons. Under Section 28V of the amended 1983 Fisheries Act, quota holders could catch up to 10 percent more than the amount of fish that they were entitled to, given their quota holdings. However, when this occurred, the quota holder's catch entitlement in the following fishing season would be reduced by an equivalent value. In addition, when quota holders caught less than their entitlement, they could transfer the uncaught component to the following season, to a maximum of 10 percent of their quota holding entitlement.

7.1.4 Bycatch Trade-Off System

Under the Bycatch Trade-Off System, fishers could trade quota of one species for another according to specified ratios set by the Ministry of Fisheries (Falloon 1993). The trade-off ratios set were based on the relative values of the two species (Peacey 2002) and were limited to only a few species (Sanchirico et al. 2006). This system was mainly used by small fishing operations who had difficulty in acquiring the quota that they required (Peacey 2002).

However, this system was biologically unsound as it made it difficult to establish and enforce TACs. By allowing the trade of quota from one species to another it was not possible to control the total amount of fish caught within each species in the bycatch trade-off system. Consequently, the TACs of some species may have been exceeded while the TACs of other species may not have been reached. Since TAC levels are set to achieve the Maximum Sustainable Yield (MSY; See Chapter 2 for more details), any deviation from the TAC may threaten the sustainability of the fish stock or reduce the efficient use of the stock.

7.1.5 Deemed Values

Deemed values were a financial penalty that fishers had to pay for catching fish without the relevant quota holdings.[72] The Fisheries Amendment Act 1990 required that all commercial fishers pay the deemed value on all excess or unauthorised quota fish. The deemed values rate for each fish stock was determined prior to the start of each fishing season by the Minister and was paid per kilogram of extra fish caught. In setting the deemed value rates, the Minister was required to consider the market value of the fish, any other benefits the fisher may receive from the fish, and ensure that the price would encourage the fishers to land the catch without encouraging further harvesting (Section 28ZE of the amended 1983 Fisheries Act).

Fishers were required to pay the deemed value amounts monthly for any excess fish caught (Peacey 2002). But they could have the money paid for the deemed values returned to them if they subsequently acquired the quota required to cover their excess catch through either leasing or buying the relevant quota.

7.2 Catch Balancing after 2001

Under the pre-2001 catch balancing system, fishers could choose the mechanism that gave them the best financial reward. While the five most notable catch balancing systems were outlined above, other mechanisms were also available. The system became more and more complex with around 20 different catch balancing mechanisms possible by 2001 (Peacey 2002). Not only was the system becoming complicated, but mechanisms such as bycatch trading and the surrendering of catch meant that there was potential for TACs to be exceeded.[73]

Substantial changes were made to simplify the catch balancing system when the Fisheries Amendment Act 2001 was passed. These changes coincided with the introduction of the ACE into the system.[74]

One of the most significant differences under the new system was that it was no longer illegal to catch species that were managed under the QMS without holding quota as long as you held a fishing permit (Newell 2004).[75] However, an individual's

[72] This system for managing bycatch is unique to New Zealand (Sanchirico et al. 2006).
[73] This potential for exceeding TACCs was exasperated by the difficulty in successfully prosecuting individuals breaching their ITQ except when the offence was blatant (Peacey 2002).
[74] See Section 3.2.3 for more information on ACE and its introduction into the QMS.
[75] However, there are minimum holding levels applying in some species. See Section 3.6.2 for more information on minimum holding levels.

failure to balance their catch would lead to the loss of their fishing permit, making it illegal for them to continue fishing for any species (Section 79 of the 1996 Fisheries Act).

Under this new system, fishers have only two options to deal with their extra catch: they must either purchase the extra ACE required or pay the relevant deemed value. But this change was not just a simplification of the earlier system through the removal of other catch balancing mechanisms. With the passing of the Fisheries Amendment Act 2001, the deemed value system was also altered to include increasing penalties as fishers further exceed their quota levels. The administration of this system is handled by FishServe.[76]

7.2.1 Deemed Values

Previously, the Minister was required to set the deemed value rates at such a level to ensure that there was an incentive for fishers to land fish, but without providing any added incentive for them to take additional fish. This was difficult to judge especially because of the different cost structures of firms.[77] Under the new system this joint requirement is removed stating that the Minister must

> "… *take into account the need to provide an incentive for every commercial fisher to acquire or maintain sufficient annual catch entitlement in respect of each fishing year that is not less than the total catch of that stock taken by that commercial fisher*" (Section 75(2)(a))

The Minister is no longer *required* to set deemed values to ensure that there is no incentive for fishers to catch excess fish. Under Section 75(2), the Minister may have regard to the desirability of encouraging fishers to land catch for which they do not have ACE. The legal requirement to land all fish prevents, at least in theory, fishers dumping fish over the side rather than landing them (Section 72 of the 1996 Fisheries Act).[78] So, under the new system, deemed values are used to encourage commercial fishers to cover their catch by holding the relevant ACE and deterring dumping of fish is provided for by criminal sanctions (Ministry of Fisheries 2004b).

The new deemed value system has two parts, a refundable interim deemed value which is paid at the end of every month and a non-refundable annual deemed value which is payable at the end of the fishing year (Peacey 2002). The monthly deemed value is set at a lower rate than the annual deemed value rate and is used as a reminder to fishers that they will have to settle their catch at the end of the year.

At the end of each fishing season, FishServe calculates the deemed values payments based on the annual deemed value rate for all individuals who either own ACE or have reported catch (FishServe 2006b). The amount that has been paid through the monthly deemed value will then be credited against an individual's annual deemed

[76] For more details on FishServe see Section 3.2.3.
[77] Due to the differing costs, some companies may be encouraged to undertake more fishing than their quota entitles them to, while others may not find it worthwhile landing their excess catch at a given deemed values rate.
[78] But there are exceptions to this. Species that are listed on the Sixth Schedule can be legally returned to the sea and fish that do not meet minimum size requirements can also be returned.

values charges and all individuals will be notified of the remaining amount that they owe. If individuals have paid more in the monthly deemed values than they are required to pay in annual deemed values, the difference will be refunded to them.[79] Failure to pay the deemed values within 20 days of the demand leads to the suspension of the fisher's fishing permit which prevents them from legally continuing to fish (Section 79 of the 1996 Fisheries Act).[80]

Under the earlier deemed values system, all fishers were treated as if they valued excess catch or bycatch the same and that this level was linked directly to the market value. But while excess catch is likely to be closely related to the market value of the fish, the value of a species taken as bycatch to a fisher is only partially related to its market value. For bycatch fish, the value of the fish is more closely related to the added benefits of being able to catch the additional species. For example, mackerel fishers use the deemed values system to cover the kingfish that they catch as bycatch. Due to the low ratio of kingfish to mackerel within the catch, these fishers are willing to pay much more than the market value of kingfish to purchase kingfish ACE or to be able to cover their catch via the deemed values system as it allows them to capture mackerel more efficiently (pers. comm. David O'Dea).

