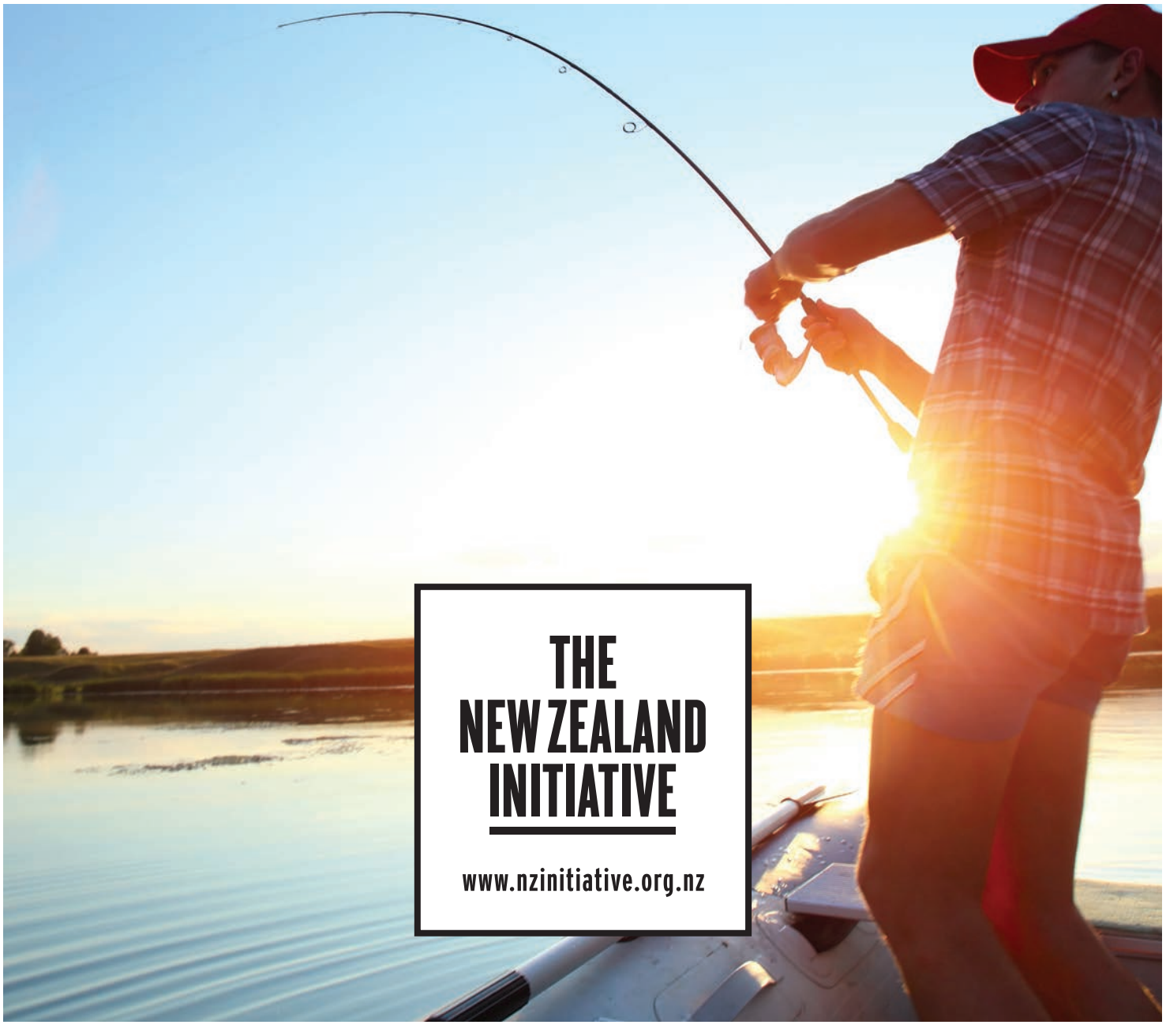
FISHERIES PROJECT

WHAT'S THE CATCH?

The state of recreational fisheries management in New Zealand

Randall Bess
Foreword by Sam Mossman



THE NEW ZEALAND INITIATIVE

www.nzinitiative.org.nz

THE
NEW ZEALAND
INITIATIVE

Published by
The New Zealand Initiative
PO Box 10147
Wellington 6143
New Zealand
www.nzinitiative.org.nz

ISBN
978-0-9941365-2-7 (print)
978-0-9941365-3-4 (online)

RR29

Designed and typeset by Angela Whitney,
angelatootill@gmail.com / 022 188 5914

Printing arranged by True North New Zealand Ltd

WHAT'S THE CATCH?

The state of recreational fisheries management in New Zealand

Randall Bess
Foreword by Sam Mossman

About the New Zealand Initiative

The New Zealand Initiative is an independent public policy think tank supported by chief executives of major New Zealand businesses. We believe in evidence-based policy and are committed to developing policies that work for all New Zealanders.

Our mission is to help build a better, stronger New Zealand. We are taking the initiative to promote a prosperous, free and fair society with a competitive, open and dynamic economy. We develop and contribute bold ideas that will have a profound, positive, long-term impact.

ABOUT THE AUTHOR

Dr Randall Bess is a Research Fellow at The New Zealand Initiative on fisheries management policy. He has researched and published articles on New Zealand's fisheries, including the seafood industry, the settlement of Treaty of Waitangi claims and conflicts between the commercial and non-commercial fishing sectors. He has also worked for the Ministry for Primary Industries for 13 years and the former Ministry of Fisheries. Before immigrating to New Zealand, he commercially fished in Alaska. He holds a Bachelors of Arts (Philosophy), Masters in Business Administration, Masters in Public Management and Doctor of Philosophy applied to the New Zealand fishing industry.

ACKNOWLEDGEMENTS

The author recognises a number of individuals and organisations who contributed their time and expertise to this research. The author also thanks The New Zealand Initiative's review panel for assessing a draft version of this report. Many thanks also go to Dr Oliver Hartwich and Dr Eric Crampton for their expert advice and support during the first part of the fisheries project. Of course, responsibility for all views expressed and any remaining errors and omissions lie with the author.

The New Zealand Initiative would like to thank the Aotearoa Foundation and Sir Douglas Myers for their generous support of this project.

CONTENTS

Tables

ABBREVIATIONS

ACE	Annual catch entitlements
BCO7	Blue cod fishery along the West Coast and top of the South Island
BIS	Benthic Impact Standard
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organization of the United Nations
FMA	Fisheries Management Area
LFR	Licensed Fish Receiver
MDL	Maximum daily limit
MFish	Ministry of Fisheries
MLS	Minimum legal size
MPI	Ministry for Primary Industries
MSY	Maximum Sustainable Yield
NIWA	National Institute of Water and Atmospheric Research
NZBGFC	New Zealand Big Game Fishing Council
NZMRF	New Zealand Marine Research Foundation
NZRFC	New Zealand Recreational Fishing Council
NZSFC	New Zealand Sport Fishing Council
QMS	Quota Management System
SeaFIC	New Zealand Seafood Industry Council
SNA1	Snapper fishery on the northeast side of the North Island
TAC	Total Allowable Catch
TACC	Total allowable commercial catch

Foreword

Things have a way of sneaking up on you. Take the Auckland housing crisis, for example: it has been developing for well over a decade, but only recently has it been recognised that a big problem exists. This long denial has allowed an issue to grow into a crisis, impossible to sort without huge expenditure and years of effort.

A similar view can be taken of fisheries management in this country. Originally, fisheries were heavily regulated, until the government of the day decided it could be a good earner for the country and kicked into gear various incentives, grants and suspensory loans. This resulted in commercial fishing being over-capitalised and the inshore fishery reaching near stock collapse in a relatively short number of years.

To counter this, the Quota Management System (QMS) was introduced as emergency triage. This worked for a time but now problems are emerging. Consider recent media reports of high levels of fish dumping, dolphin and seabird deaths being swept under the carpet, and an apparently overly close relationship between commercial fishers and fisheries managers and politicians, to the detriment of the recreational sector and the public. Another issue is that some commercial interests are already exploiting wild fisheries to the maximum with little room for further expansion so the growing number of recreational fishers are seen as a threat.

The outcome is a high level of distrust between sectors, and not without reason. The net result is an adversarial situation with almost no cooperation. Now is the time for discussion about where to go with our fishery, before we get to crisis point – again. This is a unique opportunity: a review of the 1996 Fisheries Act and the QMS is under way; and reports on the economic value of the recreational fishery, the reconstruction of the true levels of New Zealand's previous catch, and more refined surveys of the level of recreational catch have recently been published. Then there is the approach of the next general election as political motivation.

In this report, Dr Randall Bess has researched the past, present and future of the New Zealand fishery with its customary, commercial and recreational components. The material in this report is sourced from a variety of different viewpoints. These can conflict, and, personally, I do not agree with some of these views. But that, of course, is what democracy is all about: a contest of ideas and opinions that seeks to find the best outcome. I am hopeful this report can be used as a basis for badly needed debate about the future of New Zealand's fishery.

Sam Mossman
New Zealand Fishing News

Executive summary

On the face of it, a foreign recreational fisher might view New Zealand's recreational fisheries as almost surreal. New Zealanders, and tourists alike, are able to fish most days of the year and without a licence or permit. Many of the daily bag limits are generous by most other nations' standards, and there is no requirement to report the location, species or amount of fish caught, except for some fish stocks targeted by the recreational charter boat fleet. Fishers can use various fishing methods, some which are banned in most other developed fishing nations.

Though many of the fish stocks important to recreational fishers are healthy, some are overfished or depleted and need to be rebuilt. Fishers are frustrated about the current state of depletion in some inshore fish stocks, compared with what they experienced in the past.[1]

The blue cod and scallop fisheries along the top of the South Island are a case in point. The cause of decline in catch levels is unknown, but it is likely a combination of human and environmental factors. Several other inshore fisheries demonstrate the need for ongoing decreases in daily bag limits and increases in the minimum legal sizes in response to increasing demand for recreational fishing.

The snapper fishery, which is the largest recreational fishery in New Zealand, reflects this downward trend to ensure fish stock sustainability. For example, the SNA1 fishery has had the daily bag limit reduced from 30 fish in 1985 to 20 in 1993, 15 in 1994, nine in 1995 and seven in 2014. During this time, the minimum legal size has increased from 25 centimetres to 30 centimetres, increasing the effort needed to catch a legal size fish, while increasing the discard rate and, therefore, mortality.[2]

In 1960, New Zealand's population was around 2.4 million. It has recently reached 4.7 million and is projected to increase to 5 million by 2025 and 5.8 million by 2050. Several factors affect New Zealand's projected population, including net migration (the difference between arrivals and departures of migrants).

Since 1986, when the Quota Management System (QMS) was implemented, the average net gain has been 10,500 migrants a year.[3] However, New Zealand has just experienced a record-breaking net

1. Lock, K., and Leslie, S. (2007). New Zealand's *Quota Management System: A History of the First 20 Years*, Motu Working Paper 07–02. Motu Economic and Public Policy Research: Wellington.

2. MPI (2015). Fisheries Assessment Plenary May 2015: Stock Assessments and Stock Status. Ministry for Primary Industries: Wellington.

3. Figures are from Statistics New Zealand (www.stats.govt.nz).

gain of 68,400 people for the year ending June 2016.[4] Furthermore, international visitor arrivals to New Zealand for the year ending June 2016 were 3.3 million. The number of arrivals is projected to increase to 4.5 million by 2022.[5]

When considering New Zealand's projected population and tourism growth, particularly in the Auckland region, it is expected that recreational fishers will face further constraints on their fishing effort, including minimum size and daily limits, if not seasonal closures. This approach does not look good for the future of recreational fishing.

It is conceivable New Zealand's snapper fishery could eventually end up like the red snapper fishery in the United States' Gulf of Mexico waters. Because of increasing demand for recreational fishing and the commercial and recreational Total Allowable Catch (TAC) allocations, the daily bag limit for this fishery is two fish per person, and the fishing season in federal waters (9 miles to 200 miles from shore) lasted only 9 days in 2016.[6]

Worse yet, in Western Australia, the recreational abalone (paua) fishing season is down to five to six one-hour openings on successive weeks, and the bag limit for dhufish has been reduced to two per boat.

In New Zealand, successive governments have been unsuccessful in changing the way recreational fisheries have been managed. Management remains largely hands off; the few regulated controls are often ineffective in constraining recreational fishing effort and catch.

The government's solution to increasing conflict between the commercial and recreational fishing sectors has been to propose two recreational only fishing parks in the inner Hauraki Gulf and the Marlborough Sounds. It appears, however, that the recreational parks are not the preferred solution; neither commercial nor recreational fishers support their establishment, at least as proposed. The fishing sectors do not view them as viable management measures but as attempts at gaining more votes.

The Minister for Primary Industries has recently announced a "high-level" operational review of the QMS and fisheries legislation for the long term. It is unclear what this review might contribute for the recreational fishing sector, especially when the recreational right to fish is outside its scope. This type of high-level review constrains the potential for change, not to mention, the rumour is it has widened to Cabinet now considering possible strategic

4. Statistics New Zealand (2016). *The Kiwi Factor in Record Net Migration*, 14 July. Statistics New Zealand: Wellington (www.stats.govt.nz).

5. Ministry of Business, Innovation and Employment (2016). *Key Tourism Statistics*, 10 August. Ministry of Business, Innovation & Employment: Wellington (www.mbie.govt.nz/info-services/sectors-industries/tourism/documents-image-library/key-tourism-statistics.pdf).

6. Nearly 50 percent of the Gulf of Mexico-wide catch of red snapper is taken in state waters (out to 9 miles from shore). The number of days available each year to fish in state waters varies between states (http://thehill.com/blogs/congress-blog/energy-environment/279382-short-red-snapper-seasons-should-inspire-reform).

and legislative reform that will not be completed before the 2017 general election.

These proposed solutions point to an underlying problem of complacency in managing recreational fisheries, except where it is politically expedient to do something. Fisheries policy leadership and technical competence to support this leadership is lacking.

This situation has been exacerbated by the government having directed an increased portion of public resources to those larger primary industries that make, or have the potential to make, significantly greater contributions to the export economy. The downside to this situation is the extent to which the fishing industry has been able to influence fisheries management priorities and continues the practices of discarding, high grading and misreporting catch.

The most contentious issue in fisheries management is the relative share of the TAC allocated to the commercial and recreational fishing sectors. Because this situation creates uncertainty for both sectors, it is an area for management improvement.

However, the challenge is in both the commercial and recreational fishing sectors having become accustomed to lobbying and counter-lobbying the Minister for more favourable allocations. That aside, the prospect of providing preferential treatment to recreational fishers is the single biggest threat to the future of inshore commercial fisheries. The stakes are high for future ministerial influence.

Another area for improvement is the consideration of responsibilities that accompany the right to fish for recreational purposes. Currently, the right to fish incentivises free-rider behaviour that does not contribute to the cost of management or provide much information that could improve the way fisheries are managed.

As noted, another contentious issue is the poor status of some inshore fish stocks, which tends to support the view that the way most stocks are managed benefits commercial fishers over recreational fishers. Scope does exist for managing some fish stocks at higher levels of abundance (biomass) that benefit recreational fishers who prefer more fish that are older and larger in size.

New Zealanders are fortunate in that the landmass is surrounded by a marine environment that produces plenty of marine life. This series of reports aims to find ways to improve the management of recreational fisheries so New Zealanders' fishing experience is maintained and enhanced for the future.

It is important that any proposed solutions and policy developments uphold the secure rights associated with quota holdings and the principles of the Treaty of Waitangi and related Treaty settlement obligations.

Introduction

In New Zealand, fisheries policies have always been contentious, but more so at certain times. In 2013, the government considered various options for managing the snapper fishery on the northeast side of the North Island (SNA1). Fierce public and political opposition resulted in management options that would have favoured commercial over recreational fishing interests.

This level of opposition demonstrated the extent to which managing recreational fisheries has become highly political, with snapper even used as a prop for debate in Parliament. The level of opposition also demonstrated the importance that many New Zealanders place on their ability to take home a day's catch. For many, fishing in inshore waters is a valued pastime, a way to connect with nature and tradition, and something that is integral to the Kiwi way of life.[7]

Fishing is also an important commercial export industry and occupation for around 20,000 people. The catch of inshore species and aquaculture production make up a significant portion of the annual seafood export value, which is expected to reach around NZ$1.8 billion in 2016.[8] In addition, the substantial ownership stake that Māori have in commercial fishing and aquaculture is vital to their economic development.

Although New Zealand has received international recognition for sustainable management of many of its fish stocks, the status of several stocks is unknown. Much of that success has been attributed to the Quota Management System (QMS) for managing commercial fisheries and the use of individual transferable quota (quota). However, all fisheries management systems have inherent weaknesses, and so it is imperative that they continue to evolve. The QMS is no exception.

The weaknesses in the QMS have become even more apparent during the past few years. This is largely a result of a change in government focus. From the mid-1980s until the late-1990s, successive governments were strongly focused on policies that achieved economic efficiencies that supported commercial fisheries. Since then, there has been far less support for commercial fisheries, which has slowed the evolution of the QMS.

While the inherent weaknesses in the QMS are beyond the scope of this report, it must be acknowledged that some have an effect on

7. Heatherington, M.J. (2000). Property rights and recreational fishing, a New Zealand perspective – past, present and future. *Use of Property Rights in Fisheries Management*. FAO Fisheries Technical Paper 404/1. Proceedings of the FishRights99 Conference, Fremantle, Western Australia, Food and Agriculture Organization of the United Nations: Rome, 284–287.

8. MPI (2016). *Situation and Outlook for Primary Industries 2015*. Ministry for Primary Industries: Wellington.

the recreational fishing experience. The most notable is the incentives to discard, high grade and misreport commercial catches. The extent of the problem is unknown.

This report focuses on the issues most relevant to recreational fisheries. It starts with the recollection that many people have of what fishing was like several decades ago when the nation's population was almost half what it is today. At that time, the demand for recreational fishing was considerably less. For the future, it is conceivable that recreational fishing could be quite different from today, considering projected population growth, increased urbanisation and growth in tourism.

The relevant issues also concern the recreational right to fish, which is one of the few remaining free-of-charge public goods available to everyone. However, fishing is not free. The cost of managing inshore fish stocks is partly borne by the commercial fishing sector through cost recovery levies; the remaining costs of managing recreational fisheries and enforcing rules are borne by taxpayers, though most do not fish. The recreational fishing sector, however, does cover the costs of some research not funded by the government or commercial interests. The sector is also regularly involved in fisheries management processes.

Little attention has been directed at understanding the extent to which recreational fishing occurs. In addition, limited amounts of effort have been expended on understanding the values recreational fishers place on the fishing experience and how best to compare them with commercial values. To this day, few government resources are dedicated to the recreational fishing sector: two government staff are responsible for addressing recreational fishing issues nationwide.

For these reasons, the focus of this report includes the current lack of fisheries policy leadership and the technical competence needed to support it. This lack of leadership has created complacency for managing recreational fisheries within existing budgets, with exceptions where it is politically expedient to do something.

This situation cannot be attributed to the failure of any one government. It results from successive governments having failed to make unpopular decisions regarding the evolution of fisheries management, particularly for those fisheries where commercial, recreational and Māori customary fishers have a shared interest.

This series of three reports by The New Zealand Initiative addresses the management of New Zealand's marine recreational fisheries during the modern period, since the Exclusive Economic Zone (EEZ) was established in 1978. During this period, three government institutions have been responsible for administering fisheries legislation: the Ministry of Agriculture and Fisheries (1978 to 1995), the Ministry of Fisheries (MFish) (1995 to 2012) and the Ministry for Primary Industries (MPI) (2012 to present). Accordingly, in 2012, the Minister's title changed from the Minister of Fisheries to the Minister for Primary Industries.

The series aims to find ways to improve the management of recreational fisheries so the fishing experience is maintained and enhanced for the future.

The series does not address the management of freshwater fisheries, which is significantly different from the management of marine fisheries. The main differences are that the world-famous New Zealand trout fishery is managed using a licensing system and robust regional management institutions are in place.[9]

This first report presents an overview of all fisheries management systems in New Zealand as they have developed. It sets out the overall situation, focusing in particular on recreational fisheries, their existing management challenges and solutions currently being debated.

The second report will summarise the evidence gathered from experiences of fisheries management systems overseas. It will outline how and why they have succeeded or failed, and will bring together common lessons that can be learnt.

The third and final report will apply these lessons, along with those from the management of New Zealand's freshwater fisheries, by proposing policy recommendations to help the public in debating what is possible in New Zealand and what management systems will work best.

9. Most exotic species fished for sport are maintained and enhanced by Fish & Game New Zealand, which is a non-profit organisation run by 12 regional councils that are elected by those who buy licences to fish and hunt (see www.fishandgame.org.nz).

CHAPTER 01

Development of fishing rights

Fisheries policy and management in New Zealand and overseas during the 20th century sought ways to address overfishing that almost inevitably resulted in economic waste and unjustified reduction in, if not decimation of, fish stocks.[10, 11]

Clarification of who has rights to fisheries resources has become an increasingly important step in moving commercial fisheries beyond an open access competitive environment. The right to fish, in its many forms, has been one of the most debated topics, particularly for the past three decades. New Zealand's commercial fishing sector has been at the forefront in these debates.

While clarification of rights is important, it is not sufficient for effective long-term management of fisheries.[12] A focus on commercial fishing, to the exclusion of non-commercial fishing sectors, also provides an incomplete or skewed depiction of the complex and dynamic interactions that occur between people and the institutions for managing their effects on fisheries resources.[13]

Until recently, recreational fishing was considered a marginal activity that did not pose much threat to fish stock sustainability.[14] However, recreational fisheries are now accounting for increasing proportions of the total catches for many fish stocks worldwide.[15]

To help with understanding the opportunities available for improving the management of recreational fishing and enhancing the fishing experience, it is helpful to remember how fishing rights have changed and may change further.[16]

1.1 Historical development of rights

For most of human history, fishing has been a way of life for many people and a part of their annual livelihood strategies. Rights of access to fisheries resources were addressed at the community level. These rights were often governed by traditional allocations over coastal and near-shore waters. Community-level arrangements were usually used to determine the time and duration of access and gear

10. Scott, A. (2010). New directions in fishery management. In Leal, D. (ed) *Political Economy of Natural Resource Use: Lessons for Fisheries Reform*. Prepared for the Global Program on Fisheries (PROFISH), Agriculture and Rural Development Department. The World Bank: Washington, DC.

11. Arnason, R. (2005). Property rights in fisheries: Iceland's experience with ITQs. *Reviews in Fish Biology and Fisheries*, 15, 243–264.

12. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. PhD thesis. The University of Auckland: Auckland.

13. Charles, A.T. (1992). Fishery conflicts: A unified framework. *Marine Policy*, 16, 379–393.

14. Borch, T. (2010). Tangled lines in New Zealand's quota management system: The process of including recreational fisheries. *Marine Policy*, 34, 655–662.

15. Arlinghaus, R., and Cooke, S.J. (2005). Global impact of recreational fisheries. *Science*, 307, 1561–1562.

16. Pearce, P. (2006). Allocation of catches among fishing sectors: Opportunities for policy development. In Metzner, R., Isokawa, D., and Liu, Y. (eds) *Sharing the Fish '06: Allocation Issues in Fisheries Management*. FAO Fisheries and Aquaculture Proceedings 15. Food and Agriculture Organization of the United Nations: Rome, 123–135.

used and for enforcement of strict sanctions against transgressors.[17] In some parts of the world, where landowners claimed ownership of the adjacent coastal waters, fisheries were considered privately owned.[18]

In England, the regulation of access to fisheries resources in tidal waters has a long history that pre-dates Magna Carta in 1215. The nature and the extent of those rights were mainly attributed to ownership or dominion of the soil in the tidal zone.[19] Magna Carta is credited with curtailing those rights, while judicial decisions eroded the idea of private ownership of resources in tidal waters.[20] In time, no one was able to grant private rights to any fisheries in tidal waters, which led to the public right to fish being recognised as a common right.[21]

The next significant change that occurred was the development of the doctrine of the freedom of the seas. In 1609, Hugo Grotius's book titled *Mare Liberum* (The Free Sea) asserted that, because the sea was ever changing and its resources, including fisheries, were inexhaustible, it could not be possessed by anyone or any nation and access to others denied. *Mare Liberum* became the first effective treatise for the freedom of the seas doctrine in modern times.[22]

The third significant change was the development of the English common law principle of the rule of capture, which states that wild animals and wild fish cannot be subject to property law until they are captured and possessed. Some fish species behave similarly to wildlife or birds that freely shift from one place to another.[23]

The consequence of these combined events – the public right to fish, the freedom of the seas and the rule of capture – was that, with a few exceptions, for hundreds of years most fisheries were freely accessible and unregulated. Due to the commonly held view that fisheries were inexhaustible, rationing access to them or restricting fishing effort was believed unnecessary.[24]

17. Symes, D. (1996). Fishing in troubled waters. In Crean, K., and Symes, D. (eds) *Fisheries Management in Crisis*. Fishing News Books, Blackwell Science: Oxford.

18. Scott, A. (2000). Introducing property rights in fisheries management. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 1–13.

19. Walrut, B.P. (2006). Sharing the fish – whose fish? Paper presented at the Sharing the Fish '06 Conference, Fremantle, Western Australia, 27 February to 2 March (www.fishallocation.com/papers/pdf/papers/BernardWalrut.pdf).

20. Scott, A. (2000). Introducing property rights in fisheries management. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 1–13.

21. Pearce, P. (2006). Allocation of catches among fishing sectors: Opportunities for policy development. In Metzner, R., Isokawa, D., and Liu, Y. (eds) *Sharing the Fish '06: Allocation Issues in Fisheries Management*. FAO Fisheries and Aquaculture Proceedings 15. Food and Agriculture Organization of the United Nations: Rome, 123–135.

22. Yale Law School (2010) Our Exhibit Produces an Article: "Grotius and the Freedom of the Seas" (http://library.law.yale.edu/news/our-exhibit-produces-article-grotius-and-freedom-seas).

23. Scott, A. (2000). Introducing property rights in fisheries management. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 1–13.

24. Ibid.

"In contrast, fisheries continued to be owned by the government and managed within an open access environment, characterised by each fisher acting alone with no incentive to do what would benefit the group of fishers or fisheries resources"

However, by the early 1900s, problems had begun to surface. Fisheries were increasingly characterised by expanding fishing fleets, free-for-all fishing pressure and competition between fishers for their catches.[25] Observed changes in the quantity of certain fish stocks and revolutionary developments in fishing technology led to warnings about the dangers of overfishing.[26]

For the next 100 years, fisheries management remained more onerous than that of most other natural resources. The main reason was that other natural resource-based industries, such as farming, forestry and mining, had developed with the support of rights and duties, which generally eliminated open access to the resources.[27] The rights and duties evolved around ownership and continue to dominate the management of land.[28] Ownership rights in natural resources are part of a wider and more complex combination of factors necessary for ensuring resource sustainability.[29]

In contrast, fisheries continued to be owned by the government and managed within an open access environment, characterised by each fisher acting alone with no incentive to do what would benefit the group of fishers or fisheries resources. No one would voluntarily restrain their fishing effort for future gain, if the next fisher could reap the rewards.[30]

Concurrently, coastal nations continued to extend their maritime jurisdictions, from 3- to 6- and then to 12-nautical mile territorial sea limits. The United Nations Convention on the Law of the Sea provided coastal nations with sovereign rights for exploring and exploiting, conserving and managing the natural resources within an established 200-nautical mile EEZ. The extension by nations of their maritime jurisdictions provided opportunities to decrease or eliminate foreign fishing effort, while expanding domestic fishing fleets beyond inshore waters. The expansion of domestic fleets was typically accompanied by subsidies for vessel construction, which led to rapid increases in overall capacity.

25. Pearce, P. (2006). Allocation of catches among fishing sectors: Opportunities for policy development. In Metzner, R., Isokawa, D., and Liu, Y. (eds) *Sharing the Fish '06: Allocation Issues in Fisheries Management*. FAO Fisheries and Aquaculture Proceedings 15. Food and Agriculture Organization of the United Nations: Rome, 123–135.

26. Stewart, C. (2004). *Legislating for Property Rights in Fisheries*. FAO Legislative Study 83. Food and Agriculture Organization of the United Nations: Rome.

27. Scott, A. (2010). New directions in fishery management. In Leal, D. (ed) *Political Economy of Natural Resource Use: Lessons for Fisheries Reform*. Prepared for the Global Program on Fisheries (PROFISH), Agriculture and Rural Development Department. The World Bank: Washington, DC.

28. Kearney, R.E. (2001). Fisheries property rights and recreational/commercial conflict: Implications of policy developments in Australia and New Zealand. *Marine Policy*, 25, 49–59.

29. Parliamentary Commissioner for the Environment (1999). *Setting Course for a Sustainable Future: The Management of New Zealand's Marine Environment*. Office of the Parliamentary Commissioner for the Environment: Wellington.

30. Scott, A. (2000). Introducing property rights in fisheries management. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 1–13.

In a competitive environment, the governments of fishing nations had little choice but to regulate fishing activities to constrain fishing effort and total catches. One of the first constraints for some fisheries was the implementation of one or more seasonal closures. However, it became apparent that closures alone were ineffective in reducing effort or catches. During the open access periods, fishers had incentives to race to the fishing grounds where they would try to get what they could before the fishery closed.[31]

Other forms of regulation were used to support the use of closures. These included limits on vessel capacity (such as vessel length and horsepower) and fishing gear (such as the number of hooks or pots) or bans on the use of certain sizes of mesh in nets. The effect was to create more incentives for fishers to spend more to compete with those inputs that remained unregulated.[32] In regulated open access fisheries, governments had few options beyond the use of ever-shorter fishing seasons.

With fishing nations worldwide experiencing the consequences of fishing fleet expansion, the next solution applied to many fisheries was to enact regulations that limited access. A common approach was to limit the number of fishing licences available for a fishery and then to find ways to reduce the number of licences.[33] However, these limited licence systems did not address the incentive for fishers to outrace and outfish rivals to get what they could before the total catch was reached, which perpetuated the race to fish. The overall result was that overcapacity persisted in most fisheries.

From an economic perspective, overcapacity signifies excessive amounts of capital in vessels and fishing gear that is underused. From a social perspective, overcapacity shows that too many people are reliant on a fishery that cannot sustain their livelihoods. While their fishing operations remain economically marginal, fishers may not be able to afford to embrace the behaviours that could benefit the group of fishers, the fisheries resources or the wider marine environment.[34]

Despite widespread use of regulations, it became apparent the result was a near complete economic failure. As theory predicts and experience has shown, potential economic rents from fishing get eroded in over-investment in fishing capital and fishing effort,

31. Scott, A. (2010). New directions in fishery management. In Leal, D. (ed) *Political Economy of Natural Resource Use: Lessons for Fisheries Reform*. Prepared for the Global Program on Fisheries (PROFISH), Agriculture and Rural Development Department. The World Bank: Washington, DC.

32. Townsend, R.E. (1995). Fisheries self-governance: Corporate or cooperative structures? Marine Policy, 19(1), 39–45.

33. Scott, A. (2000). Introducing property rights in fisheries management. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 1–13.

34. Mace, P.M. (1996). Developing and sustaining world fisheries resources: The state of the science and management. In Hancock, D.A., Smith, D.C., Grant, A., and Beumer, J.P. (eds). *Proceedings of the Second World Fisheries Congress, Developing and Sustaining World Fisheries Resources*. CSIRO Publishing: Collingwood, Vic, Australia.

and this economic waste is often accompanied by an unjustifiable reduction in, if not decimation of, the fish stocks.[35, 36]

1.2 Commercial quasi-property rights

Economists began to consider alternative systems for managing fisheries that viewed the resources as valuable and needing exclusive rights to their use.[37] Forms of rights were developed that avoided placing limits on the amount of capital or the number of fishing vessels in a fishery. Instead, a limit was placed on the catch for each fishing vessel, which came to be known as quota.[38]

Various theoretical discussions ensued regarding the meaning and nature of quota, with the terms "rights" and "private property" used interchangeably and then linked as "property rights".[39] Over time, many of the rights associated with quota were imbued with characteristics resembling private property.[40] If the right is sufficiently strong, the quota holder has an exclusive right to harvest a predetermined proportion of the fishery's Total Allowable Catch (TAC).[41] These exclusive rights were considered an important step towards quota holders organising themselves based on shared interests to maximise the economic return from the fishery.[42]

In the early 1980s, management systems that allocated quota to individuals and companies were applied in a trial and error manner to fisheries in Iceland and New Zealand.[43] In the case of New Zealand,

35. Scott, A. (2010). New directions in fishery management. In Leal, D. (ed) *Political Economy of Natural Resource Use: Lessons for Fisheries Reform*. Prepared for the Global Program on Fisheries (PROFISH), Agriculture and Rural Development Department. The World Bank: Washington, DC.

36. Arnason, R. (2005). Property rights in fisheries: Iceland's experience with ITQs. *Reviews in Fish Biology and Fisheries*, 15, 243–264.

37. Arnason, R. (2000). Property rights as a means of economic organization. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations, Rome, 14–25.

38. Scott, A. (2010). New directions in fishery management. In Leal, D. (ed) *Political Economy of Natural Resource Use: Lessons for Fisheries Reform*. Prepared for the Global Program on Fisheries (PROFISH), Agriculture and Rural Development Department. The World Bank: Washington, DC.

39. Connor, R. (2000). Are ITQs property rights? Definition, discipline and discourse. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/2. Food and Agriculture Organization of the United Nations: Rome, 29–38.

40. The four common characteristics used to determine the quality of a quota right were: exclusivity, security, duration and transferability.

41. Connor, R. (2000). Are ITQs property rights? Definition, discipline and discourse. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/2. Food and Agriculture Organization of the United Nations: Rome, 29–38.

42. Scott, A. (1993). Obstacles to fishing self-government. *Marine Resources Economics*, 8, 187–199.

43. Scott, A. (2010). New directions in fishery management. In Leal, D. (ed) *Political Economy of Natural Resource Use: Lessons for Fisheries Reform*. Prepared for the Global Program on Fisheries (PROFISH), Agriculture and Rural Development Department. The World Bank: Washington, DC.

quota was first allocated in perpetuity and as fixed tonnage, which supported the view that it represented rights to private property. Quota was subsequently changed to proportional shares of TACs. When compared with those of other fishing nations, New Zealand's quota holdings are considered strong. This strength is partly because quota allocations to Māori having been integral to the settlement of their claims to fisheries resources, based on the Treaty of Waitangi.[44]

In other fishing nations, quota was not viewed as filling an individual property rights vacuum but more as pre-assigned proportional shares with inherent flexibility in arranging its distributional effects. On occasions, quota, with a varying measure of strength, was assigned to vessels, groups or communities that strongly relied on fishing.[45]

By the 1990s, quota-based management systems were promoted as the only solution to the problem of overcapacity and overfishing, even though effort-based systems (for example, pre-assigned levels of effort) performed better in certain circumstances.[46, 47] These systems were also promoted as expectantly leading to a transition from government centralised management to reduced bureaucracy and an increase in self-management.[48] This transition, however, has been limited in both Iceland and New Zealand.

Interest in quota-based management systems has continued to grow as familiarity with them has been gained worldwide. Experience has shown that those fisheries managed with these systems generally have improved economic performance. This improvement is mainly because of fishing effort decreasing, fishing fleets contracting and greater emphasis being placed on the quality and value of landed catches. Declines in fish stock abundance have generally been halted, and some previously depleted fish stocks have been rebuilt. Quota-based management systems have been adopted by at least 21 other fishing nations, and around 25 percent of catches worldwide are now taken under these systems.[49]

The attraction of quota-based management systems over most other types of systems is not only that they end the race for fish by granting a pre-assigned proportion of the TAC but this security

44. Bess, R. (2011). New Zealand's Treaty of Waitangi and the doctrine of discovery: Implications for the foreshore and seabed. *Marine Policy*, 35, 85–94.