This is a difficult problem to address but differential annual deemed values (sometimes referred to as 'ramping') are now being used in some species to address the issue of differential valuing of bycatch. Under the differential deemed value system, the deemed value rate that the fisher must pay depends on the percentage of their ACE by which they overfished (FishServe 2006b). Therefore, it provides a graduated disincentive to overcatch, a disincentive which increases the more a fisher harvests in excess of his ACE. In a fish stock where the differential deemed value system is applied in the standard fashion, fishers must pay the standard deemed value rate for the first 20% of catch taken in excess of their ACE; for the next 20% of their catch by which they overfish they must pay 120% of the standard deemed value rate, and so on. This continues until the fisher is paying 200% of the standard deemed values rate for all additional catch 100% greater than their ACE entitlement.[81] There is flexibility in the legislation regarding the levels at which the deemed value amount increases so that the schedule can be adjusted to meet the needs of individual fisheries. But to date, this flexibility has never been used and in all species where the differential deemed values are used, the above thresholds apply (Newell 2004).

The differential deemed value system is only used in selected species based on the incentives that the Ministry wants to create for fishers (Ministry of Fisheries 2001). In high value, single species fisheries, there are strong incentives for people to catch more than their quota due to the profitable nature of the species. Thus, it is important to discourage taking of catch in excess of ACE holdings. In these situations, the graduated deemed values system is very useful as the larger the excess catch, in proportion to the ACE holdings, the higher the deemed value payments per unit will become, hence discouraging additional catch.

[79] This refund of the deemed value payments will only occur if an individual acquires ACE to cover some or all of their excess catch during the fishing season.
[80] This only applies if the outstanding deemed value payment is greater than $1,000.
[81] If a fisher holds no ACE for a species on which differential deemed values apply, then all deemed values are charged at the highest rate (usually 200% of the annual deemed value).

7.2.1.1 Chatham Island Deemed Value Rates

Prices that are received by fishermen who land their catch in the Chatham Islands are significantly lower than those received by fishermen who land their catch on the mainland. Thus, if fishermen were forced to pay the same deemed values irrelevant of where they landed their fish, Chatham Island fishers would be severely disadvantaged and this would restrict the development of Chatham Island fisheries. To prevent this from occurring, separate, lower deemed values are used for fishermen who land their catch in the Chatham Islands.

However, fishers do not automatically have Chatham Island deemed values applied (FishServe 2006b). To qualify for the lower rate, fishers must complete the relevant paperwork and get acceptance from FishServe prior to landing their fish. It is not possible to apply the Chatham Island deemed value rates to fish that are landed prior to gaining approval. Due to the potential financial benefits of landing fish on the mainland while paying Chatham Island deemed value rates, FishServe is required to check reported Chatham Island landings.

In 2003, a private company, FishTech, was set up to minimise the deemed values that its members were required to pay through the transfer of ACE between the members. For details on this system see Section 3.5.3.

7.2.2 Banking Quota

ACE that is not caught in the current fishing year may be transferred to the subsequent fishing year. Under Section 67A of the 1996 Fisheries Act, if FishServe identifies that an individual has caught less than their ACE holdings, up to 10% of the individual's ACE holdings may be transferred to the next fishing year. The ACE that is being transferred to the following season will be allocated as soon as is practical after the 15th day following the end of the first fishing year.

Allowing ACE to be transferred from one fishing season to another may enable TACCs to be exceeded by up to 10% in any fishing season. This makes planning difficult as a high catch in one season may reduce the population size in the subsequent fishing years. To avoid these fluctuations in vulnerable species, restrictions are put in place to prevent the transfer of ACE from one fishing year to another. ACE pertaining to fish stocks listed in Schedule 5A of the Fisheries Act 1996 cannot be transferred from year to year, thus protecting these species from large annual fluctuations and allowing for better management of the resource. In addition, ACE cannot be transferred when the TACC is reduced in the subsequent fishing year.

7.3 Over-Fishing Thresholds and Tolerance Limits[82]

While the deemed values system is in place to prevent over-fishing, it does not impose limits on how much fishing may occur as long as the individual is willing to pay the relevant deemed value. If deemed values are not imposing a sufficient economic disincentive, this could lead to fishing levels that significantly exceed the

[82] These were introduced in the Fisheries Act 1996 Amendment Act 1999 creating Sections 77 and 78 of the 1996 Fisheries Act.

TACs. To prevent this from occurring, over-fishing thresholds have been put in place in some stocks to restrict the amount by which fishers can exceed their ACE holdings. Over-fishing thresholds identify a percentage of catch entitlement by which an ACE holder can exceed their ACE holdings. If this value is exceeded, then fishers will no longer be able to harvest any fish, aquatic life or seaweed in the QMA where the threshold was exceeded. This prohibition will remain in place until either the individual has obtained enough quota to cover their catch or the end of the fishing year.

However, this system causes problems for small quota holders who are at a much higher risk of exceeding their over-fishing threshold. To ensure that the individuals with small quota holdings are able to exceed their ACE by a small amount without suffering from permit prohibitions, threshold levels (or tolerance limits) are set by the Governor-General under advice from the Minister of Fisheries (Ministry of Fisheries 2004b). These threshold levels state a minimum amount by which ACE holders can exceed their ACE holdings without being subject to a prohibition.[83] Thus, under this system the small ACE holders can exceed their over-fishing threshold by a small amount without suffering from permit prohibitions.

To date, these two mechanisms have only been applied in sedentary species.

[83] The Chief Executive of the Ministry of Fisheries can also provide an exemption to fishers to have their prohibition removed, but when these exemptions are granted they may include conditions relating to the fishing method and location to avoid the catch of the species exceeding the limit (FishServe 2006b).