45. Macinko, S. (2014). Lipstick and catch shares in the Western Pacific: Beyond evangelism in fisheries Policy? *Marine Policy*, 44, 37–41.

46. Jarrett, A. (2015). User-rights in Australia's Northern Prawn Fishery (NPF): A Southern Hemisphere Development Country Experience. Presentation to the Tenure and Fishing Rights 2015 Conference, Apsara Angor Hotel, Siem Reap, Cambodia, 23–27 March (www.slideshare.net/FAOoftheUN/userrights-in-australias-northern-prawn-fishery-npf-a-southern-hemisphere-developed-country-experience-by-annie-jarrett).

47. Clark, L. (2014). Case study on foreign fishing agreements in the western Pacific, Appendix B. In *Trade in Fishery Services: Emerging Perspectives on Foreign Fishing Arrangements*. Environment and Natural Resources Global Practice Discussion Paper #01. World Bank: Washington, DC, 61–72.

48. Scott, A. (1988). Development of property in fisheries. *Marine Resource Economics*, 5, 289–311.

49 Arnason, R. (2015). Rights-based Approaches to Fishing: Theory and Experiences. Presentation to the Tenure and Fishing Rights 2015 Conference, Apsara Angor Hotel, Siem Reap, Cambodia, 23–27 March (www.fao.org/about/meetings/user-rights-2015/speakers/en).

should generate an increased sense of care and responsibility for the resource.[50, 51] However, when a binding TAC and a quota-based management system are implemented congruently, it can be difficult to decipher the effect of one versus the other.[52]

In theory, quota holdings provide incentives for long-term conservation of a fishery, because improvements in conservation would be reflected in increased quota value.[53] With this in mind, the governments of several fishing nations, including New Zealand, have attempted to devolve management responsibilities and costs for fish stock conservation and management to quota holders. At least, they have introduced provisions that recover much of those costs as a duty for using the resources. This devolution process changes centralised management institutions to address incentives, costs and opportunities that arise through quota holdings.[54]

"In theory, quota holdings provide incentives for long-term conservation of a fishery, because improvements in conservation would be reflected in increased quota value"

A contrary view is that quota holdings do not promote better care and responsibility of fisheries resources. Instead, better resource care can be attributed to improved technology, science and environmental regulation. A related view is that the development of quota-based management systems is simply a further expansion of regulated fishing licence systems, but the licences are imbued with certain valuable characteristics.[55, 56]

Notwithstanding, experience has shown that quota holders, under certain suitable institutional conditions, can have wide responsibility for management, but some responsibilities must remain with government. In fact, government functions and responsibilities can increase in two ways.

First, government is required to establish a clear and comprehensive policy and administrative framework that provides certainty for those who depend on fishing so they can conduct their affairs efficiently.

50. Kearney, R.E. (2001). Fisheries property rights and recreational/commercial conflict: Implications of policy developments in Australia and New Zealand. *Marine Policy*, 25, 49–59.

51. Macinko, S. (2014). Lipstick and catch shares in the Western Pacific: Beyond evangelism in fisheries policy? *Marine Policy*, 44, 37–41.

52. Bromley, D.W. (2009). Abdicating responsibility: The deceits of fisheries policy. *Fisheries*, 34(6), 280–290.

53. Scott, A. (2000). Introducing property rights in fisheries management. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 1–13.

54. Hanna, S.S. (2009). Evolution of property rights: Lessons of process and potential for Pacific Northwest recreational fisheries. In Leal, D.R., and Maharaj, V. (eds) *Evolving Approaches to Managing Marine Recreational Fisheries*. Lexington Books: UK, 3–21.

55. Scott, A. (2000). Introducing property rights in fisheries management. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 1–13.

56. Significant objections are raised regarding the socio-economic effects of quota-based management systems. For example, difficult trade offs arise in determining the basis for allocating quota. Objections are also raised concerning the concentration of quota holdings, overcapitalisation of quota holdings, the cost of quota acting as a barrier to new entrants, quota transferred outside the fishery, increased processor control and divisions created between people and communities. Pinkerton, E. (2015). Neoliberalism and the politics of enclosure in North American small-scale fisheries. *Marine Policy*, 61, 303–312.

"In most cases, however, somewhat perversely, a quota-based management system increases incentives to discard and high grade catches, especially when it imposes limits on landings rather than on catches"

Second, government must protect the broad public interest with respect to the environment. The public goods should accrue to the wider society, not just to those who catch or consume fisheries resources. This function is about articulating, enforcing and achieving the desired long-term conservation objectives and standards of performance.[57]

1.2.1 Discarding, high grading and misreporting catches

Discards are the portion of a catch that is unwanted and returned to the ocean. Increasingly, evidence shows that, in certain types of fisheries, particularly where bycatch is avoidable, the transition from a competitive environment to a quota-based management system resulted in reduced discard rates.[58] Reductions were generally due to the use of regulations with high penalties for discarding quota species that were not in place previously.

Discarding occurs for several reasons, including when catch is the wrong species, size or sex, or when prohibited or damaged, or when quota holdings are exceeded or high graded (landing catch that is more valuable, which is often related to preferable size). Fishers might also have incentives to land their catches but not officially report them, under-report the quantity of their catches or misreport one species for another.[59]

Discarding, high grading and misreporting catches can cause several problems, especially when fisheries statistics fail to sufficiently account for their occurrences and these statistics become the basis for fisheries management decisions. According to the Food and Agriculture Organization of the United Nations (FAO), the discard problem includes the economics of reducing bycatch and increasing the landing and use of bycatch. It also involves the practicality of enforcing regulations to prevent or minimise discarding, as well as ethical and responsible stewardship of fisheries resources.[60]

The FAO also suggests a trend exists in reducing bycatch and discarding in many fisheries, particularly those in developed nations. This downward trend is attributed to the increasing use of discards, decreasing fishing effort and changes in target species, as well as changes in regulation requiring more selective fishing and prohibiting or curtailing discards.[61]

In most cases, however, somewhat perversely, a quota-based management system increases incentives to discard and high grade

57. Pearce, P. (2006). Allocation of catches among fishing sectors: Opportunities for policy development. In Metzner, R., Isokawa, D., and Liu, Y. (eds) *Sharing the Fish '06: Allocation Issues in Fisheries Management*. FAO Fisheries and Aquaculture Proceedings 15. Food and Agriculture Organization of the United Nations: Rome, 123–135.

58. Arnason, R. (2014). *Best Practice in the Use of Right-based Management to Reduce Discards in Mixed Fisheries: In-depth Analysis*. Policy Department, Structural and Cohesion Policies. European Parliament: Brussels.

59. Clucas, I. (1997). Incentives and disincentives to discarding. In *A Study of the Options for Utilization of Bycatch and Discards from Marine Capture Fisheries. FAO Fisheries Circular, No 928. Food and Agriculture Organization of the United Nations: Rome.*

60. FAO (2005). *Discards in the world's marine fisheries: An update*. Fisheries Technical Paper 470. Food and Agriculture Organization of the United Nations: Rome.

61. Ibid.

catches,[62] especially when it imposes limits on landings rather than on catches.[63, 64] These types of systems also present a new incentive similar to that for high grading, which is to discard valuable fish for the purpose of maximising the net value of the quota holdings.

Because a fisher's catch volume is fixed, profits can increase by maximising the value of the fixed volume.[65] Quota-based management systems may, therefore, need more rather than less monitoring and enforcement to ensure fish stock conservation and sufficiently inspect, audit and balance quota holdings against catches, which could affect the security of quota holding rights.[66] This monitoring and enforcement could be done by government or an independent industry body with an interest in long-term quota value, but it should be undertaken in a transparent way.

1.3 Recreational fishing rights

Many documents outline the evolution of commercial fishing rights. A lot show that fisheries management has never been simple, even in modern times.[67] The same evolution in non-commercial fishing rights has been shorter, slower and far less well documented, despite many nations' fish stocks being shared between competing fishing sectors.[68]

The slow rate of evolution for recreational fishing rights is generally explained by the view that the public right to fish is a common law right unless restrained by legislation. This is coupled with the view that recreational fishing was a marginal activity that did not pose much of a threat to fish stock sustainability.[69] The latter view has had the result of relieving governments of any need to regulate, or even investigate, the effect recreational fishing has on the marine environment.[70]

62. Copes, P. (1986). A critical review of individual quota as a device in fisheries management. Land Economics, 62, 278–291.

63. Arnason, R. (1994). On catch discarding in fisheries. *Marine Resource Economics*, 9, 189–208.

64. Anderson, L.G. (1994). An economic analysis of highgrading in ITQ fisheries regulation programs. *Marine Resource Economics*, 9, 209–226.

65. Arnason, R. (2014). *Best Practice in the Use of Right-based Management to Reduce Discards in Mixed Fisheries: In-depth Analysis*. Policy Department, Structural and Cohesion Policies. European Parliament: Brussels.

66. Stewart, C. (2004). *Legislating for Property Rights in Fisheries*. FAO Legislative Study 83. Food and Agriculture Organization of the United Nations: Rome.

67. Borch, T. (2010). Tangled lines in New Zealand's quota management system: The process of including recreational fisheries. *Marine Policy*, 34, 655–662.

68. Hanna, S.S. (2009). Evolution of property rights: Lessons of process and potential for Pacific Northwest recreational fisheries. In Leal, D.R., and Maharaj, V. (eds) *Evolving Approaches to Managing Marine Recreational Fisheries*. Lexington Books: UK, 3–21.

69. Borch, T. (2010). Tangled lines in New Zealand's quota management system: The process of including recreational fisheries. *Marine Policy*, 34, 655–662.

70. Kearney, R.E. (2001). Fisheries property rights and recreational/commercial conflict: Implications of policy developments in Australia and New Zealand. *Marine Policy*, 25, 49–59.

© NZFisher e-magazine

While recreational fishing is often considered as having many dimensions, catch rates and fish size are important determinants of the quality of the fishing experience.[71] Where recreational fisheries are open to public access, a basic problem exists in that successful fisheries breed failures; developing a quality fishing experience attracts more fishers and, therefore, increased fishing effort until the quality of the fishing experience is reduced.[72] In limited cases, the same open access problems seen in commercial fisheries can arise between recreational fishers when competing for a heavily exploited fish stock.

In this situation, governments generally move beyond the common law right to fish by enacting licensing systems and regulations that constrain recreational fishing effort and catches (for example, daily bag limits, size limits, gear restrictions and closed areas and seasons). These types of controls were initially adapted from the management of many freshwater fisheries.

Licensing systems can be used to restrict access to recreational fisheries and, therefore, improve the experiences for those who gain access. These systems also provide revenue for covering much of the costs of fisheries management. Regulated controls, such as daily catch and size limits, are used for various reasons beyond reductions in fishing

71. Holland, S.M., and Ditton, R.B. (1992). Fishing trip satisfaction: A typology of anglers. *North American Journal of Fisheries Management*, 2(1), 28–33.

72. Cox, S., and Walters, C. (2002). Maintaining quality in recreational fisheries: How success breeds failure in management of open-access sport fisheries. In Pitcher, T.J. and Hollingworth, C.E. (eds) *Recreational Fisheries: Ecological, Economic and Social Evaluation*. Blackwell Science: Oxford.

effort and catches. These include creating a more equitable distribution of catches, protecting fish that might survive catch and release, and guidance on what constitutes a fair catch for the day.

The use of size and daily bag limits encourages catch and release, and so they do not necessarily lead to reduced fishing mortality. When a significant amount of released fish are likely to die, any increase in the size limit can be counterproductive. Similarly, the use of bag limits can lead to high grading where smaller fish are discarded if fishers prefer to fill their limit with larger fish.[73]

The rationale for using seasonal closures can be due to the biological cycle of the species. For example, a closure might be put in place during spawning, because the capture of a gravid (egg-bearing) fish could affect future fish stock abundance. Seasonal closures are also used to reduce total catches.

However, the use of regulated controls generally provides limited information for assessing the effect recreational fishing can have on fish stock sustainability,[74] because the management of recreational fisheries typically lacks any requirement to report catches. For this reason, survey techniques are often required as the primary means of assessing and estimating the level of recreational catches. Surveys are expensive and arduous to maintain.[75]

Consequently, surveys are usually undertaken infrequently, and inferring what has occurred between them often involves some crude form of interpolation between or extrapolation from them.[76] This practice can be cause for concern, because recreational catches can vary significantly in response to prevailing environmental conditions and localised variations in fish abundance and, therefore, remain unpredictable.[77]

1.4 Inter-sectoral tensions and conflicts

Given the complex and dynamic interactions that occur between people and the systems and institutions for managing their effects on fisheries resources, it is unsurprising that tensions and conflicts are prevalent within fisheries.[78] In those nations that have indigenous people who have been dispossessed from their ancestral fishing

73. Kim, H.N., Woodward, R.T., and Giffin, W.L. (2009). Can transferable rights work in recreational fisheries? In Leal, D.R., and Maharaj, V. (eds) *Evolving Approaches to Managing Marine Recreational Fisheries*. Lexington Books: UK, 47–76.

74. Ibid.

75. Hartill, B., Payne, G.W., Rush, N., and Bian, R. (In press). Bridging the temporal gap: Continuous and cost-effective monitoring of dynamic recreational fisheries by web cameras and creel surveys. *Fisheries Research*.

76. Van Poorten, B.T., Cos, S.P., and Cooper, A.B. (2013). Efficacy of harvest and minimum size limit regulations for controlling short-term harvest in recreational fisheries. *Fisheries Management and Ecology*, 20, 258–267.

77. Stevenson, B.C., and Millar, R.B. (2013). Promising the moon? Evaluation of indigenous and lunar fishing calendars using semiparametric generalised mixed models of recreational catch data. *Environmental and Ecological Statistics*, 20(4), 591–608.

78. Charles, A.T. (1992). Fishery conflicts: A unified framework. *Marine Policy*, 379–393.

grounds, the formal recognition of their fishing and management rights can significantly affect status quo management systems and fishing practices.[79]

As regulatory controls expand, governments are forced to adopt different regulations for each fishing sector, to achieve management objectives. Thus, it is difficult to measure the relative value of fisheries resources to different sectors of society. Governments have often addressed conflicts between competing fishing sectors by separating them spatially and temporally. Gear restrictions can also be used for this purpose.[80]

Governments are also left with the increasingly onerous task of allocating TACs among competing fishing sectors.[81] This is highly contentious, because it inevitably means more catch being allocated to one fishing sector and less to others. The lack of accurate recreational catch data makes the TAC allocations even more difficult.

The allocation of shares of the TAC to different fishing sectors has proven to be so contentious that governments have acceded to pressure to increase the allocation to one fishing sector without offsetting reductions in others. This can lead to overfishing, fish stock depletion and eventual losses for all fishing sectors.[82]

The rights of commercial fishers are generally well defined in the statutes, and the economic contribution of their efforts can be readily demonstrated through government statistics, which are largely based on statutory reporting regimes that commercial fishers are required to comply with.[83] Similarly, the rights of indigenous (customary) fishers are often clearly defined through historical agreements, treaties and legal precedents of customary rights. In some areas, tribal members benefit exclusively from exercising their customary rights to fish and manage fish stocks. Often there is little, if any, external influence on the exercising of those rights, because they generally extend beyond those of common citizenship. In the case of New Zealand, these rights are explicitly referenced in the Treaty of Waitangi.

The public right to fish is not nearly as well defined. Often, the lack of support from the recreational fishing sector does not allow any rights to be well defined. This lack of support can be attributed to a lack of unity and strong leadership vision within the sector.

79. Veiga, P., Pita, C., Leite, et al. (2013). From a traditionally open access fishery to modern restrictions: Portuguese anglers' perceptions about newly implemented recreational fishing regulations. *Marine Policy*, 40, 53–63.

80. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. PhD thesis. The University of Auckland: Auckland.

81. Pearce, P. (2006). Allocation of catches among fishing sectors: Opportunities for policy development. In Metzner, R., Isokawa, D., and Liu, Y. (eds) *Sharing the Fish '06: Allocation Issues in Fisheries Management*. FAO Fisheries and Aquaculture Proceedings 15. Food and Agriculture Organization of the United Nations: Rome, 123–135.

82. Ibid.

83. Pearce, P. (2006). Allocation of catches among fishing sectors: Opportunities for policy development. In Metzner, R., Isokawa, D., and Liu, Y. (eds) *Sharing the Fish '06: Allocation Issues in Fisheries Management*. FAO Fisheries and Aquaculture Proceedings 15. Food and Agriculture Organization of the United Nations: Rome, 123–135.

"Ill-defined rights are difficult to protect when pressure increases for the use of marine space and resources. The recreational fishing sector could potentially take a disproportionally high burden relative to other fishing sectors, which could diminish the quality of the recreational fishing experience over time"

Ill-defined rights are difficult to protect when pressure increases for the use of marine space and resources. The recreational fishing sector could potentially take a disproportionally high burden relative to other fishing sectors, which could diminish the quality of the recreational fishing experience over time.[84] Likewise, expansion of recreational catches can erode quota holding rights.

When the rights of commercial fishers and indigenous (customary) fishers are strengthened in statue, their precedence over poorly defined public access rights is increased. A general lack of understanding of what individuals and groups value most when accessing fisheries resources for recreational use further complicates efforts to define their rights. Their use can be associated with a range of social benefits that are difficult to quantify, such as opportunities to reconnect with nature or with friends while fishing for fun or to catch enough to feed themselves and their families and friends. It remains difficult to quantify how their resource use contributes economically to society.[85]

The common law right of all people to fish is often used to rally public support in protest of more stringent controls being put in place.[86] In New Zealand, the courts have determined that the fisheries legislation governs all aspects of the rights of the various fishing sectors, including recreational, to the exclusion of the common law.[87] The Minister can set more stringent controls to meet legislative obligations to manage fish stocks sustainably.

Individuals and groups often consider their longstanding open access to fisheries as tantamount to an entitlement, perhaps even an inalienable birthright of citizenship, to fish.[88] This sense of right may be accompanied by expectations for preferential access to fisheries resources, which can be similar to arguments posed by commercial quota holders who assert their rights as akin to private property and able to override all other use and non-use rights.

As interest has grown in quota-based management systems, ideas have been debated about resolving inter-sectoral competition by adapting those systems so they can be applied to the management of recreational fisheries. It has been proposed that, by joining the property rights paradigm, recreational fishers can stop being left

84. McMurran, J. (2000). Property rights and recreational fishing: Never the twain shall meet? *Use of Property Rights in Fisheries Management*. Proceedings of the FishRights99 Conference, Fremantle, Western Australia. FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 184–187.

85. Kearney, R.E. (2001). Fisheries property rights and recreational/commercial conflict: Implications of policy developments in Australia and New Zealand. *Marine Policy*, 25, 49–59.

86. Borch, T. (2010). Tangled lines in New Zealand's quota management system: The process of including recreational fisheries. *Marine Policy*, 34, 655–662.

87. *New Zealand Recreational Fishing Council Inc and Anor v Sanford Ltd and Ors* SC 40/2008 [28 May 2009].

88. Borch, T. (2010). Tangled lines in New Zealand's quota management system: The process of including recreational fisheries. Marine Policy, 34, 655–662.

behind.[89] It has also been suggested that the solution for recreational fishing sectors is not by having individual quotas but having clearly defined rights for each sector's share in total catches.[90]

Regardless of how recreational fishing rights are defined, it has been suggested that recreational fishers could benefit from establishing mandated representative organisations to manage their TAC allocations, and these organisations' mandates could include the right to control access to those allocations. It follows that, if all fishing sector rights and their respective TAC allocations are clearly defined, attention could be turned to ensuring optimal resource use through market-based, inter-sectoral transfers of access (allocations).[91]

Despite some attempts, none of the fishing nations with quota-based management systems have been able to harmonise and integrate recreational fishing into those systems. A few examples exist of one-way transfers of quota: from commercial fishers to charter boat operators and even to individual recreational fishers. It is likely further attempts will be made to improve congruence or integration between the management of recreational fisheries and quota-based management systems. Whether these attempts are successful will depend on societal expectations about the marine environment.

One driver for change is the growing public awareness that the ocean's finite resources are increasingly threatened by the cumulative effects of resource use and other human activities.[92] This awareness has led to public appeals for more protection of marine biodiversity and other measures that restrict resource use to sustainable levels. As more stringent restrictions are put in place, tension and conflicts between fishing sectors are sure to increase.[93]

1.5 Concluding remarks

This chapter outlines how fishing rights have developed over time in developed fishing nations. They include the right to access, harvest, manage and enhance the fisheries resources and to control use patterns. To be effective, these rights must create constraints that

89. Kearney, R.E. (2001). Fisheries property rights and recreational/commercial conflict: Implications of policy developments in Australia and New Zealand. *Marine Policy*, 25, 49–59.

90. Pearce, P. (2006). Allocation of catches among fishing sectors: Opportunities for policy development. In Metzner, R., Isokawa, D., and Liu, Y. (eds) *Sharing the Fish '06: Allocation issues in Fisheries Management*. FAO Fisheries and Aquaculture Proceedings 15. Food and Agriculture Organization of the United Nations: Rome, 123–135.

91. Sutinen, J.G., and Johnston, R.J. (2003). Angling management organizations: Integrating the recreational sector into fishery management. *Marine Policy*, 27, 471–487.

92. Douvere, F., and Ehler, C. (2009). Ecosystem-based marine spatial management: An evolving paradigm for the management of coastal and marine places. *Ocean Yearbook*, 23(1), 1–26. United Nations Educational, Scientific and Cultural Organization: Paris.

93. Kearney, R.E. (2001). Fisheries property rights and recreational/commercial conflict: Implications of policy developments in Australia and New Zealand. *Marine Policy*, 25, 49–59.

other resource users recognise and conform to, and they must create appropriate incentives for the right-holders to value them.

While quota-based management systems have their weaknesses, like all management systems, they are generally successful because they address several endemic problems of fisheries, particularly those related to overcapacity.

The rights of commercial fishers have become increasingly entrenched, while the public right to fish has been defined to a far lesser extent. As fish stocks have become fully exploited and demand for recreational fishing has grown, the tension and conflict between commercial and recreational fishers has become more pronounced. Fishing nations may progressively need to speed up the evolutionary process for recreational fishing rights and related management issues.

However, the ongoing difficulty remains in measuring the social, economic and cultural value of fisheries resources in alternative uses, leaving governments with the onerous task of allocating TACs among competing fishing sectors.[94]

One response to this situation has been increasing support for the public right to fish, which could erode the rights of commercial fishers. In many fishing nations, compensation provisions are in place for loss of commercial rights and reduction of commercial fishing fleets. Despite this, without increasing support for the public right to fish, the recreational fishing sector could take a disproportionally high burden relative to other fishing sectors, which could diminish the quality of the recreational fishing experience.[95]

While rights are an integral part of resource management, they are a subset of broader management institutions. These institutions include the formal powers of regulation that constrain fishers' activities and the informal rules, based on social and cultural norms.

94. Pearce, P. (2006). Allocation of catches among fishing sectors: Opportunities for policy development. In Metzner, R., Isokawa, D., and Liu, Y. (eds) *Sharing the Fish '06: Allocation Issues in Fisheries Management*. FAO Fisheries and Aquaculture Proceedings 15. Food and Agriculture Organization of the United Nations: Rome, 123–135.

95. McMurran, J. (2000). Property rights and recreational fishing: Never the twain shall meet? *Use of Property Rights in Fisheries Management*. Proceedings of the FishRights99 Conference, Fremantle, Western Australia. FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 184–187.

CHAPTER 02

New Zealand's management of fisheries

Since the first people arrived from eastern Polynesian islands, fisheries resources have been an important food source in New Zealand. The evidence is clear that Māori greatly valued numerous *tauranga ika* (fishing grounds) for marine fish, shellfish and crustaceans and subjected them to complex customary rules for allocation and management.[96] Tauranga ika were clearly defined, and knowledge about them was closely guarded and handed down to each generation.[97]

New Zealand's subsequent experience in managing fisheries reflects the development of commercial fishing rights following the largely unconstrained over-exploitation of inshore fish stocks, strong reliance on regulation to constrain fishing effort and catches, and limits placed on access to fisheries. As in other fishing nations, these regulations have helped address problems related to overcapacity.[98]

New Zealand's experience also shows the preoccupation with commercial fisheries when the QMS was implemented,[99] which is generally explained by the state of the economy in the early 1980s. The nation was essentially broke, and the government had to find ways to improve economic performance.

The development of quota holding rights had the effect of eroding the rights that Māori were guaranteed under the Treaty of Waitangi. Implementation of the QMS became a catalyst for Treaty-based claims to fisheries resources.

The settlement of these claims in 1992 provided Māori with 20 percent of quota and other opportunities to become dominant players in commercial fisheries. It also renewed Māori ability to exercise rights to fish and manage for non-commercial customary purposes. The terms of the settlement were agreed, despite significant compromises made to the rights that Māori had practised historically. The settlement of claims secured the QMS as the preferred management system, which strengthened the quota holding rights for Māori and non-Māori alike.[100]

Until this time, the recreational fishing right had been left undefined and essentially relegated in priority, while the government secured the rights for commercial and customary fishers.[101] This was mainly because recreational fishing was regarded as the forgotten

96. Belich, J. (1996). *Making Peoples: A History of New Zealanders from Polynesian Settlement to the End of the Nineteenth Century*. Penguin: Auckland.

97. Ririnui, T., and Memon, A. (1997). *Recognition of Maori Customary Fisheries in New Zealand's Fisheries Management Regime*. Revised paper presented at the Regional and Urban Development Conference, Wellington, 10 December.

98. NIWA (2016). *Water & Atmosphere*, June. National Institute of Water and Atmospheric Research: Wellington (www.niwa.co.nz/sites/niwa.co.nz/files/WandA_15_June_2016_web.pdf).

99. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. PhD thesis. The University of Auckland: Auckland.

100. Bess, R., and Harte, M. (2000). The role of property rights in the development of New Zealand's seafood industry. *Marine Policy*, 24, 331–339.

101. Hersoug, B. (2002). *Unfinished Business: New Zealand's Experience with Rights-based Fisheries Management*. Eburon: Delft, The Netherlands.

sector[102] and being behind the eight ball with respect to the strength of fishers' rights relative to those of commercial and customary fishers.

This situation was seen as a clear disadvantage in fully allocated, fully exploited fisheries with competing fishing sectors.[103]

2.1 Recreational fishing

The right to fish for recreational purposes is, as noted, not based on common law but provided for in fisheries legislation. The statutory references to recreational fishing mostly relate to obligations that decision makers have to consult with representatives of those who have a recreational interest in fishing. References are also made to the appointment of those representatives in specific roles.[104]

The recreational fishing sector is a widely used term, even though no single sector representative exists. Instead, the term encompasses people with a broad range of interests and involvement in recreational fishing. For the purpose of this report, recreational fishing constitutes any fishing that does not require a commercial fishing permit or customary authorisation.

Since 2010, the government has had in place registration and reporting requirements for the charter boat fleet, which must report the location and number of fish caught for selected fish stocks (which do not include some of those most commonly fished by recreational fishers, including snapper and kahawai). No equivalent reporting requirement is in place for individual recreational fishers. Marine recreational fishers, including tourists, do not pay a licence fee, so entry to any fishery is free.

The various interests that comprise the recreational fishing sector receive TAC allocations for several inshore fish stocks. These allocations are held in common for all who fish recreationally. This means recreational fisheries are open access and non-exclusive; no ability exists to exclude anyone. Recreational catches, therefore, cannot be capped or held to TAC allocations, although the Minister is required to implement constraints on catch levels. Total recreational catches are small relative to commercial catches in most, but not all, fisheries. Catch estimates for large recreational fisheries are made periodically using various survey methodologies.

The government has complete responsibility for managing recreational fisheries.[105] The management relies strongly on regulations to constrain recreational fishing effort and catches. The regulated

102. Pearce, P. (1991). *Building on Progress: Fisheries Policy Development in New Zealand*. A report prepared for the Minister of Fisheries. Ministry of Agriculture and Forestry: Wellington.

103. McMurran, J. (2000). Property rights and recreational fishing: Never the twain shall meet? *Use of Property Rights in Fisheries Management*. Proceedings of the FishRights99 Conference, Fremantle, Western Australia. FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 184–187.

104. Sections 12(1)(a), 16(2)–(3), 21(1)(a)(ii)–(2), 25(3)(b), 75A, 177(2)(b)(i), 186A(7)(a), 186B(6)(a), 186D(1)(c), 186H(4), 188(1), 277(1)(b)(ii), 310 of the Fisheries Act 1996.

105. Hersoug, B. (2002). *Unfinished Business: New Zealand's Experience with Rights-based Fisheries Management*. Eburon: Delft, The Netherlands.

"Continual increases in the demand for recreational fishing, along with competition with commercial fishing, have led, however, to localised depletion and concerns about the sustainability of certain fish stocks"

constraints include daily bag limits, size limits, gear restrictions and seasonal and area closures, but the application of these management controls may vary by fish stock for a given species.

The total annual recreational catch provided for within all TACs is stated as around 25,000 tonnes.[106] However, the estimated total recreational catch in 2011–12 was less than half that amount, based on the MPI National Panel Survey of Marine Recreational Fishers.[107] No formal record is kept of the annual number of recreational fishers, though there are validated survey-based estimates (see section 3.4).

Initially, TAC allocations for recreational fisheries were set at levels that should have satisfied the recreational fishing sector if abundance was high enough (for example, the daily bag limit for some finfish species is 20 fish per person and others are as high as 30). Continual increases in the demand for recreational fishing, along with competition with commercial fishing, have led, however, to localised depletion and concerns about the sustainability of certain fish stocks. These concerns have resulted in more stringent controls being implemented for several fish stocks that are important to recreational fishers.[108]

For recreational fishers, two main species demonstrate increasingly stringent constraints on fishing effort and catches. The snapper fishery along the northeast portion of the North Island (SNA1) and the blue cod fishery along the west coast and top of the South Island (BCO7) use the minimum legal size (MLS) and maximum daily limit (MDL) as their primary means of constraining recreational landings from these fish stocks (refer table 1).

Table 1: Constraints on the SNA1 and BCO7 recreational fisheries

SNA1 (North Cape to Cape Runaway)				BCO7	Marlborough Sounds			
	MLS	MDL	Longline hooks		MLS	MDL	MLS	MDL
1985	25	30	50	**1986**	30	30	30	12
1983	–	20	–	**1993**	33	20	33	10
1994	27	15	–	**1994**	–	–	28	6
1995	–	9	25	**2001**	33	10	–	–
2014	30	7	–	**2003**	–	–	30	3
				2011	–	–	30–35	2
				2015	33	20	33	2

Note: BCO7 = blue cod fishery along the west coast and top of the South Island; MDL = maximum daily limit; MLS = minimum legal size; SNA1 = snapper fishery along the northeast portion of the North Island.

106. MPI (2010). *New Zealand Fisheries at a Glance* (www.fish.govt.nz/en-nz/Fisheries+at+a+glance/default.htm).

107. Wynne-Jones, J., Gray, A., Hill, L., and Heinemann, A. (2014). *National Panel Survey of Marine Recreational Fishers 2011–12: Harvest Estimates*. New Zealand Fisheries Assessment Report 2014/67. Wellington: Ministry for Primary Industries.

108. Lock, K., and Leslie, S. (2007). *New Zealand's Quota Management System: A History of the First 20 Years*. Motu Working Paper 07-02. Motu Economic and Public Policy Research: Wellington.

"More recently, the representative organisations that provide advocacy and public education have expressed conflicting views on the management of recreational fisheries"

The SNA1 fishery has also had reductions in the legal number of longline hooks, as well as a change in the minimum mesh size for nets. These increasing constraints on recreational fishing effort have been necessary to keep overall levels of harvesting from these fish stocks to sustainable levels. The BCO7 fishery also has a set net ban in place as of 2015, and a seasonal ban is in place on blue cod fishing in the Marlborough Sounds, as well as some small-scale area closures.

The primary opportunity for recreational fishing interests to have input into fisheries management processes is through public consultation, and the primary means of face-to-face interaction with government staff is through recreational fishing forums. Each forum includes a group of 8 to 10 people comprising local fishing club representatives, recreational fishing representative organisations and government staff. The forums meet three times each year to discuss fisheries management issues and concerns. Forum members are able to share their knowledge and experience about the recreational fishing sector, including charter boat operators and spear-fishers, which is incorporated into the information presented to the Minister.

A portion of recreational fishers are members of fishing clubs, but most carry out their fishing activities without affiliation with any formal organisation. More recently, the representative organisations that provide advocacy and public education have expressed conflicting views on the management of recreational fisheries. These organisations predominately focus on finfish fisheries and less so on shellfish fisheries,[109] though lately they have made submissions on the scallop and rock lobster fisheries.

Historically, the largest representative organisation was the New Zealand Recreational Fishing Council (NZRFC), established in 1978. The NZRFC was a non-profit organisation that represented the interests of marine recreational fishers and participated in the protection and scientific study of the marine environment. Before it ceased to function in 2015, the NZRFC coordinated members' positions on various fisheries management issues, including the basis for legal action taken in conjunction with the New Zealand Big Game Fishing Council (NZBGFC).[110]

The NZBGFC began in 1957 and formed a strong organisational and decision-making framework that historically focused on game fishing. The NZBGFC collects mandatory membership fees, which fund its fisheries policy, legal and advocacy work.

In 2000, an NZBGFC-affiliated representative group, known as Option 4, was formed in response to the three options proposed in the Soundings document (discussed further in section 3.2.1). In 2009, the NZBGFC changed its name to the New Zealand Sport Fishing

109. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. PhD thesis. The University of Auckland: Auckland.

110. Several regional and national clubs cater to particular types of fishing, such as the New Zealand Angling and Casting Association, the New Zealand Underwater Association, the New Zealand Trailer Boat Federation and various regional associations.

Council (NZSFC), with the likely intent of appealing to a broader base of recreational fishers. The NZSFC's national membership currently includes 59 fishing clubs, and its affiliated membership is 31,600. Clubs keep records of all trophy fish presented to weigh stations and all game fish tagged and released. Catch tallies from all clubs are publicly available in the NZSFC Yearbook.[111]

In 2012, the NZSFC launched LegaSea, which is a public outreach initiative with the objective of raising funds from the public to support the NZSFC's work on protecting and enhancing current and future fishing interests.[112] LegaSea has attracted a wide funding base that includes numerous fishing-related businesses. LegaSea's mottos are Fish for the People and More Fish in the Water.[113]

LegaSea's primary workstreams are advocacy, education, research and what is referred to as working together, which collectively have attracted a regular stream of support. Most of the research workstream consists of projects undertaken by the New Zealand Marine Research Foundation (NZMRF). The NZMRF was incorporated as a charitable trust in 1996 to fund research on the aquatic environment and to better understand the interactions between people and marine ecosystems.

These research projects focus mainly on topics not funded by the government or commercial interests.[114] The working together workstream included development of its SNA1 policy in 2013 in response to MPI-proposed options to decrease the recreational daily bag limit, increase the minimum legal size limit and increase the recreational allocation of the TAC. LegaSea's SNA1 policy provided a significant contribution to the work of the SNA1 Strategy Group set up by the Minister.[115]

LegaSea has a reputation for providing the public with government and non-government information to improve the understanding of existing fisheries management systems, management options and their potential effects on recreational fisheries. It is also known for presenting arguments in support of aspects of the status quo recreational fisheries management, such as the current decision-making process for TAC allocations, while providing commentary on certain issues regarding commercial fisheries management that could impinge on recreational fishing. These issues include the use of bulk harvesting methods (trawling) and commercial bycatch discards and high grading.