8. Future Directions

Over time, social, political and economic environments change. No matter how good the system is for the current environment, all management systems need to have the flexibility to adapt to these changes over time. Consequently, the New Zealand QMS will continue to change to adapt to future conditions. Since New Zealand adopted the ITQ system early on, it was not possible for regulators to look to other countries' experience to plan the QMS. Therefore, as experience with the system and its many enhancements grows, more effective methods may become apparent and subsequently implemented. As time goes on, the QMS may change significantly from the system in place today.

There are a number of areas currently being examined. This chapter first discusses three main issues facing the Ministry at the moment – the precautionary approach, deepwater fisheries management, and recreational and shared fisheries. The Ministry is considering the use of an outcomes framework, fisheries plans and standards to address some of these challenges. These are discussed in the second half of this chapter. However, these policies are still being developed and are thus likely to change before they are implemented. But by including them within this report, readers will be able to gain some insight into changes that may occur in the near future. It will also provide a record of current options being considered by the Ministry.

8.1 Current Areas of Focus

8.1.1 Precautionary Approach

In December 2006, the Minister of Fisheries announced his intention to amend the Fisheries Act 1996 to reflect the internationally-accepted precautionary approach. This would be applied where information on fisheries sustainability and the impact of fishing on the environment is uncertain or limited. At the time of writing (December 2006), little policy background is available; in the coming months, a Cabinet paper will be drafted, a Bill introduced into the House, consideration and hearings by Select Committee, a departmental report prepared and a final Bill introduced. The Minister has announced his intention to have the new law in force in time to make decisions for sustainability measures for the 2007/08 fishing year.

Based on available information, the proposed amendments would re-write section 10 (the Information Principles) of the Fisheries Act 1996. Currently, Section 10 directs the Minister to be cautious when information is of poor quality, and not to avoid making a decision simply because of a lack of (or poor quality) information. Caution is to be exercised in order to achieve the dual purpose of the Act: utilisation and sustainability, neither of which has precedence over the other. If the FAO definition of precaution is adopted, the Fisheries Act will introduce a clear direction to favour sustainability when information is uncertain or incomplete.

Information to manage fisheries is invariably uncertain or limited. The impact of the proposed changes would depend on the specific decisions being made, the stocks they

relate to, and the state of information about them. In general, it is unlikely to cause abrupt changes in current fisheries management measures. The net effect on harvest levels will either be neutral (where the Minister is confident that stocks are being fished sustainably) or will lead to a decrease in catch. Ultimately, there may be changes in the way that stock assessment is undertaken, and how management advice is prepared and presented to the Minister where information is uncertain or limited.

8.1.2 Deepwater Fisheries

While many species are fished by multiple fishing sectors, some fisheries are only harvested commercially, such as orange roughy. In these fisheries, there may be more effective ways of managing the resource than the methods - designed for all fish stocks - which are currently being used. Different management plans for these fish stocks may be appropriate for two reasons. First, since these fish stocks are only fish commercially the effect of (and on) customary and recreational fishers does not need to be considered. Second, commercial-only fisheries tend to be deepwater species, for which successful participation requires a significant investment. Consequently, these fish stocks tend to be dominated by a small number of large companies, which are increasingly becoming vertically and horizontally integrated.

The majority of deepwater stocks are represented by the Deepwater Group Limited (incorporating the commercial stakeholder organisations that included the orange roughy management company, the hoki management company, and the squid management company). This streamlining of representation, along with increasing consolidation within industry, may simplify stakeholder interaction with the Ministry of Fisheries. Thus, pursuing alternative management methods for these fisheries may become feasible.

Current management of deepwater fisheries can be characterised by the lack of a shared overall strategic plan, its poor integration and collaboration, and the limited ability of quota holders to influence or control the services implemented for deepwater stocks or the costs associated with those services. This results in an environment that is not conducive to collaboration or agreement. Considerable effort is expended by industry to engage in Ministry processes, and by the Ministry to respond to concerns raised by industry.

Greater collaboration is desired and achievable, and different structural options can be considered. In the short term, the Deepwater Group and the Ministry are working to better integrate existing processes, and to identify where greater collaboration is warranted. Over the long term, greater collaboration can remove duplication of efforts and resources, remove inefficiencies in processes, and reduce business costs for both parties.

8.1.3 Recreational Fishing

There are a number of challenges facing policy makers with regard to recreational fishing, both as a sector on its own, but also its interaction with the commercial fishing sector. Regulators are only able to estimate (through voluntary surveys) the total recreational catch, as fishers are not required to report their catches. This makes it difficult to ensure that sustainable harvest levels are maintained and to accurately

set the TACC, which is vital for the QMS. There are also concerns regarding the process of allocating of the TAC between recreational, customary and commercial fishers as the share awarded to each is determined by the Minister. As this relies solely on the Minister's discretion, there is considerable uncertainty regarding future catch levels and this makes planning difficult.

To address some of these issues, the Ministry has initiated a public discussion process that includes various proposals for managing shared fisheries. The outcome will be determined by the sort of feedback received and the nature and extent of proposed changes to the regulatory framework.

Chapter 5 provides more information on challenges relating to the recreational fishing sector and its relationship with the commercial fishing sector.

8.2 Objectives-Based Management

In the 2005-2008 Statement of Intent, the Ministry of Fisheries introduced the term "objective-based approach to fisheries management" (Ministry of Fisheries 2005c). This approach comprises a number of key components, including outcomes, standards, and fisheries plans.

At its simplest, an objectives-based approach is being clear about what fisheries management is intended to achieve (the objectives), and designing management of a fishery to meet these objectives. Managing a fishery to achieve clearly defined objectives has advantages over other approaches, including:

- increased transparency in how and why fisheries are managed
- improved tangata whenua and stakeholder understanding, input and buy-in to the process of fisheries management
- easier decision-making
- a stronger link between objectives and management by better integrating science, policy, compliance, and other services
- increased confidence that government obligations will be met and the benefits obtained by stakeholders and tangata whenua maximised.