LegaSea has been successful in attracting popular support for the positions it takes on formal consultation processes. This level

111. NZRFC (2015). *New Zealand Sport Fishing Council. Board Policy Document Versions – September 2015*. New Zealand Sport Fishing Council: Hunua, South Auckland (www.nzsportfishing.co.nz/index.cfm/PageID/361/ViewPage/NZSFC-Policy-Document).

112. NZSFC (2012). Fisheries Management Annual Report: Year ending 30 June 2012. New Zealand Sport Fishing Council: Hunua, South Auckland.

113. See LegaSea (www.legasea.co.nz).

114. LegaSea (No date) *New Zealand Marine Research Foundation* (www.legasea.co.nz/nzmrf.php).

115. NZSFC (2014). *Fisheries Management Annual Report: July 2013 to June 2014*. New Zealand Sport Fishing Council: Hunua, South Auckland.

of support has increased to nearly double the NZSFC-affiliated membership of 31,600, which is around 10 percent of the estimated recreational fishing population in New Zealand, albeit the most active 10 percent.

Before the NZRFC ceased to function, another recreational fishing group emerged. During the NZRFC's 2011 annual general meeting, agreement was reached to pursue an open and action-focused discussion on the future of recreational fishing. This approach recognised the diverse groups with interests in fishing and maintaining the health of the marine environment, as well as the complexity of management and lack of easy answers. It also acknowledged the many fishers who are not affiliated with fishing clubs and representative organisations.[116]

After months of planning, in 2013, a three-day event was held in Nelson with 66 diverse attendees. The event, referred to as FISHinFuture Search, resulted in attendees agreeing on eight areas of common ground as the pathway forward for recreational fisheries (refer table 2). The attendees considered these areas should be pursued by widening and connecting circles of buy-in across individuals, schools, clubs, businesses, communities and organisations.

Table 2: Our Fishing Future – Eight areas of common ground

Area of common ground	Common ground statement
Sustainable fisheries	We ensure a healthy marine environment enjoyed by all
Community buy-in and support	We all take pride in an abundant and healthy marine environment when our community extends manaakitanga (to have mutual respect) over our fisheries and oceans
Unity across the recreational fishing sector	We believe in unity and inclusion within the recreational fishing community
Equity of access	We strive to ensure equity of access through stakeholder engagement
Education	We ensure New Zealanders understand and value our marine environment and its resources so we can all be responsible for a better future
Governance	We are a recognised representative and accountable body that promotes and protects responsible recreational fishing
Sustainable funding	We create an independent and sustainable income stream to achieve our aspirations and meet our responsibilities
Communication	We create a comprehensive strategy and a network to communicate with members, stakeholders, media and other interests parties

Source: FISHinFuture Search – *Positive change for recreational fishing*, June 2013

116. The methodology, referred to as Future Search, has been successfully used in various nations, including Northern Ireland, United States of America, Indonesia, Sudan, Brazil and Germany. The methodology is based on four core principles: getting the whole system in the room; global context for local action; focus on future and common ground; and self-management and responsibility for action.

"The claims settlement process led to a negotiated split in Māori fishing rights that is far from the more comprehensive right exercised by Māori until around 1860 and that remains a point of contention within Māoridom"

For the purpose of pursuing these areas, a new organisation emerged titled, Our Fishing Future. It is based on the idea that recreational fishing interests are better served by aligning to a national body with close links to regional fishing associations and clubs.

Our Fishing Future considers the Kiwi way of fishing from boats, rocks or shore cannot be taken for granted, because fisheries resources will come under ever-increasing pressure. Recognition is also growing that everyone needs to be part of the solution. The aim is to pursue responsible recreational fisheries through multi-sector participation and ongoing involvement in government statutory and collaborative processes.[117]

Our Fishing Future is making minor changes to its rules as an incorporated society so it can better attract both funding and support services. To date, it has mainly operated within MPI processes, and has been enquiring into support from the Ministries for Primary Industries, Environment and Conservation and their respective Departmental Chief Executives. However they are experiencing frustration working directly with government. More recently, it has engaged with the fishing industry and has sought their membership, reflecting the view that all have a stake in recreational fishing and that there is much to be gained from working across common ground.

2.2 Māori customary fishing

The fishing rights held by Māori are defined in the statutory settlement of their claims to fisheries resources. These claims were based on Māori having never relinquished their fishing rights, and the government having breached the guarantees set out in the Treaty of Waitangi when the QMS was implemented.

Since the settlement of claims to fisheries resources in 1992 and aquaculture in 2004, Māori have had an increasing role in the commercial fishing sector. Māori quota ownership has continued to increase from its 10 percent and then 20 percent allocation for settlement purposes to currently around 40 percent of total quota holdings. The settlement also provides Māori with 20 percent of quota for new species introduced into the QMS. The settlement of Māori aquaculture claims is still in the early stage of implementation after reform in 2011 that provides for settlement entitlements as new aquaculture operations are developed.

The claims settlement process led to a negotiated split in Māori fishing rights that is far from the more comprehensive right exercised by Māori until around 1860 and that remains a point of contention within Māoridom.[118] The negotiated split includes rights comprising

117. See www.ourfishingfuture.org.nz.

118. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. Unpublished PhD thesis. The University of Auckland: Auckland.

a commercial component, which was settled with the allocation of quota holdings and other assets, and a non-commercial component, which is referred to in law as the right to customary food gathering.

With respect to the customary food-gathering right, some steps in the management processes are devolved to *iwi* (tribe), *hapū* (sub-tribe) and specifically designated *kaitiaki* (guardians) whose role is to represent those who appointed them. The customary food-gathering right is a collective right that supports internal consultation and collaborative management for defined areas, *rohe moana* (marine) and *rohe awa* (freshwater).

The customary food-gathering right is considered strong, because it is defined in regulation. It refers to the traditional rights confirmed by the Treaty of Waitangi, including the take and management of fisheries resources for a purpose authorised by kaitiaki to the extent that the purpose is consistent with their customary law.[119] The customary right remains integral to Māori culture and is complex in nature. This right provides for the development of various management institutions.

First, by law kaitiaki are required to record details about their customary authorisations and periodically report customary data to the government in aggregate form, at the relevant quota management area level.

Second, kaitiaki have the legal right to recommend regulatory management measures to the Minister.

Third, kaitiaki, and local Māori who appoint them, may apply for defined areas to be set aside for customary food gathering and management practices through the establishment of *taiapure* (local fisheries) and mataitai reserves. Government approval of these applications includes recognition of the special relationship local Māori have with these areas and their right to manage for customary food-gathering purposes.

The more common form of these areas, mataitai reserves, prohibits all commercial fishing upon establishment, and includes the prospect of changes being made to the recreational fishing rules, including a ban on fishing. Recreational fishers generally support these applications, while commercial fishers generally object to them.

Because no cap is placed on TAC allocations for the right to customary food gathering, the convention is that it has preference over other allocations for recreational and commercial fishing. In addition, no restrictions are in place on the fishing methods used; commercial fishing vessels are regularly used to take fish under customary authorisations, so long as reporting requirements are met to record and store the customary catch separate from any commercial catch.

The total annual customary allocation provided for within the TACs of all species in the QMS is around 4,800 tonnes, which is around one-fifth of the total annual recreational allocation. However, the quality of the reported authorisation data from some *rohe* (regions)

119. Fisheries (Kaimoana Customary Fishing) Regulations 1998 and the Fisheries (South Island Customary Fishing) Regulations 1999. Where these regulations have not been applied, various people or organisations can authorise the take of fisheries resources for the purposes of *hui* (meetings) or *tangi* (funerals) though without any designated management right: regulations 50 and 51 of the Fisheries (Amateur Fishing) Regulations 2013.

is poor, although the actual total customary catch of most species is likely to be significantly lower than that allowed under a TAC.[120] As well, most fishing by Māori occurs without customary authorisation, and therefore it is subject to the recreational fishing regulations.

Iwi and hapū represent themselves in various fisheries management processes and can receive government financial and technical support for expression of their customary food-gathering right. In addition, Te Ohu Kai Moana (Te Ohu)[121] has increasingly expressed views on behalf of Māori fishing interests. As a statutory body, Te Ohu is responsible for advancing the interests of iwi in fisheries and fisheries-related activities. Te Ohu administers, allocates and transfers Treaty settlement assets to those iwi that meet the statutory requirements as a mandated iwi organisation.

The tradition of iwi and hapū collective rights and their longstanding practices of adapting these to various issues have been integral to developing customary institutions and governance arrangements, as well as balancing their commercial and non-commercial fishing interests.

The capability improvements displayed by an increasing number of iwi and hapū in managing their commercial and customary interests raise important questions regarding possible institutions for recreational fisheries, other than continued sole reliance on the government.[122] However, the establishment of institutions for recreational fishing might prove to be far more difficult than those for Māori, given the longstanding practices and traditions of Māori.[123]

2.3 Commercial fishing

Quota holding rights are secured in legislation with respect to initial quota allocations and the legal definition of those rights. Quota is allocated in perpetuity. Initially, it was allocated as defined tonnage of a fish stock, and so it was considered a strong legal claim to the amount that could be caught.[124] Quota has subsequently been redefined as a number of shares for a fish stock.

Each fish stock has 100,000,000 shares and each share produces an annual catch entitlement (ACE). ACE is a separation of quota holdings from the entitlement to catch a quantity of a fish stock in the

120. MPI (2010). *New Zealand Fisheries at a Glance* (www.fish.govt.nz/en-nz/Fisheries+at+a+glance/default.htm).

121. The origin of Te Ohu was the Treaty of Waitangi Fisheries Commission, established under the Treaty of Waitangi Fisheries Settlement Act 1992. The commission's purpose is to represent Māori and facilitate their entry into fishing, administer settlement assets and develop an asset allocation model.

122 Hooper, M. (2002). Indigenous fishing rights in New Zealand – From rhetoric to reality. Proceedings of the International Institute of Fisheries Economics and Trade Conference. Victoria University of Wellington: Wellington.

123. Ackroyd, P., Hide, R.P., and Sharp, B.M.H. (1990). *New Zealand's ITQ System: Prospects for the Evolution of Sole Ownership Corporations*. Report to the Ministry of Agriculture and Fisheries. Ministry of Agriculture and Fisheries: Wellington.

124. Pearce, P.H. (1991). *Building on Progress – Fisheries Policy Development in New Zealand*. A report prepared for the Minister of Fisheries. Ministry of Agriculture and Fisheries: Wellington.

"From the time the QMS was implemented, ongoing statutory adjustments have been made that demonstrate the intention to create a legal right that is as close as possible to property"

fishing year. ACE is generated from quota shares on the first fishing day of each fishing year and relate only to the quota management area for that quota. Annual expected revenue from 1 quota share is one-hundred-millionth of the total allowable commercial catch (TACC) for that stock, and the value of the 1 share reflects expected future cash flows. ACE holdings are, therefore, dependent on what level the TACC is set at for each fish stock.

Consequently, when compared with other fishing nations, New Zealand quota holdings are considered strong. From the time the QMS was implemented, ongoing statutory adjustments have been made that demonstrate the intention to create a legal right that is as close as possible to property.[125] The New Zealand courts have determined that quota ownership has many of the characteristics of property rights, and these rights cannot be rendered ineffective, though quota rights are subject to the provisions of the legislation under which they were established.[126] However, these rights might be removed as has been proposed by the government through the establishment of the Kermadec Ocean Sanctuary.[127]

The QMS can limit the amount of quota per fish stock that can be held by any one person or company. Depending on the species, the quota aggregation limits are 10, 20, 35 or 45 percent of the fish stock. These limits are relatively high, when compared with most other nations' quota-based management systems. No aggregation limits are placed on holdings of ACE.

2.3.1 Catch–quota balancing system

The commercial fishing sector catches around 500,000 tonnes annually. A quota-based management system needs a means of balancing catch against quota, because fishers will catch more or less than intended of both targeted and bycatch species. New Zealand trialled several balancing systems before putting in place the ACE-based system in 2001.

In most cases, ACE does not need to be purchased before fishing occurs. At the end of the fishing year, if a fisher's catch of a fish stock exceeds the ACE held for that stock, then the fisher can purchase more ACE (if available) or pay a higher annual deemed value to cover the excess. Deemed values are designed to remove any profit motive for fishers landing catch that exceeds their ACE. If deemed values are set too low, however, fishers have incentives to discard in order to forego purchasing ACE.

A significant number of fishers do not own quota and instead fish each year with contractual arrangements with quota holding

125. Stewart, C. (2004). *Legislating for Property Rights in Fisheries*. FAO Legislative Study 83. Food and Agriculture Organization of the United Nations: Rome.

126. *New Zealand Fishing Industry Association Inc & Ors v Minister of Fisheries* (CP 294/96, CA 82/97, CA 83/97, CA 96/97).

127. Te Ohu first filed proceedings in the High Court to protect iwi fishing interests in Fisheries Management Area 10 around the Kermadec Islands, and then several seafood companies filed legal proceedings. The proposed Kermadec Sanctuary is seen as undermining their quota holding rights.

companies. Fishers are contracted to land a pre-agreed composition of species, which provides them with access to ACE and channels to sell their catches. If a fisher's catch composition varies from that contracted, the fisher may need to pay high deemed values and possibly not be in a position to sell fish landed in excess for a profit, and potentially, at a loss. If the fisher lands insufficient amounts of other fish, the fisher might not be able to honour the contract.[128] These contractual arrangements reveal the incentives in the current reporting system, which include discarding, high grading and misreporting catches.

2.3.2 Commercial fishing sector structure

As of 2014, there were 1,412 registered fishing vessels.[129] Discrepancy exists in the number of jobs the commercial fishing sector supports, ranging from 20,000[130] to 26,000.[131]

The combination of over 3,000 quota holders having exited the commercial fishing sector early on and high quota aggregation limits has led to a significant concentration of quota holdings. In 1986, the 12 largest quota holders had 49 percent of total quota holdings; in 1996, they held 86 percent.[132] The eight largest quota holding companies currently own 75.7 percent of total quota (refer table 3).

Table 3: Quota holdings and percentage of total quota held by the eight largest quota holding companies in New Zealand

Company	Quota holdings (tonnes)	Percentage of total quota (%)
Sanford Ltd	148,242	22.9
Pupuri Taonga Ltd (Sealord)	130,262	20.2
Talley's Group Management Ltd	86,113	13.3
Independent Fisheries Holdings Ltd	54,472	8.4
Vela Quota Number One Ltd	27,907	4.3
Ngai Tahu Fisheries Settlement Ltd	16,571	2.6
KPF Investments Ltd (United Fisheries)	15,466	2.4
Moana (Aotearoa Fisheries Ltd)	10,069	1.6

Source: FishServe, data provided 14 July 2016

128. Marchal, P., Lallemand, P., and Stokes, K. (2009). The relative weight of traditions, economics, and catch plans in New Zealand fleet dynamics. *Canadian Journal of Fisheries and Aquatic Sciences*, 66(2), 291–311.

129. Seafood New Zealand (2014). *Economic Review of the Seafood Industry*, 8, 6. (www.seafoodnewzealand.org.nz/fileadmin/documents/Economic_reviews/economic-review-quarter-1-2014.pdf).

130. Seafood New Zealand (No date). *Key Facts* (www.seafoodnewzealand.org.nz/industry/key-facts).

131. Seafood New Zealand (No date). (www.seafoodnewzealand.org.nz/fileadmin/documents/Fact_Sheets/factsheet-nz-commercial-fish-species.pdf).

132. Stewart, J., Walshe, K., and Moodie, B. (2005). The demise of the small fisher? A profile of exiters from the New Zealand fishery. *Marine Policy*, 30, 328–340.

Most of these companies are medium or large sized and highly vertically integrated, particularly those involved in the mid-water and deepwater fisheries. While the use of charter and joint venture arrangements with foreign partners was necessary for the initial development of the deepwater fisheries, most companies have invested heavily in their catching capabilities. However, more recently some of the larger companies have reverted to the use of charter and joint venture arrangements, which are cheaper to operate due to lower labour costs.

The continued reliance on foreign partners eventually raised serious concerns about employment conditions on board foreign fishing vessels. Ongoing problems associated with the mistreatment and underpayment of foreign fishing vessel crews persisted for decades without the government or commercial fishing sector taking action to mitigate those problems.[133]

133. In 2010, the *Oyang 70*, a South Korean-flagged vessel fishing contracted to a New Zealand fishing company, sank with the loss of six crew members. The University of Auckland investigated the extent of abuse of foreign fishing vessel crews before the government took action. The government passed legislation that required, as of 1 May 2016, all foreign vessels fishing in New Zealand waters to be registered as a New Zealand vessel, which means each must carry the New Zealand flag, allowing New Zealand to have full jurisdiction over employment and labour conditions on board those vessels.

This failure to act is surprising, given the potential negative publicity for seafood export markets and the commercial fishing sector having a long history of organising itself to address management issues.

"Since the QMS was implemented, the commercial fishing sector has stood out with respect to its intent to progress towards self-management"

Since the QMS was implemented, the commercial fishing sector has stood out with respect to its intent to progress towards self-management. The prospect of quota holders moving beyond just catching fish and accepting fisheries management and development responsibilities has been considered a new frontier for the fishing industry.[134]

Governments generally retain a core role in fisheries management to protect the public good, while providing help to quota holding organisations to build capabilities that allow some management responsibilities and services to be devolved to them. In New Zealand, devolution has occurred for the rock lobster stocks,[135] the scallop fishery at the top of the South Island[136] and the delivery of quota registry services. Before 1999, registry services were delivered by MFish, with annual costs of around $8.6 million recovered from the fishing industry. Following the devolution of services to FishServe in 2001, costs steadily decreased to current levels of around $4 million.[137]

During the late 1990s, the Minister was prepared to have the fishing industry take a far greater level of responsibility to collectively manage fisheries within sustainability parameters.[138] Legislation was put in place in 1999 to support further devolution of management responsibilities and services to quota holding organisations. However, the momentum behind devolution stalled in around 2000 when the fisheries management function became increasingly centralised and bureaucratic.[139]

The management of commercial fisheries continues to be centralised with an ever-increasing reliance on regulations.[140] The government has appeared to be sceptical of further devolution and, at

134. Soboil, M., and Craig, T. (2006). *Growing pains of the Quota Management System*. Paper presented at the Sharing the Fish '06 Conference, Fremantle, Western Australia, 27 February to 2 March.

135. Since 1997, the New Zealand Rock Lobster Industry Council has been an accredited research provider and has tendered for and executed contracts for monitoring and scientific stock assessments in accordance with government standards.

136. The Challenger Scallop Enhancement Company undertakes stock enhancement, area rotation, quota setting, enforcement, biotoxin monitoring, self-funding levies and resolution of conflicts with customary fishing interests, recreational users and other fisheries.

137. The government entered into a public–private partnership to form an industry-led, fully owned subsidiary, FishServe, to deliver quota registry services and other contract functions.

138. Luxton, Hon. J. (1997). Speech given at the 1997 Seafood Industry Conference. Plaza International Hotel: Wellington, 14–17 May.

139. Harte, M. (2008). Assessing the road towards self-governance in New Zealand's commercial fisheries. In Townsend, R., Shotton, R., and Uchida, H. (eds) *Case Studies in Fisheries Self-governance*. FAO Fisheries Technical Paper 504. Food and Agriculture Organization of the United Nations: Rome, 324–334.

140. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. Unpublished PhD thesis. The University of Auckland: Auckland.

worst, could be strongly opposed to it.[141] However, the government's preparedness for devolution might change, considering constraints on public expenditure, coupled with fishing industry advocacy for further devolution.

Since the mid-1990s, the commercial fishing sector was structured around the New Zealand Seafood Industry Council (SeaFIC) and commercial stakeholder groups. These supported the development of deepwater fishing interests but less so for inshore fishing interests. In 2012, SeaFIC was restructured to better direct the use of industry levies and Seafood New Zealand was established.

Seafood New Zealand was designed to provide greater commercial representation and responsibility by way of five main organisations: Aquaculture New Zealand Ltd, Deepwater Group Ltd, New Zealand Rock Lobster Industry Council Ltd, Paua Industry Council Ltd and Fisheries Inshore New Zealand Ltd. In particular, the establishment of Fisheries Inshore New Zealand is expected to provide more cohesive representation of the various inshore commercial interests.[142] However, there is uncertainty regarding the extent that Fisheries Inshore New Zealand represents the larger companies operating in inshore fisheries.

"Increasingly, the public expects improved management of the marine environment, particularly the reduction or mitigation of seabird and marine mammal mortality, as well as bycatch of fish species. The public also expects improved transparency in management decision making, along with a greater participatory role in management processes"

2.3.3 Weaknesses of the QMS

As noted, it is beyond the scope of this report to address the inherent weaknesses in the QMS. These weaknesses can be attributed, in part, to the QMS having been designed initially as a simple management system with economic efficiency and the allocation of property rights as primary goals.[143] Over time, these goals have become misaligned with the recognition that fisheries have a public component.[144] Increasingly, the public expects improved management of the marine environment, particularly the reduction or mitigation of seabird and marine mammal mortality, as well as bycatch of fish species. The public also expects improved transparency in management decision making, along with a greater participatory role in management processes.[145]

The fisheries legislation has been amended over time to include provisions for environmental management and avoiding, remedying

141. Craig, A., and Soboil, M. (2008). Self governance in New Zealand's developmental fisheries: Deep-sea crabs. In Townsend, R., Shorton, R., and Uchida, H. (eds) *Case Studies in Fisheries Self-governance*. FAO Fisheries Technical Paper No. 504. Food and Agriculture Organization of the United Nations: Rome, 269–276.

142. Seafood New Zealand (No date). *Our Sectors* (www.seafoodnewzealand.org.nz/our-industry/related-organisations).

143. The QMS was designed with two primary goals: limit catches to levels that result in maximum production from the fish stocks, and allocate fishing rights so the economic return to the nation is maximised. Sharp, B.M.H. (2009). Recreational fishing in New Zealand's evolving rights-based system of management. In Leal, D.R. and Maharaj, V. (eds) *Evolving Approaches to Managing Marine Recreational Fisheries*. Lexington Books: UK, 23–46.

144. Mikalsen, K.H., and Jentoft, J. (2001). From user-groups to stakeholders? The public interest in fisheries management. *Marine Policy*, 25, 281–292.

145. Gibbs, M.T. (2008). Network governance in fisheries, *Marine Policy*, 32, 113–119.

or mitigating the adverse effects of fishing.[146] MPI and its predecessors have taken various actions to meet the requirements of these provisions, while others considered crucial to meeting them were abandoned, including the 2010 project to develop a Benthic Impact Standard (BIS).

The objective of the BIS was to determine when an effect of fishing on the seabed was adverse, and what actions and approaches should be undertaken to avoid, remedy or mitigate this effect. To ensure good process, MFish contracted Standards New Zealand to develop the draft BIS. In addition, to ensure a whole-of-government perspective, a government advisory group was established that included staff from the Ministry for the Environment, Department of Conservation, Ministry of Economic Development, Ministry of Agriculture and Forestry and Te Puni Kōkiri.

In accordance with the Standards New Zealand process, a balanced and representative BIS committee was appointed, including representatives from the fishing industry, non-governmental organisations, Te Ohu and the National Institute of Water and Atmospheric Research (NIWA). The BIS Committee's role was to help with developing the Standard, to actively contribute toward achieving consensus and to approve the final draft. BIS Committee members agreed to consensus decision-making principles and to working openly, constructively and collaboratively.

The BIS Committee met twice. The first meeting discussed the terms of reference[147] and a draft outline. The second meeting drafted the BIS framework and a fictitious example was used to demonstrate how it might be applied. Although the framework was considered at a late stage, the feedback was positive about its workability. Various BIS Committee members also agreed to provide the necessary technical information and analysis to develop the framework fully for further discussion and evaluation. That same day as the second BIS Committee meeting, fishing industry leaders met with the Minister of Fisheries. The BIS project was abandoned within the week.

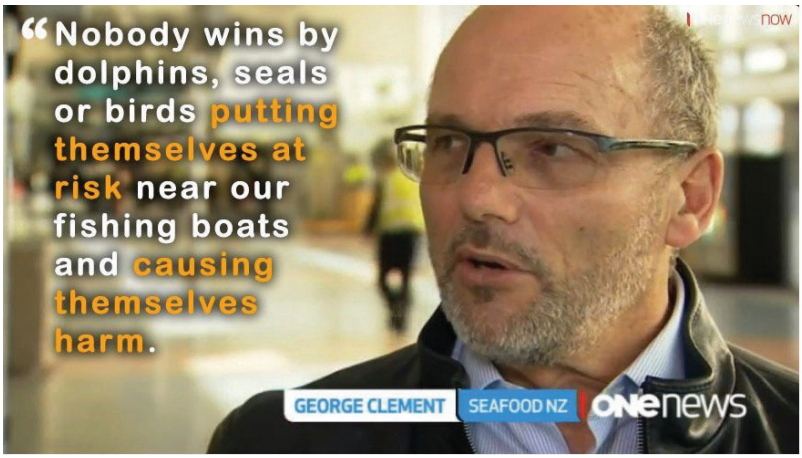
Abandonment of the BIS project suggests the fishing industry has had considerable influence over the prioritisation of Ministry projects, at least around 2010 when MFish began to be subjected to major restructuring.

Of those actions that have been implemented to meet environmental management requirements, the standouts include the National Plan of Action for seabirds,[148] which covers all fisheries to mitigate seabird bycatch, and sea lion exclusion devices implemented in some trawl fisheries. Also included is the Hector's and Maui's dolphin

146. Section 9 of the Fisheries Act 1996 sets out environmental principles to be taken into account in relation to utilisation of fisheries resources or ensuring sustainability.

147. Standards New Zealand (2010) Terms of Reference between Benthic Impact Standards Committee and Standards New Zealand Version 0.1 – Draft. Standards New Zealand: Wellington.

148. MPI (2015). *National Plan of Action – Seabirds 2013* (www.fish.govt.nz/en-nz/Environmental/Seabirds/default.htm).



RIGHT: *George Clement from Seafood NZ, 11 July 2016*

Threat Management Plan that covers numerous fishing closures around the South Island and the west coast of the North Island.[149]

Despite these actions, the fishing industry and MPI appear to be losing the confidence of the public. A recent example (11 July 2016) of media coverage highlighted this potential loss of public confidence with respect to under-reporting of dolphin and seabird mortality.[150] The coverage included protests about onboard observers having reported 17 dolphins killed by fishing vessels in 2012–13, and the number had almost doubled to 30 dolphins in 2013–14. The media reporting referred to the low level of observer coverage on vessels as contributing to under-reporting of mortality figures, noting dolphin mortality may have surpassed 80 in 2013–14.

Furthermore, the reported number of protected seabirds killed in 2013–14 was 512, while the estimated number killed across all vessels was 2,277. The coverage included an opposition party spokesperson stating that the government was not doing enough and all vessels should be monitored for bycatch of dolphins and seabirds. At the end, the fishing industry representative provided a rather astounding response, "Nobody wins by dolphins, seals or birds putting themselves at risk near our boats and causing themselves harm".[151]

This type of media coverage and industry response do not engender public confidence in the fishing industry or its ability to self-manage. Further recent media coverage of evidence of potential discarding, high grading and misreporting behaviours appear to have elicited similar public responses.

A report was released by the University of Auckland on 13 May 2016 regarding unreported and misreported catches and discards. This report attempted to estimate the total amount of catches in New Zealand from 1950 to 2010, including the official

149. Mace, P., Sullivan, K.J., and Cryer, M. (2014). The evolution of New Zealand's fisheries science and management system under ITQs. ICES Journal of Marine Science, 71(2), 204–215.

150. One News (2016). *Fishing Trawlers Accused of Killing Precious Dolphins: 'I've seen dolphins rotting in nets'*, 29 July (www.tvnz.co.nz/one-news/new-zealand/fishing-trawlers-accused-killing-precious-dolphins-ive-seen-rotting-in-nets).

151. Ibid.

catch statistics reported to the FAO and what could be found regarding the levels of illegal, unreported and misreported catches based on the best available information. Amongst other things, the report estimated the total amount of reconstructed catches from 1950 to 2010 was 38.1 million tonnes, or 2.7 times higher than the 14 million tonnes reported for that period to the FAO. The report also concluded that the evidence shows the QMS is in need of a robust critical review.[152]

Just as Seafood New Zealand and MPI were criticising the Auckland University report and raising doubts about its credibility, in what appeared to be an orchestrated manner, MPI investigation reports on misreporting and discarding were leaked to the public.

One of the leaked reports titled, *Operation Achilles*, makes rather disturbing statements, such as having evidence of "what we have known for a long time" and did not act on, samples showing "between 20 to 100% of some quota fish are being discarded during every haul", seemingly "callous disregard" for simple reporting requirements, and the prospect that over the years some catch levels have been set based on incorrect and misleading information.[153]

MPI was quick to announce that an independent Queen's Council will review the leaked reports to provide, amongst other things, a clearer interpretation of the legal obligations and recommendations on the adequacy and appropriateness of MPI's actions in those instances.[154]

MPI was criticised for its decisions not to prosecute those involved in potential illegal activities, despite having video camera evidence.[155] Even if the review finds that MPI did not have legal grounds for prosecution, questions remain regarding the apparent "callous disregard" of behaviours displayed with cameras rolling, and what MPI has subsequently done to mitigate those behaviours.

While the Auckland University report might face legitimate challenges to its methodology and findings, it, like the leaked MPI investigation reports, point to potentially serious problems that will increasingly elicit public demands for explanations and more transparency and accountability in the way fisheries are managed.

152. Simmons, G., Bremner, G., et al. (2016). *Reconstruction of Marine Fisheries Catches for New Zealand (1950–2010)*. Working Paper Series, #2015-87, Institute for the Oceans and Fisheries, University of British Columbia: Vancouver (www.seaaroundus.org/doc/PageContent/OtherWPContent/Simmons+et+al+2016+-+NZ+Catch+Reconstruction+-+May+11.pdf).

153. MPI (2013). *Operation Achilles: Preliminary Investigation Report Dumping/Discarding*. Ministry for Primary Industries: Wellington.

154. Mitson, E. (2016). MPI appoints QC to look into its own fishing investigations. *National Business Review*, 19 May.

155. Bess, R. (2016). Fix fishing from the top. *National Business Review*, 10 June.

2.4 Concluding remarks

This chapter discusses how New Zealand's recreational, customary and commercial fisheries are managed. New Zealand stands out from most other fishing nations for its long term and almost sole focus on commercial fisheries, with limited regard for recreational fisheries.[156] Implementation of the QMS presented a radical solution for troubled commercial fisheries at a time when the economy and fish stocks were deteriorating.

The QMS also presented Māori with an opportunity to join forces in their claims to fisheries resources. The settlement of those claims significantly changed Māori traditional understanding of how to exercise their rights to fisheries resources and how to manage those resources. It also provided Māori with allocated quota and other assets. Māori can also receive government financial and technical support, and they can draw on the support of Te Ohu, which has a statutory role to express views on behalf of Māori fishing interests. Expectations are ongoing regarding further evolution of the customary right.

In contrast, recreational fishers were given assurances that the public right to fish would have priority. These assurances, however, were short lived. Subsequently, the courts determined that the fisheries legislation provides the expectation that the Minister must demonstrably consider the interests of all fishing sectors but has wide discretion in decision making when allocating shares of a TAC between these sectors. While the capability of some recreational fishing representative organisations has continued to improve, resources remain limited. Few organisations are nationally recognised, and none have a mandate to represent all recreational fishers.

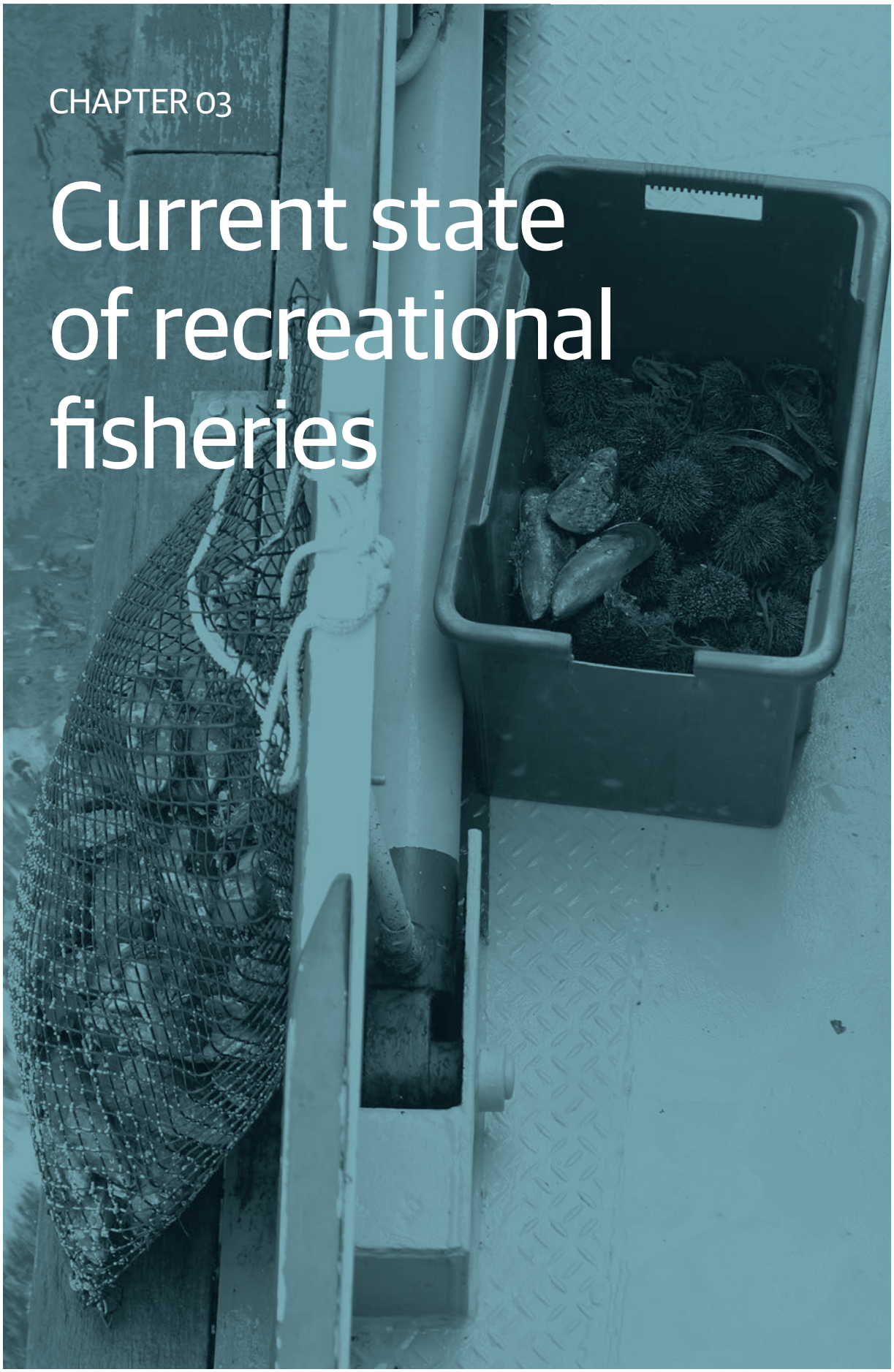
The commercial fishing sector has a long history of organising itself to address the management of its respective fisheries. While many have a strong preference for self-management, and management responsibilities and services have been devolved to certain groups, the overall approach has reverted to centralised management with strong reliance on regulations.