8.2.1 Outcomes

In the current fisheries legislation, the overriding goal is to achieve sustainable utilisation of fisheries resources (as outlined in Section 8 of the 1996 Fisheries Act). The remainder of the Act contains specific details about different areas of the system developed to achieve this purpose. However, there are no guidelines between the broad goal of sustainable utilisation and the specific details outlined in the remainder of the Act. Similarly, there is currently no link between the goal to 'maximise the value New Zealanders obtain through the sustainable use of fisheries resources and protection of the aquatic environment', and all the outputs and activities undertaken by fisheries managers.

An 'outcomes framework' is a way to describe the desired results from the management process. The Ministry will be developing a hierarchy of outcomes to

determine what needs to be done in order to achieve the overall goal of 'maximis[ing] value'. At the top, outcomes will be wide in scope and general, reflecting their use as goals of public policy. At the bottom, they will be more specific and focused, reflecting their focus for specific management of fisheries activities. At the lowest level of detail, the outcomes framework will detail standards which, together with fisheries plans, will drive fisheries management decision-making in the future.

8.2.2 Fisheries Plans

Fisheries plans are the main planning tool that will be used to implement objectives-based management for specific fisheries. The primary purpose of a fisheries plan is to set out clear linkages between the objectives set for a fishery and the interventions and services used to achieve these objectives.

While fisheries plans have been available in the legislation for a number of years,[84] action has only recently been taken to create fisheries plans. The intent of the Ministry of Fisheries to utilise fisheries plans was introduced in the 2005-2008 Statement of Intent (Ministry of Fisheries 2005b) as part of the Government's attempt to have more inclusive fisheries management, incorporating the views of different sectors involved in fishing.

Fisheries plans will better define the roles of different stakeholders in managing fisheries resources to maximise the total value that is obtained (Ministry of Fisheries 2005c). This approach utilises the knowledge of tangata whenua and stakeholders regarding the value of their fisheries and the clear ideas that these groups can have about the optimal management practices. By including these individuals into the decision making process, rather than the Ministry preparing management advice, and then seeking input, it is more likely that the value of the resource can be maximised. This process allows the stakeholders and tangata whenua to identify what they believe are the most important objectives for the management of their resource.

Fisheries plans are still a new concept in New Zealand fisheries management and thus the process involved in their creation is still being developed. The legislation that governs the use of these plans only outlines the power of the Minister to approve, amend and revoke the plans, but does not stipulate the precise requirements of what the plan must contain. However, work has begun on the creation of fisheries plans for some species and detailed information on fisheries plans and the Ministry's expectations of them can be found in the Fisheries Plan Framework (Ministry of Fisheries 2005c).

In the future, the Ministry expects that fisheries plans will cover all species. More complex plans are likely to be developed as time goes on involving more species and stakeholders within a single plan. From the second half of 2006, the Ministry of Fisheries will be working on developing fisheries plans for all fisheries (Ministry of Fisheries 2006i). However, the initial plans will be preliminary and form the basis of the discussion with stakeholders and tangata whenua in the future. It will likely take

[84] Fisheries plans were introduced in 1999 with the passing of the Fisheries Act 1996 Amendment Act 1999 which introduced Section 11A.

up to five years to have fully developed fisheries plans in place for most fisheries (Ministry of Fisheries 2006i).

8.2.3 Standards

A standard describes minimum performance requirements for fisheries. Over time, standards will be developed to describe required results across all relevant facets of fisheries management.

The main purpose of standards is to establish clear, specific, measurable statements of results. Standards fulfil three main functions:

- Guidance – Standards provide guidance to fisheries managers, tangata whenua and stakeholders on the Government's expectations for the minimum level of performance expected from a fishery and the processes used to manage fisheries.
- Consistency – Different managers make similar types of decisions across a range of fisheries. In some situations, achieving an outcome will require a consistent approach across different fisheries. In these circumstances, standards help ensure a consistent approach.
- Monitoring – Standards describe a required result in a manner that enables the result to be monitored. Standards therefore provide a useful means of reporting on fisheries management performance. This enables both Government and stakeholders to track the performance of management strategies.

Process standards will primarily define best practice for processes to achieve desired outcomes. Most of these processes are not constrained by the Fisheries Act 1996, although many are required to meet administrative law requirements. Performance standards set the minimum levels of performance in respect of specified components of ecosystems such as fish stock size and habitat structure, and the use of fisheries resources, including allocation between fisheries sectors.

8.3 Into the Future

The changes in policy that are outlined above and the Shared Fisheries Project represent substantial changes in fisheries management practice.[85] But since these new policies are still conceptual, changes may be made prior to their implementation as they continue to be developed.

As time goes on, additional challenges to the QMS will present themselves as the environmental, social and political environments, both domestically and internationally, change. However, as it has done over the past 20 years, the QMS will continue to evolve and adapt to efficiently manage New Zealand fisheries in the future.

[85] See Section 5.3.3 for more information on the Shared Fisheries Project.

References

Anderson, L. G. (1995). Privatising Open Access Fisheries: Individual Transferable Quotas. In: Bromley, D. W. *The Handbook of Environmental Economics*. Oxford: Blackwell Handbooks in Economics

Anderton, J. (2006). Akaroa Taiapure Comes into Effect. Press Release posted 31 March 2006. http://www.progressive.org.nz/modules.php?name=News&file=article&sid=2235. Last accessed May 2006.

Aotearoa Fisheries Limited (2006). Aotearoa Fisheries Limited – History. http://afl.maori.nz/about/history.htm Last accessed May 2006

Batstone, C. J., Sharp, B. M. H. (1999) New Zealand's Quota Management System: the first ten years. *Marine Policy* 23(2): 177-190

Bess, R. (2000). Property Rights and their Role in Sustaining New Zealand Seafood Firms' Competitiveness. In: Shotton, R. (ed.) *Use of Property Rights in Fisheries Management.* FAO Fisheries Technical Paper 404/2. Rome: Food and Agriculture Organization of the United Nations

Bess, R. (2001). New Zealand's Indigenous People and Their Claims to Fisheries Resources. *Marine Policy* 25: 23-32

Bess, R. (2005). Expanding New Zealand's Quota Management System. *Marine Policy* 29: 339-347

Bess, R., Rallapudi, R. (2006). Spatial Conflicts in New Zealand Fisheries: The Rights of Fishers and Protection of the Marine Environment. *Presented at Sharing the Fish Conference, Perth, Australia. 25th February – 2nd March 2006*.

Bjørnstad, O. N., Fromentin, J.-M., Stenseth, N. C., Gjøsæter, J. (1999). Cycles and Trend in Cod Populations. *Proceedings of the National Academy of Sciences of the United States of America* 96: 5066-5071

Boyd, R. O., Dewees, C. M. (1992). Putting Theory into Practice: Individual Transferable Quotas in New Zealand's Fisheries. *Society & Natural Resources* 5(2): 179–98.

Careering Options Limited (2001). Analysis of Public Submissions to the Joint Working Group's Discussion Document "Soundings". Available from www.option4.co.nz/Your_Rights/documents/sdganalysis.pdf Last Accessed July 2006.

Clark, I. N. (1993). Individual Transferable Quotas: The New Zealand Experience. *Marine Policy* 17(5): 340-342

Clark, I. N., Duncan, A. J. (1986). New Zealand's Fisheries Management Policies – Past, Present and Future: The Implementation of an ITQ-Based Management System. In: Mollett, N. (ed.) *Fisheries Access Control Programs Worldwide: Proceedings of the Workshop on Management Options for the North Pacific Longline Fisheries. Orcas Island, Washington, April 21-25, 1986.* Alaska: University of Alaska, 107-139

Clark, I., Major, P. (1988). The Development and Implementation of New Zealand's ITQ Management System. *Draft paper prepared for an Advanced Research Workshop on the Scientific Foundations for Rights Based Fishing, Reykjavik, Iceland 27June – 1 July 1988.* 129 pp.

Clement, G. (2000). The Orange Roughy Management Company Limited – A Positive Example of Fish Rights in Action. In: Shotton, R. (ed.) *Use of Property Rights in Fisheries Management.* FAO Fisheries Technical Paper 404/2. Rome: FAO

Clement and Associates (2003). *New Zealand Commercial Fisheries: The Guide to the Quota Management System*. Nelson: Clement and Associates, 93 pp.

Connor, R. (2000). Trends in Fishing Capacity and Aggregation of Fishing Rights in New Zealand under Individual Transferable Quota. In: Shotton, R. (ed.) *Use of Property Rights in Fisheries Management.* FAO Fisheries Technical Paper 404/2. Rome: Food and Agriculture Organization of the United Nations

Connor, R. (2001a). Initial Allocation of Individual Transferable Quota in New Zealand Fisheries. In: Shotton, R. (ed.) *Case Studies on the Allocation of Transferable Quota Rights in Fisheries*. FAO Fisheries Technical Paper 411. Rome: Food and Agriculture Organization of the United Nations

Connor, R. (2001b). Changes in Fleet Capacity and Ownership of Harvesting Rights in New Zealand Fisheries. In: Shotton, R. (ed.) *Case Studies on the Effects of Transferable Fishing Rights on Fleet Capacity and Concentration of Quota Ownership*. FAO Fisheries Technical Papers 412. Rome: Food and Agriculture Organization of the United Nations

Crothers, S. (1988). Individual Transferable Quotas: The New Zealand Experience. *Fisheries* 13(1): 10-12

Day, A. (2004). Fisheries In New Zealand: The Maori and the Quota Management System. *Report prepared for The First Nation Panel on Fisheries.* Available from www.fns.bc.ca/pdf/NewZealand.pdf Last accessed November 2006.

Dewees, C. M. (1989). Assessment of the Implementation of Individual Transferable Quotas in New Zealand's Inshore Fishery. *North American Journal of Fisheries Management* 9(2): 131-139

Falloon, R. (1993). Individual Transferable Quotas: The New Zealand Case. In: OECD, *The Use of Individual Quotas in Fisheries Management*. OECD, Paris. 44-62

FishServe (2006a). FishStock Auctions. http://www.fishstock.co.nz/aboutauctions/. Last accessed June 2006.

FishServe (2006b). Fees. http://www.fishserve.co.nz/information/fees/ Last accessed June 2006.

FishServe (2006c). ACE. http://www.fishserve.co.nz/information/ace/ Last accessed May 2006.

Gibbs, N., Stokes, K. (2006). Implications of Reallocation: Examples from New Zealand. *Presented at Sharing the Fish Conference, Perth, Australia. 25th February – 2nd March 2006.*

Hartevelt, T. (1998). Fishing for the Future: Review of the Fisheries Act 1996. *Report of the Independent Reviewer of the Fisheries Act 1996 to the Minister of Food, Fibre, Biosecurity and Border Control.* Wellington: PriceWaterhouseCooper, September 1998. 91 pp.

Hawkey, D. (1994). Property Rights, ITQs, and the Slice of the Fish Pie: An Appraisal of Fishery Culture and Conflict in the Northland Region. *University of Auckland Working Papers in Economics* No. 17 April 1994.

Jones, W. (2004). The Maze of PCH and Quota Allocation. *Seafood New Zealand* March: 17-18

Kearney, R. E. (2002). Review of Harvest Estimates from Recent New Zealand National Marine Recreational Fishing Surveys. *Report to the New Zealand Ministry of Fisheries. September 2002*. 33 pp.

Kerr, S., Newell, R. G., Sanchirico, J. N. (2004). Evaluating the New Zealand Individual Transferable Quota Market for Fisheries Management. In: *Tradeable Permits Policy Evaluartion, Design and Reform.* Paris: OECD. pp. 121-134

Kidd, D. (2000). A Minister's Perspective on Managing New Zealand Fisheries. In: Shotton, R. (ed.) *Use of Property Rights in Fisheries Management.* FAO Fisheries Technical Paper 404/1. Rome, FAO

Lawson, C., McPherson, T., Woods, K. (2006). The "Race for Space": Maintaining the Value of Fisheries Rights Allocated to Maori as Part of Treaty Settlements in New Zealand. *Presented at Sharing the Fish Conference, Perth, Australia. 26 February – 2 March 2006*.

Ministry of Agriculture and Fisheries (1984). Inshore Finfish Fisheries: Proposed Policy for Future Management. Wellington: New Zealand Ministry of Agriculture and Fisheries.

Ministry of Fisheries. (2000). *Soundings*. Wellington: New Zealand Ministry of Fisheries. 50 pp. Available from http://www.option4.co.nz/Your_Rights/documents/soundings.pdf Last accessed November 2006.