However, inherent weaknesses in the QMS appear to perpetuate certain problems that MPI has not sufficiently addressed and cannot leave to the fishing industry alone. These problems include incidental bycatch of seabirds and marine mammals and discarding, high grading and misreporting of commercial catches. The extent of these problems is unknown, and the current situation can best be described as confusing, with claims and counter-claims and conjecture. The public response will increasingly be to demand more explanation and transparency and accountability in the way fisheries are managed.

156. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. PhD thesis. The University of Auckland: Auckland.

CHAPTER 03

Current state of recreational fisheries



New Zealand has received recognition worldwide for sustainably managing most fish stocks, yet some inshore species important to recreational fishers are overfished or depleted and need to be rebuilt to targets specified in line with MPI's Harvest Strategy Standard. A small number of stocks are considered collapsed, which generally requires the fishery to be closed.

Fisheries Inshore New Zealand, which represents substantial commercial inshore fishing interests, is also concerned about the proportion of commercial landings from low information fish stocks with little available stock data. However, unknown status does not necessarily equate to a fishery being depleted or fished unsustainably.

The process for determining TAC allocations is the most contentious fisheries management issue, because it is characterised by competing self-interests and conflicts. The Minister must use discretion in weighing up these interests when deciding what would be reasonable allocations in the circumstances.

Successive governments have been unsuccessful in changing the way recreational fisheries have been managed in the aftermath of the late 1980s assurances about the public right to fish. Some attempts have been made to bring about changes, most notably in 2000 and 2006, and court determinations have also clarified several TAC allocation issues.

The most significant proposed change to recreational fisheries management since then was in 2014, in the lead up to the general election, when the government proposed new recreational fishing parks in the inner Hauraki Gulf and the Marlborough Sounds. This proposal was not well received by the commercial and recreational fishing sectors. The fishing sectors do not view these parks as viable measures for managing fisheries, but mainly as attempts to gain more votes. In 2015, MPI also established a small fisheries team of two staff dedicated to addressing issues important to the recreational fishing sector.

Recreational fishers represent an increasing diversity of ethnicities and interests as immigration continues at tens of thousands each year. They span everything from the occasional shellfish gatherer to highly skilled gamefish fishers and charter boat operators. Evidence suggests the primary motivation for many is not to catch for sustenance but simply to enjoy the fishing experience.

Finally, sizeable annual expenditure by recreational fishers suggests they are in it for more than just the fish as a source of protein. It would be far cheaper, on average, to buy commercially caught fish. Despite the inefficiencies, fishers fish because they enjoy the experience. While those benefits have not been quantified adequately, fishers are willing to pay a lot overall for the experience.

3.1 Fish stock sustainability and Total Allowable Catch

Fisheries legislation is the basis for fisheries management across all fishing sectors. Its overall purpose is to provide for the utilisation of fisheries resources while ensuring sustainability (maintaining the potential of fisheries resources to meet the reasonably foreseeable

needs of future generations, and avoiding, remedying or mitigating any adverse effects of fishing on the aquatic environment). Utilisation means conserving, using, enhancing and developing fisheries resources to enable people to provide for their social, economic and cultural wellbeing.[157]

3.1.1 Fish stock sustainability

Even though New Zealand is well regarded worldwide for the sustainable management of its fish stocks,[158, 159] over a quarter of all landings are from fish stocks with an unknown stock status. Most of the catch landed from these stocks is taken by large-scale deepwater commercial fisheries, whereas most shared fisheries occur close to land.

While many levels of abundance exist where an equilibrium can be achieved between the productivity of an exploited stock and the harvest it can sustainably yield, there is a theoretical level of harvesting at which the yield can be maximised over the long term. This is commonly known as the Maximum Sustainable Yield (MSY). For most fish stocks managed in the QMS, the statutory requirement is to set a TAC that maintains the stock at or above a biomass level that can produce MSY.

If the biomass of a fish stock is held at a level significantly greater than that which will support MSY, however, it will produce a lower yield over the long term, because there will be greater competition for food and other resources, slower fish growth and higher levels of natural predation given the increased density of the population. Conversely, if the annual harvest exceeds MSY, the fish stock will be pushed towards collapse as long as that level of harvesting is maintained.

Since 2008, MPI's Harvest Strategy Standard has provided guidance for managing fish stocks at or above a biomass level that can produce MSY based on the following measures:

- an MSY-compatible target based on a biomass or fishing mortality rate (for species with intermediate natural productivity, such as snapper, the target biomass is 40 percent of the unfished biomass);
- an overfishing threshold;
- a soft limit set at half the biomass level that can produce MSY (such as 20 percent of unfished biomass for snapper); and
- a hard limit set at one-quarter the biomass level that produces MSY or 10 percent of unfished snapper biomass.

Fish stocks that fall below the hard limit are deemed collapsed and closure of the fishery should be considered. Fish stocks that have fallen below the soft limit are deemed to be overfished or depleted

157. Fisheries Act 1996, section 8.

158. Worm, B., Hilborn, R., et al. (2009). Rebuilding global fisheries. *Science*, 325(5940), 578–585.

159. Adler, J., Cullis-Suzuki, S., et al. (2010). Aggregate performance in managing marine ecosystems of 53 maritime countries. *Marine Policy*, 34, 468–476.

and need to be rebuilt. If the rate of extraction exceeds the overfishing threshold, it is considered to eventually lead to the fish stock biomass declining below management targets and/or limits.[160]

Results show that, at the end of 2015, most fish stocks were performing well when compared with the above measures. However, the biomass for some inshore species was considered to be well below target levels (such as 40 percent of unfished biomass for snapper),[161] though few fish stocks have a biomass estimate, and most are monitored by catch-per-unit-effort. Those considered below the soft limit are important to recreational fishers, as are stocks considered below the hard limit. Overfishing has also been documented for several of the stocks.[162]

"The poor status of some inshore stocks tends to support the view that managing fish stocks at a biomass level that can produce MSY is like dancing on a razor edge"

The poor status of some inshore stocks tends to support the view that managing fish stocks at a biomass level that can produce MSY is like dancing on a razor edge. This especially so when considering the level of uncertainty and lack of knowledge about certain stocks, which is why higher target levels, such as 40 percent of the unfished biomass, are often set.[163]

Similarly, the poor status of these stocks points to historical overfishing and competition over the way fisheries are managed; that is, managing a fish stock at a biomass level that can produce MSY benefits commercial fishers, while recreational fishers might prefer higher biomass, which provides for more fish that are older and, therefore, a larger size.[164] Even with the biomass around 40 percent, the effect on the quality of the fishing experience can be significant, especially for those who use low-technology fishing gear.

Fisheries Inshore New Zealand has raised concerns that the proportion of landings (around 28 percent) from fish stocks of unknown status has progressively increased. Fisheries Inshore New Zealand states that too many of the inshore fish stocks are under-managed or not managed, citing that 86 percent of the fish stocks have not had formal TAC or TACC reviews since they were introduced into the QMS.[165]

The number of fish stocks managed in the QMS increased significantly after 1998 when a new information system was developed, and the government then adopted the policy position that those stocks requiring management should be introduced into the QMS. The

160. Mace, P. (2014). Interim update of the status of New Zealand's fish stocks. In Mace, P., and Vignaux, M. (eds) *Fisheries Assessment Plenary. May 2014 – Supplement. A Celebration of 30+ Years of Fisheries Science*. Ministry for Primary Industries: Wellington, 55–59.

161. MPI (2016). *The Status of New Zealand's Fisheries 2015*. Ministry for Primary Industries: Wellington.

162. Ibid.

163. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. Unpublished PhD thesis. The University of Auckland: Auckland.

164. Connor, R.D. (2006). Necessary but not sufficient: Allocation of allowable catch as a management tool in shared fisheries. Paper presented at the Sharing the Fish '06 Conference, Fremantle, Western Australia, 27 February to 2 March.

165. Fisheries Inshore New Zealand (2015). Fisheries Inshore New Zealand's response to the Operational Review of the New Zealand Fisheries Management Framework, 11 December. Fisheries Inshore New Zealand: Wellington.

policy's aim was to avoid having a parallel management system that lacked the QMS's characteristics.[166]

The consequence of this policy position was that several fish stocks with low or no commercial value, which might be taken incidentally, were added to the administrative burden. Fish stocks that had previously been discarded legally were then subject to the discard ban put in place in 1990 and, therefore, to the catch–quota balancing system. However, many of these fish stocks had their TACCs set based on landed catch, not actual catch that included what was legally discarded.

3.1.2 Total Allowable Catch allocations

As noted, the process for deciding TAC allocations for each fishing sector is the most contentious in the management of fisheries in New Zealand. It has been regarded as lacking transparency and providing little certainty about future allocations. The process is characterised by competing self-interests and conflicts, and it requires some explanation.

For each fish stock, the Minister is charged with setting a TAC based on the best available biological information and the statutory obligation to manage the stock biomass at or above the level that will produce MSY. Once the TAC decision is made, the Minister apportions the TAC for customary food-gathering purposes, other fishing-related sources of mortality (including estimated illegal take and discards), and then for the recreational and commercial fishing sectors.

The Minister has no specific guidance for when setting the recreational allocation relative to the commercial allocation. The Minister must use discretion in weighing up competing interests when deciding what would be reasonable in the circumstances. It is expected each fishing sector will, therefore, argue its case for a greater share of the TAC. Each appears to exert as much influence as possible to gain favourable allocations, at the expense of the other.

While the above description might first appear straightforward, it is increasingly difficult to reconcile quota holding rights with the demands of recreational and customary fishers when fish stocks are fully exploited. The problem with allocating fish stocks amongst competing fishing sectors is that, although all want to catch more fish, the values each sector gains from doing so are often very different. In general, commercial fishers seek to maximise the net present value of their quota holdings, while recreational fishers hold diverse values for fishing, which the Minister must take into consideration.[167]

A common complaint by quota holders is that their rights are undermined by the uncapped recreational catches in inshore

166. Bess, R. (2005). Expanding New Zealand's quota management system. *Marine Policy*, 29, 339–347.

167. Connor, R.D. (2006). Necessary but not sufficient: Allocation of allowable catch as a management tool in shared fisheries. Paper presented at the Sharing the Fish '06 Conference, Fremantle, Western Australia, 27 February to 2 March.

"The lobbying and counter-lobbying rent-seeking behaviours displayed can consume much time and effort, which diverts attention from potentially building collaborative efforts that could improve fish stocks management and benefit all fishing sectors"

fisheries. The undermining occurs either through the recreational fishing sector receiving more favourable TAC allocations or the recreational catches exceeding those allocations. While, in theory, the better defined quota holding rights and customary rights are expected to reduce the strength of the recreational right, it has remained remarkably robust. This robustness is largely attributed to heavy reliance on lobbying of the Minister during the TAC allocation decision-making process.[168]

The lobbying and counter-lobbying rent-seeking behaviours displayed can consume much time and effort, which diverts attention from potentially building collaborative efforts that could improve fish stocks management and benefit all fishing sectors.[169] Both commercial and recreational fishing representative organisations have been known to take staunch positions and claim they will exert influence over the electorate if decisions are unfavourable. Some positions taken have resulted in legal action.

3.2 Previous fisheries policy proposals

As noted, successive governments have been unsuccessful in defining the recreational right to fish and determining principles for allocating TACs since the late 1980s. This was when a policy position was briefly taken to provide the recreational right with priority status where there was insufficient abundance to support both commercial and non-commercial fishing.[170] This policy was not taken to Cabinet for legislative approval, nor has it been endorsed by any subsequent governments.[171] The courts have consequently confirmed that, when allocating TACs amongst the fishing sectors, there is no legal requirement to favour recreational fishing interests over commercial interests.

The next significant effort directed at recreational fisheries management began in 1998 when MFish and the NZRFC worked collaboratively to clarify the public's views regarding the recreational fishing right and possible management responsibilities.

The NZRFC was working with its members' longstanding policy mandate that there would not be any licensing or quota-type system for recreational fisheries, and that the government would continue managing these fisheries. The NZRFC members agreed to negotiate

168. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. PhD thesis. The University of Auckland: Auckland.

169. McMurran, J. (2000). Property rights and recreational fishing: Never the twain shall meet? *Use of Property Rights in Fisheries Management*. Proceedings of the FishRights99 Conference, Fremantle, Western Australia. FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 184–187.

170. MAF (1989). National Policy for Marine Recreational Fisheries. Wellington, Ministry of Agriculture and Fisheries. The Hon Colin Moyle put the 1989 policy in place, which became known as Moyle's promise.

171. Lock, K., and Leslie, S. (2007). *New Zealand's Quota Management System: A History of the First 20 Years*, Motu Working Paper 07–02. Motu Economic and Public Policy Research: Wellington.

with the government regarding the public right to fish and to review its own policy.

A joint working group was formed. To help this group, the government commissioned research to estimate the total expenditure on recreational fisheries. In 1999, this was estimated at $973.5 million for the five major recreational species alone (snapper, kingfish, blue cod, kahawai and rock lobster).[172]

At that time, the NZRFC expressed concern about the government's intent to devolve management responsibilities to all fishing sectors to reduce government expenditure. The NZRFC considered this was a form of privatisation of fisheries, which should not occur because it considered fisheries a public resource. The NZRFC reiterated its opposition to recreational fishing licences.

In addition, the NZRFC reiterated a solution that had been considered for several years, which was the establishment of a coastal fishing zone to better accommodate recreational fishing. It proposed the zone extend 12 nautical miles with an initial ban on all commercial fishing, excluding rock lobster and paua, and priority be given to customary food gathering, recreational fishing and lastly commercial fishing. At that time, the NZRFC considered this type of coastal zone to be a workable solution for the long term.[173]

3.2.1 Soundings document

The government had other solutions in mind, however, which it progressed through the working group. In 2000, the working group released the Soundings document for consultation, which set out three options for consideration:

- proposed retention of the status quo for determining allocations between commercial and recreational fisheries, with the Minister continuing to have discretion in allocation decisions;
- proposed use of a fixed proportion of TACs for allocations between the two sectors. After the Minister made a decision on the TAC and an allocation was made for customary food gathering, the remainder of the TAC would be split between commercial and recreational fisheries based on predetermined proportions; and
- proposed use of recreational management, based on cooperation with the government and the commercial fishing sector. The TAC allocation process would also involve predetermined proportions.[174]

172. Lindsay, S., et al. (1999). *Value of New Zealand Recreational Fishing Project: REC9801*. Report written for the New Zealand Ministry of Fisheries. The South Australian Centre for Economic Studies, University of Adelaide: Adelaide.

173. Heatherington, M.J. (2000). Property rights and recreational fishing, a New Zealand perspective – past, present and future. *Use of Property Rights in Fisheries Management*. Proceedings of the FishRights99 Conference, Fremantle, Western Australia. FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 284–287.

174. MFish and NZRFC (2000). *Soundings. Cast your line! Sounding out New Zealanders' views on the future of recreational fishing*. Ministry of Fisheries: Wellington.

A proportional basis was intended to allow proportional reductions or increases in catch levels for both the commercial and recreational fishing sectors. As is noted in section 3.2.2, proportionality was determined to be outside the existing statute. In response to these options, a recreational fishing representative group formed, referred to as Option 4 (as noted in section 2.1).[175]

Option 4 strongly opposed proportional TAC allocations, and any licensing for recreational fishing, while advocating that the recreational right should have priority over commercial fishing. Option 4 also advocated for the ability to exclude commercial fishing from certain areas and that a government-funded body be formed to represent recreational fishing interests.

Other submissions expressed various views about the above options. For example, the predecessor to Te Ohu, the Treaty of Waitangi Fisheries Commission, advocated for commercial fishing rights having priority over recreational rights, and asserted that to do otherwise would undermine the 1992 settlement of Māori claims. The commission also stated that the customary food-gathering right has priority and with an unconstrained share of TACs.

The 2001 Ministerial advice was to forgo the proposed three options and continue with joint efforts to find common ground on a range of issues. Agreement was reached on a few issues, but not on a different approach for commercial and recreational TAC allocations. Eventually, failures to reach agreement led to the joint efforts ceasing to continue.

Subsequently, legal action began regarding kahawai fish stocks. After snapper, kahawai is the second most important recreational fishery in Fisheries Management Area (FMA) 1, which is the same area covered by SNA1. Many recreational fishers consider kahawai to be an iconic fishery, because it is a frequently caught, sizable species. In contrast, commercial fishers view kahawai as a low value bulk fishery that supports purse seine vessels and crew outside the tuna season.[176] Kahawai are also caught in substantial quantities by the set net method and as bycatch in the longline and trawl fisheries.

Kahawai was introduced into the QMS in 2004. Legal action began in the High Court in 2006 then the Court of Appeal in 2008 and the Supreme Court in 2009. To summarise the Supreme Court determination: the Minister must set the TAC before deciding on allocations and then the TACC; the Minister has discretion in setting a TAC and allocations, provided the Minister is well informed by considering relevant social, cultural and economic factors; the Minister

175. In 2012, Option 4 was subsumed into LegaSea. As noted, LegaSea is a public outreach initiative of the NZSFC that raises funds and provides public information on issues of importance to the sustainable management of fisheries for future generations. LegaSea's mottos are 'Fish for the People' and 'More Fish in the Water' (www.legasea.co.nz).

176. Connor, R.D. (2006). Necessary but not sufficient: Allocation of allowable catch as a management tool in shared fisheries. Paper presented at the Sharing the Fish '06 Conference, Fremantle, Western Australia, 27 February to 2 March.

can set the TAC at or above the biomass level that can produce MSY (noted: the kahawai 1 stock is managed at or above 52 percent of the unfished biomass, or well above the biomass level that can produce MSY, and hence favouring recreational fishing interests).[177]

3.2.2 Shared fisheries document

In 2006, the government released the document, *Shared Fisheries: Proposals for Managing New Zealand's Shared Fisheries*, for consultation.[178] It included several specific management changes for those fisheries where all fishing sectors had shared interests and placed emphasis on unlocking greater value from these fisheries. This was not a new policy, because it mainly addressed the most critical points of contention between the fishing sectors.[179]

The central issue was determining the best value for a fishery when setting TACs and decisions on allocations. Options were included for determining baselines (or minimum TAC allocations) to protect the recreational fishing right. This minimum, set in tonnage, was proposed as a means of giving priority to recreational fishing. However, the policy also acknowledged that setting minimum initial TAC allocations was problematic due to the lack of accurate information on the level of recreational catches.