Ministry of Fisheries. (2001). Fisheries Act 1996 – Catch Balancing Regime. Advice Paper to the Minister. Wellington: New Zealand Ministry of Fisheries.

Ministry of Fisheries. (2002). *Primary Production Select Committee Inquiry into the Scampi Fishery: Background Submission*. Wellington: Ministry of Fisheries 2002. 60 pp.

Ministry of Fisheries. (2004a). Hi Ika. Issue 1. August 2004. Available from http://www.fish.govt.nz/en-nz/Publications/Hi+Ika+newsletter/default.htm?WBCMODE=PresentationUnpublished. Last accessed August 2006.

Ministry of Fisheries. (2004b). Catch Balancing and Over-Fishing. Fisheries Act 1996 Compliance Training Lesson Note. Wellington, Ministry of Fisheries.

Ministry of Fisheries. (2005a). Shared Fisheries Policy Development. http://www.fish.govt.nz/en-nz/Shared+Fisheries/SF+Policy+Development.htm. Last Accessed July 2006.

Ministry of Fisheries (2005b). Statement of Intent 2005-2008. Wellington, Ministry of Fisheries. Available from: http://www.fish.govt.nz/en-nz/Publications/default.htm. Last Accessed July 2006.

Ministry of Fisheries. (2005c). Fisheries Plan Framework. Wellington, Ministry of Fisheries. http://www.fish.govt.nz/en-nz/Fisheries+Plans/default.htm. Last Accessed July 2006.

Ministry of Fisheries. (2006a). How we conserve our fisheries. Geography fact sheets. Available from http://www.starfish.govt.nz/geography/facts/fact-conserve-fisheries.htm#taiapure. Last accessed May 2006.

Ministry of Fisheries. (2006b). Annual Report 2005/2006. *Wellington, Ministry of Fisheries*. 73 pp.

Ministry of Fisheries. (2006c). *The State of Our Fisheries*. Wellington, Ministry of Fisheries.44 pp.

Ministry of Fisheries (2006d). *Review of Sustainability Measures and Other Management Controls for the 2006-7 (1 October) Fishing Year. Initial Position Paper.* Wellington: New Zealand Ministry of Fisheries.

Ministry of Fisheries. (2006e). Facts and Figures. http://www.fish.govt.nz/en-nz/Commercial/facts+and+figures/default.htm Last accessed July 2006.

Ministry of Fisheries. (2006f). External Relationships. http://www.fish.govt.nz/en-nz/Publications/Ministerial+Briefing+04/External+Relationships/External.htm?wbc_purpose=Basic Last Accessed July 2006.

Ministry of Fisheries (2006g). Shared Fisheries Project http://www.fish.govt.nz/en-nz/Shared+Fisheries/default.htm. Last Accessed October 2006.

Ministry of Fisheries (2006h). Shared Fisheries: Proposals for Managing New Zealand's Shared Fisheries: A Public Discussion Paper. Wellington: Ministry of Fisheries. Available from http://www.fish.govt.nz/en-nz/Shared+Fisheries/Discussion+Paper.htm Last accessed July 2006.

Ministry of Fisheries. (2006i). Stakeholder-led Fisheries Plans. http://www.fish.govt.nz/en-nz/Fisheries+Plans/Stakeholder+Plans.htm Last Accessed July 2006.

Muse, B., Schelle, K. (1988). New Zealand's ITQ Program. *Commercial Fisheries Entry Commission Paper 88-3*. 47 pp.

Newell, R. G. (2004). Maximising Value in Multi-species Fisheries. Unpublished Report. Available from http://www.fulbright.org.nz/voices/axford/newellr.html. Last Accessed November 2006.

Newell, R. G., Sanchirico, J. N. (2003). Analysis of Concentration and Consolidation in New Zealand Fishing Quota Markets. *Report to the New Zealand Ministry of Fisheries.* June 2003.

Newell, R. G., Sanchirico, J. N., Kerr, S. (2005a). Fishing Quota Markets. *Journal of Environmental Economics and Management* 49: 437-462

Newell, R. G., Papps, K. L., Sanchirico, J. N. (2005b). Asset Pricing in Created Markets for Fishing Quotas. *Resources for the Future Discussion Paper 05-46* (Forthcoming American Journal of Agricultural Economics)

Office of the Parliamentary Commissioner for the Environment. (1999). *Setting Course for a Sustainable Future; The Management of New Zealand's Marine Environment.* Wellington: Office of the Parliamentary Commissioner for the Environment http://www.pce.govt.nz/reports/allreports/0_908804_89_X.shtml. Last Accessed July 2006.

Option4 (2000). Submission to Rights Working Group on Soundings. http://www.option4.co.nz/Your_Rights/sdgsoption4p.htm Last Accessed July 2006

Option4 (2006a). Taiapure – Local Fishery. Available from http://www.option4.co.nz/FAQs/faqtaiapure.htm. Last Accessed May 2006.

Option4 (2006b). Customary Regulatory Comparison. http://www.option4.co.nz/Information/refcusregs.htm Last Accessed May 2006.

Option4 (2006c). Fishing for Food or Profit? *New Zealand Fishing News* June 2006. http://www.option4.co.nz/Updates_and_Alerts/nzfnupdate70p.htm. Last Accessed July 2006

Peacey, J. (2002). Managing Catch Limits in Multi-Species, ITQ Fisheries. *Presented at the IIFET Conference, Wellington, New Zealand. August 19-22, 2002*.

Sanchirico, J. N., Holland, D., Quigley, K., Fina, M. (2006). Catch-Quota Balancing in Multispecies Individual Fishing Quotas. *Marine Policy* 30(6): 767-785.

Seafood New Zealand. (2005). The Quiet Over-Achiever of the Fishing Industry. *Seafood New Zealand* October 2005: 10-12

Seaweek. (2006). Reserves. http://www.nzaee.org.nz/Seaweek2006/marinereserves.htm. Last accessed May 2006.

Sharp, B. M. H. (1997). From Regulated Access to Transferable Harvesting Rights: Policy Insights from New Zealand. *Marine Policy* 21(6): 501-517

Sinner, J., Fenemor, A. (2005). The Adoption of ITQ for New Zealand's Inshore Fisheries. *Ecologic Research Report No. 4* 37 pp.

Sissenwine, M. P., Mace, P. M. (1992). ITQs in New Zealand: The Era of Fixed Quota in Perpetuity. *Fisheries Bulletin* 90: 147-160

Stevens, P. (2005). The Cost of Fishing: The Price of Change – Is it sustainable? *Seafood New Zealand* March 2004: 44-45

Stevens, P. (2005). Making Progress on Recreational Fishing. *Seafood New Zealand* August 2005

Stewart, J. M., Callagher, P. D. (2003). New Zealand Fisheries Management: Changes in Property Rights Structure and Implications for Sustainability. *Sustainable Development* 11: 69-76.

Straker, G., Kerr, S., Hendy, J. (2002). A Regulatory History of New Zealand's Quota Management System. *Draft Motu manuscript*

Sullivan, K. J., Mace, P. M., Smith, N. W. McL., Griffiths, M. H., Todd, P. R., Livingston, M. E., Harley, S. J., Key, J. M., Connell, A. M. (2005). *Report from the Fishery Assessment Plenary, May 2005: Stock Assessments and Yield Estimates*. Wellington: New Zealand Ministry of Fisheries 792p.

Te Ohu Kai Moana (2000). *Submission on the 'Soundings": Discussion Document Reviewing the Management of Recreational Fishing in New Zealand.* Wellington, Treaty of Waitangi Fisheries Commission. http://www.option4.co.nz/Your_Rights/sdgstokm.htm. Last Accessed July 2006.

Te Ohu Kai Moana (2001a). He Anga Mua – A Path Ahead. Wellington, Treaty of Waitangi Fisheries Commission. Available from http://teohu.maori.nz/archive/allocation/index.htm Last accessed November 2006.

Te Ohu Kai Moana (2001b). He Anga Mua – A Path Ahead summary. Wellington, Treaty of Waitangi Fisheries Commission. Available from http://teohu.maori.nz/archive/allocation/index.htm Last accessed November 2006.

Te Ohu Kai Moana (2002) Ahu Whakamua – Summary document Wellington, Treaty of Waitangi Fisheries Commission. Available from http://teohu.maori.nz/archive/allocation/index.htm. Last accessed November 2006.

Te Ohu Kai Moana (2003). *He Kawai Amokura*. Wellington, Treaty of Waitangi Fisheries Commission. pp. 162

Te Ohu Kai Moana (2005a). Annual Report 2005. Wellington, Te Ohu Kai Moana. Available from http://teohu.maori.nz/te_ohu/index.htm. Last accessed May 2006.

Te Ohu Kai Moana (2005b). New $20-million Māori trust will help develop people http://teohu.maori.nz/publications/press_statements/ps_03Mar05_putea_whakatupu.htm. Last accessed May 2006.
Te Ohu Kai Moana (2006a). About Te Ohu. http://teohu.maori.nz/te_ohu/index.htm. Last accessed May 2006.
Te Ohu Kai Moana (2006b). Aotearoa Fisheries Limited. http://teohu.maori.nz/afl/index.htm. Last accessed May 2006.
Te Ohu Kai Moana (2006c). Mandated Tribes. http://teohu.maori.nz/iwi/mandated.htm Last accessed November 2006
Te Ohu Kai Moana (2006d). Eight Iwi to Receive Assets. Media Release, Te Ohu Kai Moana, 18th September 2006. Available from http://teohu.maori.nz/publications/press_statements/ps_18Sept_eight_iwi_approved_to_recieve_assets.htm. Last Accessed October 2006.
Teirney, L D., Kilner, A. R., Millar, R. B., Bradford, E., Bell, J. D. (1997). Estimation of Recreational Harvest from 1991-92 to 1993-94. *Report to the Ministry of Fisheries* July 1997
Townsend, R. E., McColl, J. Young, M. D. (2006). Design Principles for Individual Transferable Quotas. *Marine Policy* 30: 131-141
Treaty of Waitangi Information Programme (2006). Read the Treaty http://www.treatyofwaitangi.govt.nz/treaty/ Last accessed May 2006.
Waitangi Tribunal (1983). Report of the Waitangi Tribunal on the Motunui-Waitara Claim. Department of Justice: Wellington.
Waitangi Tribunal (1988). Report of the Waitangi Tribunal on the Muriwhenua Fishing Claim. Department of Justice: Wellington.
Waitangi Tribunal (1992a). *The Ngāi Tahu Sea Fisheries Report*. Department of Justice: Wellington.
Waitangi Tribunal (1992b). The Fisheries Settlement Report 1992. Department of Justice: Wellington. http://www.waitangi-tribunal.govt.nz/reports/view.asp?ReportID=9E79854F-EB77-46D2-BFB3-6BCB594D37ED. Last accessed August 2006.
Wallace, C. (1998). Marine Management and the Quota Management System: Reform Required. *Sea Views: Marine Ecosystem Management - Obligations and Opportunities*. Wellington: Environment and Conservation Organizations. p. 62-78.
Wyatt, N. (2000). Why Recover Costs? Cost Recovery and Property Rights in New Zealand. In: Shotton, R. (ed.) *Use of Property Rights in Fisheries Management*. FAO Fisheries Technical Paper 404/2. Rome: Food and Agriculture Organization of the United Nations

Motu Working Paper Series

All papers are available online at http://www.motu.org.nz/motu_wp_series.htm or by contacting Motu Economic and Public Policy Research.

07-01 Grimes, Arthur and Andrew Aitken, "House Prices and Rents: Socio-Economic Impacts and Prospects".

06-09 Maani, Sholeh A., Rhema Vaithianathan and Barbara Wolf, "Inequality and Health: Is House Crowding the Link?"

06-08 Maré, David C. and Jason Timmins, "Geographic Concentration and Firm Productivity".

06-07 Grimes, Arthur; David C. Maré and Melanie Morten, "Defining Areas Linking Geographic Data in New Zealand".

06-06 Maré, David C. and Yun Liang, "Labour Market Outcomes for Young Graduates".

06-05 Hendy, Joanna and Suzi Kerr, "Land-Use Intensity Module: Land Use in Rural New Zealand Version 1".

06-04 Hendy, Joanna; Suzi Kerr and Troy Baisden, "Greenhouse Gas Emissions Charges and Credits on Agricultural Land: What Can a Model Tell Us?"

06-03 Hall, Viv B.; C. John McDermott and James Tremewan, "The Ups and Downs of New Zealand House Prices".

06-02 McKenzie, David; John Gibson and Steven Stillman, "How Important is Selection? Experimental vs Non-Experimental Measures of the Income Gains from Migration".

06-01 Grimes, Arthur and Andrew Aitken, "Housing Supply and Price Adjustment".

05-14 Timmins, Jason, "Is Infrastructure Productive? Evaluating the Effects of Specific Infrastructure Projects on Firm Productivity within New Zealand".

05-13 Coleman, Andrew; Sylvia Dixon and David C. Maré, "Māori Economic Development—Glimpses from Statistical Sources".

05-12 Maré, David C., "Concentration, Specialisation and Agglomeration of Firms in New Zealand".

05-11 Holmes, Mark J. and Arthur Grimes, "Is There Long-Run Convergence of Regional House Prices in the UK?"

05-10 Hendy, Joanna and Suzi Kerr, "Greenhouse Gas Emission Factor Module: Land Use in Rural New Zealand—Climate Version 1".

05-09 Poland, Michelle and David C. Maré, "Defining Geographic Communities".

05-08 Kerr, Suzi; Joanna Hendy, Emma Brunton and Isabelle Sin, "The Likely Regional Impacts of an Agricultural Emissions Policy in New Zealand: Preliminary Analysis".

05-07 Stillman, Steven, "Examining Changes in the Value of Rural Land in New Zealand between 1989 and 2003".

05-06 Dixon, Sylvia and David C. Maré, "Changes in the Māori Income Distribution: Evidence from the Population Census".

05-05 Sin, Isabelle and Steven Stillman, "The Geographical Mobility of Māori in New Zealand".

05-04 Grimes, Arthur, "Regional and Industry Cycles in Australasia: Implications for a Common Currency".

05-03 Grimes, Arthur, "Intra and Inter-Regional Industry Shocks: A New Metric with an Application to Australasian Currency Union".

05-02 Grimes, Arthur; Robert Sourell and Andrew Aitken, "Regional Variation in Rental Costs for Larger Households".

05-01 Maré, David C., "Indirect Effects of Active Labour Market Policies".

04-12 Dixon, Sylvia and David C. Maré, "Understanding Changes in Māori Incomes and Income Inequality 1997–2003".

04-11 Grimes, Arthur, "New Zealand: A Typical Australasian Economy?"

04-10 Hall, Viv and C. John McDermott, "Regional Business Cycles in New Zealand: Do They Exist? What Might Drive Them?"

04-09 Grimes, Arthur; Suzi Kerr and Andrew Aitken, "Bi-Directional Impacts of Economic, Social and Environmental Changes and the New Zealand Housing Market".

04-08 Grimes, Arthur and Andrew Aitken, "What's the Beef with House Prices? Economic Shocks and Local Housing Markets".

04-07 McMillan, John, "Quantifying Creative Destruction: Entrepreneurship and Productivity in New Zealand".

04-06 Maré, David C. and Isabelle Sin, "Māori Incomes: Investigating Differences Between Iwi".

04-05 Kerr, Suzi; Emma Brunton and Ralph Chapman, "Policy to Encourage Carbon Sequestration in Plantation Forests".

04-04 Maré, David C., "What do Endogenous Growth Models Contribute?"

04-03 Kerr, Suzi; Joanna Hendy, Shuguang Liu and Alexander S. P. Pfaff, "Uncertainty and Carbon Policy Integrity".

04-02 Grimes, Arthur; Andrew Aitken and Suzi Kerr, "House Price Efficiency: Expectations, Sales, Symmetry".

04-01 Kerr, Suzi; Andrew Aitken and Arthur Grimes, "Land Taxes and Revenue Needs as Communities Grow and Decline: Evidence from New Zealand".

03-19 Maré, David C., "Ideas for Growth?"

03-18 Fabling, Richard and Arthur Grimes, "Insolvency and Economic Development: Regional Variation and Adjustment".

03-17 Kerr, Suzi; Susana Cardenas and Joanna Hendy, "Migration and the Environment in the Galapagos: An Analysis of Economic and Policy Incentives Driving Migration, Potential Impacts from Migration Control, and Potential Policies to Reduce Migration Pressure".

03-16 Hyslop, Dean R. and David C. Maré, "Understanding New Zealand's Changing Income Distribution 1983–98: A Semiparametric Analysis".

03-15 Kerr, Suzi, "Indigenous Forests and Forest Sink Policy in New Zealand".

03-14 Hall, Viv and Angela Huang, "Would Adopting the US Dollar Have Led to Improved Inflation, Output and Trade Balances for New Zealand in the 1990s?"

03-13 Ballantyne, Suzie; Simon Chapple, David C. Maré and Jason Timmins, "Movement into and out of Child Poverty in New Zealand: Results from the Linked Income Supplement".

03-12 Kerr, Suzi, "Efficient Contracts for Carbon Credits from Reforestation Projects".

03-11 Lattimore, Ralph, "Long Run Trends in New Zealand Industry Assistance".

03-10 Grimes, Arthur, "Economic Growth and the Size & Structure of Government: Implications for New Zealand".

03-09 Grimes, Arthur; Suzi Kerr and Andrew Aitken, "Housing and Economic Adjustment".

03-07 Maré, David C. and Jason Timmins, "Moving to Jobs".

03-06 Kerr, Suzi; Shuguang Liu, Alexander S. P. Pfaff and R. Flint Hughes, "Carbon Dynamics and Land-Use Choices: Building a Regional-Scale Multidisciplinary Model".

03-05 Kerr, Suzi, "Motu, Excellence in Economic Research and the Challenges of 'Human Dimensions' Research".

03-04 Kerr, Suzi and Catherine Leining, "Joint Implementation in Climate Change Policy".

03-03 Gibson, John, "Do Lower Expected Wage Benefits Explain Ethnic Gaps in Job-Related Training? Evidence from New Zealand".

03-02 Kerr, Suzi; Richard G. Newell and James N. Sanchirico, "Evaluating the New Zealand Individual Transferable Quota Market for Fisheries Management".

03-01 Kerr, Suzi, "Allocating Risks in a Domestic Greenhouse Gas Trading System".