The document also included options for making adjustments to TAC allocations: proportional; value based (the value of the next fish caught); and a combination (proportional as the default position with valuation information used where available).

A related suggestion was to improve recreational survey methodologies and other sources of information for determining the best value in shared fisheries, taking account of the pecuniary and non-pecuniary benefits to society.

The document also referred to the use of various spatial management options: bulk fishing exclusion zones; amateur fishing havens; specified areas that had limits on catches; multi-party agreements; and fisheries planning processes that involved both commercial and recreational fishing sectors.

Finally, the document suggested the establishment of a fishing trust to improve the recreational fishing sector's input into management processes. These processes would continue working with current recreational fishing representative organisations, which, at that time, were the NZRFC and NZBGFC. It was suggested that the trust could be supported with government funding.

Both the commercial and recreational fishing sectors strongly rejected the document, perceiving potential losses for themselves

177. *New Zealand Recreational Fishing Council Inc & Ors v Sanford Ltd* [2009] NZSC 54, [2009] 3 NZLR 438.

178. MFish (2009). *Shared Fisheries: Proposals for Managing New Zealand's Shared Fisheries – A Public Discussion Paper*. Ministry of Fisheries: Wellington.

179. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. Unpublished PhD thesis. The University of Auckland: Auckland.

if its proposals were implemented. The basis for this rejection is briefly summarised.

In response, Te Ohu considered the document could have a significant and detrimental effect on the settlement of Māori claims to fisheries resources. Te Ohu was concerned it could undermine the value of the settlement assets and bring about greater uncertainty. Furthermore, it was perceived as no more than a means of giving recreational fishers an increased share of catches at the expense of the commercial fishing sector.

Te Ohu also expressed concern about the document's workability, because no single organisation was mandated to speak on behalf of recreational fishers and no means existed of limiting recreational catches to sustainable levels nor requiring fishers to report their catches.

Option 4 also strongly objected to the document. Its greatest cause for objection was the proposed change to TAC allocations to a proportional basis. This basis was intended to allow proportional reductions or increases in catch levels for both commercial and recreational fishing sectors. Option 4 viewed a proportional basis as essentially transferring fisheries resources from a public resource to privatisation, or treating recreational fishers as though they were minor shareholders in commercial fisheries.

Furthermore, Option 4 considered that accepting a proportional basis would constitute giving the recreational fishing sector an initial allocation that was based on depleted fish stocks, and that depletion had already been caused by poor management under the QMS.

Option 4 concluded no benefits would be gained for recreational fishers in accepting proportional TAC allocations and subsequent proportional adjustments. Option 4 cited the previously mentioned case law that raised legal questions regarding the use of proportional TAC allocations.[180]

The court determination cited refers to the imprecise account of recreational catch levels as good reason why strict proportional allocations would be almost impossible to achieve. Furthermore, the determination refers to the Minister being entitled to consider changes in population patterns and growth; if demand for recreational fishing were to increase, then the Minister could not be precluded from giving extra allocation. In summary, the court found that fisheries legislation does not include any duty on the part of the Minister to fix or vary an allocation against any particular proportion of the TACC or TAC.[181]

180. Option 4 (2005). *Proportional Allocation of Fisheries Resources in NZ: Option 4 Final Submission* (www.option4.co.nz/Fisheries_Mgmt/proportions.htm#work).

181. *New Zealand Fishing Industry Association Inc & Ors v Minister of Fisheries* (CA 82/97).

3.3 Lack of subsequent progress

Since the Shared Fisheries document was released in 2006, no further significant attempts have been made to improve the management of recreational fisheries or to clarify the public right to fish outside the court determinations. It would appear the government has no intention of pursuing substantive changes.

MPI is currently considering submissions received in late 2015 in response to its operational review of the fisheries management system, of which the terms of reference include improving decision-making processes. It has signalled, however, that the recreational right to fish is outside the scope of the review. MPI's next step is to release a public discussion document, due in late 2016, on any proposed changes to how fisheries are managed.

3.3.1 Fisheries 2030 strategy

This lack of subsequent progress is somewhat surprising given the references to recreational fisheries in the Fisheries 2030 strategy document.[182] Fisheries 2030 was developed in 2009 as part of an organisation-wide review of MFish and to address the long-term interests of all fishing sectors and aquaculture.

Fisheries 2030 outlines the broad management framework, starting with the goal of maximising the benefits from the use of fisheries resources within environmental limits. This goal is supported by three outcomes, 15 objectives and 45 strategic actions.

The government endorsed Fisheries 2030 while acknowledging that all 45 strategic actions could not be undertaken concurrently because of resource constraints and sequencing requirements. On that basis, a five-year action plan (2009 to 2014) was devised for seven objectives and 26 strategic actions, with the intention that the remaining actions would start in the near future, and some may include legislative reform. The strategic actions in the five-year action plan that affect recreational fishing include:

- strategic action 1.1: develop and implement a TAC allocation policy for shared fisheries;
- strategic action 1.3: determine the best option for providing non-commercial fishing areas; and
- strategic action 10.4: determine best options for information collection from amateur fisheries – including implementation of charter boat reporting.

No noticeable progress has been made on strategic action 1.1, despite it being central to the proposed Soundings document in 2000 and the Shared Fisheries document in 2006. In response to both

182. MFish (2009). *Fisheries 2030: New Zealanders Maximising Benefits from the Use of Fisheries within Environmental Limits*. Ministry of Fisheries: Wellington.

documents, the prospect of a change in the process for TAC allocations attracted the most significant level of objections.

3.3.2 Coastal fishing zones

Progress has been made with respect to strategic action 1.3. Beginning in 2008, the Minister of Fisheries raised the prospect of establishing recreational fishing only areas. Fisheries legislation includes provisions that allow the Minister to recommend the closure of areas to commercial fishing to protect access for recreational fishing.[183] It is understood that the commercial fishing sector was not receptive to engaging with the Minister on the possible location of these closed areas, so progress was halted until the lead up to the 2014 general election.

At that time, the government proposed the establishment of the new inner Hauraki Gulf and Marlborough Sounds recreational fishing parks. The Hauraki Gulf park covers the area with high recreational use by fishers targeting snapper, and it is proposed that this park will exclude all commercial fishing. However, a trawl ban is already in place for the inner Hauraki Gulf. It appears that the displacement of commercial fishing would mainly affect a few small operations in the Firth of Thames that target grey mullet and flatfish species, and some longline vessels that seasonally fish for snapper.

The Marlborough Sounds park covers an area important for recreational fishers, particularly for catching blue cod. The recreational sector has required ongoing management intervention for this fishery because of the significant increase in population during the summer holiday period. It is proposed the Marlborough Sounds park exclude commercial finfish fishing, which includes blue cod, but would allow the continuation of commercial fishing for scallops, rock lobster and paua.

The location of these proposed parks is over marine areas that are the most heavily used by recreational fishers. The proposal also includes more inclusive planning processes for the management of the parks, which provide further opportunities for recreational fishing sector involvement.[184]

Progress has also been made on strategic action 10.4 regarding charter boats being required to report the location, target species, number of fishers per trip, and the number of fish caught (for a limited subset of species that excludes snapper, the most important and most-caught recreational species). These requirements have been in place since 2010. A concerted effort has also been made to develop and test more rigorous survey-based methods to estimate recreational harvests.

3.3.3 Recreational fisheries team

As noted, MPI established a fisheries management team in 2015 comprising two staff dedicated to addressing issues important to the recreational fishing sector. This team is tasked with improving

183. Section 311 of the Fisheries Act 1996.

184. Ministry for the Environment (2016). *A New Marine Protected Areas Act – Consultation Document*. Ministry for the Environment: Wellington.

engagement with recreational fishers and keeping them informed on the work it is doing. To date, the team's engagement has occurred through public meetings and attendance at public events that provide opportunities for face-to-face conversations about fishing experiences and ideas for improving fisheries. The team is exploring how MPI's fisheries management function can more effectively incorporate the views of recreational fishers in its decision-making processes.

The establishment of the recreational fisheries management team is intended to signal a new approach towards engagement in those fisheries where all sectors have a shared interest. For example, when changes to catch limits are a consideration, the shared fisheries approach will be to consult with the sectors at an early stage to generate discussion and collectively develop options. The team is also responding to public concerns regarding localised depletion of certain fish stocks. These concerns generally include reference to the need for more local and area management. Finally, the team will use social media channels and relevant publications to advise the public on relevant issues and updates.[185]

3.4 What we know about recreational fishing

The highest concentrations of recreational fishing effort are near the more densely populated areas, particularly the Hauraki Gulf, Bay of Islands, Bay of Plenty, Hawke's Bay, Marlborough Sounds and off towns on the west coast of the North Island. The level of recreational fishing effort increases significantly during the summer months, when many New Zealanders take extended holidays, often lasting for several weeks, which causes significant shifts in the population of many areas that are highly sought for recreational fishing.

A lot of speculation has been made about the number of marine recreational fishers in New Zealand since the QMS was implemented, and the size of their catches, but validated survey-based estimates have only become available in recent years. A National Panel Survey in 2011–12 estimated 600,000 marine recreational fishers were in New Zealand at that time.[186] Other estimates in the past have ranged from 400,000[187] to 1.32 million[188] recreational fishers, but these have been based on very crude calculations and are not reliable.

Despite the variations in estimates of annual recreational fishers in New Zealand, it is reasonable to expect the number of fishers

185. Turner, D. (2016). Ministry Notebook. *New Zealand Fishing News*, August, p. 85.

186. Wynne-Jones, J., Gray, A., et al. (2014). *National Panel Survey of Marine Recreational Fishers 2011–12: Harvest Estimates*. New Zealand Fisheries Assessment Report 2014/67. Wellington: Ministry for Primary Industries.

187. Sutinen, J.G. and Johnston, R.J. (2003). Angling management organizations: integrating the recreational sector into fishery management. Marine Policy, 27, 471–487.

188. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. Unpublished PhD thesis. The University of Auckland: Auckland.

will increase by the rate of growth in the population and tourism. However, research has shown that, in developed nations, participation rates in recreational fishing declined with population density and gross domestic product, which indicates a negative effect of urbanisation. Participation rates also declined with increasing median age, average household size and unemployment rates, and often in response to declining fish abundance, which suggests resource limitations constrain participation in fishing.[189]

"A common practice among many fishers is to share their catch with family members and neighbours who may be unable to go fishing or cannot afford to buy fresh fish, and this is a valued reward for their efforts on the water"

New Zealand might well be an exception to this downward trend in participation rates, if the number of recreational boats is any indication. In 1997, there were an estimated 240,000 boats, which represented one boat for every eight people. In 2009, the number of boats had almost doubled to 450,000,[190] this then doubled again to 900,000 by 2014, representing one boat for every five people.[191] A substantial proportion of the boats would not be used for fishing though, and some that are would be used solely for freshwater fishing.

For many New Zealanders, fishing in inshore waters is a valued pastime, a connection to nature and tradition, and something that constitutes an integral part of Kiwi culture.[192] A large segment of recreational fishers has historically held the view that they have a birthright to catch for fun and food.[193]

A common practice among many fishers is to share their catch with family members and neighbours who may be unable to go fishing or cannot afford to buy fresh fish, and this is a valued reward for their efforts on the water.[194]

The results of a 2007 survey of recreational fishers show that attitudes towards fishing might be changing. Alternatively, the results might reflect attitudes that are different from those presented by recreational fishing representative organisations. The survey was commissioned by SeaFIC in response to the release of the Shared Fisheries document in 2006.

The survey found 65 percent of New Zealanders think that, if there is not enough fish to meet the demands of both recreational and commercial fishers, both commercial and recreational fishers should be required to take less fish. As well, 64 percent believe it would be

189. Arlinghaus, R., Tillner, R., and Bork, M. (2014). Explaining participation rates in recreational fishing across industrialised countries. *Fisheries Management and Ecology*, 22, 45–55.

190. Maritime New Zealand (2009). *Recreational vessel activity in New Zealand: Fact Sheet*, October (www.maritimenz.govt.nz/Publications-and-forms/Recreational-boating/recreational-vessel-activity-fact-sheet.pdf).

191. Maritime New Zealand (2014). *Annual Report 2013–14*. Maritime New Zealand: Wellington.

192. McMurran, J. (2000). Property rights and recreational fishing: Never the twain shall meet? *Use of Property Rights in Fisheries Management*. Proceedings of the FishRights99 Conference, Fremantle, Western Australia. FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 184–187.

193. Ingram, K. (2006). The right to fish for food or fun. Paper presented at the Sharing the Fish '06 Conference, Fremantle, Western Australia, 27 February to 2 March.

194. NIWA (2013). *Counting Fish*, 16 December (www.niwa.co.nz/publications/wa/water-atmosphere-9-december-2013/counting-fish).

reasonable if recreational fishers were required to record how many fish they catch. Furthermore, 55 percent believe that a maximum of five fish is a reasonable daily allowance per recreational fisher, with a further 30 percent thinking that a maximum of 10 is reasonable.[195]

3.4.1 Estimated recreational fishing catch

Reliable estimates for recreational catch have only become available in recent years. The commonly held view before 2010 was that, despite attempts to improve survey methodologies, the historical account of recreational catch and effort, as well as economic value, has been contradictory and plagued with methodological problems.[196] Subsequently, significant progress has been made to collect and verify recreational harvest estimates using three concurrent surveys with different methods in 2011–12. The results were comparable and reviewed by international experts.

Historical estimates of recreational catch levels were based on voluntary regional phone–diary surveys starting in the 1990s. While these surveys became increasingly sophisticated, sources of bias were identified and addressed. With more sources of potential bias identified, a shift was made towards observation-based methodologies.[197]

The main method of direct observation over the past 10 years has been aerial surveys to assess boat-based fishing, but not shore-based fishing. Most harvest estimates were considered reasonably accurate, though the limited scope of these surveys led to interest in offsite survey methods with greater scope.

For the period 1 October 2011 to 30 September 2012 the most comprehensive survey was undertaken of marine recreational fishers. The survey, referred to as the National Panel Survey, used a meshblock-based face-to-face recruitment,[198] a frequent contact system and structured interviews.[199] The aim was to involve the same fishers for the entire one-year period. Participants were randomly selected, and the interviews sought information on whether or not participants had fished in the week, what they caught and where and by which method.

The surveyed catch data were expanded by recognised statistical methods to estimate total catches. The survey results show that

195. Colmar Brunton (2007). Omnibus Recreational Fishing Survey. Prepared for the New Zealand Seafood Industry Council Ltd.

196. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. Unpublished PhD thesis. The University of Auckland: Auckland.

197. Hartill, B (2009). The evolution of recreational harvest estimation in New Zealand from indirect to direct approaches. In Scandol, J.P., Gray C.A., Steffe, A.S., and Ferrel, D.J. (eds) *Assessing Recreational Fisheries – Current and Future Challenges. Australian Society for Fish Biology Workshop and Conference Proceedings*. Sydney, NSW, September 2008, Australian Society for Fish Biology, 33.

198. A meshblock is the smallest geographic unit that Statistics New Zealand uses for reporting statistical data. Each meshblock borders on another to form a network covering all of New Zealand.

199. Wynne-Jones, J., Gray, A., Hill, L., and Heinemann, A. (2014). *National Panel Survey of Marine Recreational Fishers 2011–12: Harvest Estimates*. New Zealand Fisheries Assessment Report 2014/67. Wellington: Ministry for Primary Industries.

around 8.7 million finfish and 8.3 million other marine species were caught. The most popular finfish were snapper, followed by kahawai, blue cod, gurnard, tarakihi, trevally, sea perch, flounder and other flatfish. The most popular other species were kina, scallops and mussels.[200]

This survey methodology will be repeated for 1 October 2017 to 30 September 2018, because it provides the most comprehensive estimates of boat-based and land-based recreational fishing nationwide. The survey results of fishing trips are viewed by platform and FMA. The differences between FMAs are evident. Fishing from trailer boats is more popular in FMA 1 and FMA 7. Conversely, fishing from land is more popular in other FMAs (refer table 4).

Table 4: Recreational fishing trips by platform and Fisheries Management Area (FMA)

		FMA						
Platform		**1**	**2**	**3**	**5**	**7**	**8**	**9**
Trailer motor boat		759,789	82,857	46,884	7,222	122,099	61,563	73,146
	cv	0.09	0.11	0.15	0.21	0.15	0.14	0.17
	%	57.0	37.2	33.7	26.0	55.9	39.8	35.6
Larger boat/launch		136,375	5,892	5,580	4,146	22,403	4,132	11,821
	cv	0.10	0.21	0.21	0.28	0.22	0.30	0.22
	%	10.2	2.6	4.0	14.9	10.3	2.7	5.8
Trailer yacht		4,112	0	47	121	747	0	85
	cv	0.30	0.00	1.01	1.03	0.54	0.00	1.01
	%	0.3	0.0	0.0	0.4	0.3	0.0	0.0
Larger yacht/keeler		24,335	129	1,316	0	4,633	483	54
	cv	0.20	0.74	1.01	0.00	0.40	0.76	1.00
	%	1.8	0.1	0.9	0.0	2.1	0.3	0.0
Kayak/rowboat		79,511	5,015	3,285	1,079	6,867	8,403	3,688
	cv	0.15	0.34	0.44	0.72	0.21	0.33	0.30
	%	6.0	2.3	2.4	3.9	3.1	5.4	1.8
Off land		313,947	127,410	81,190	15,027	60,107	79,786	115,733
	cv	0.07	0.11	0.14	0.27	0.12	0.13	0.18
	%	23.6	57.3	58.3	54.1	27.5	51.6	56.3
Other		13,962	1,139	1,003	191	1,571	367	941
	cv	0.18	0.35	0.58	0.80	0.60	0.60	0.49
	%	1.0	0.5	0.7	0.7	0.7	0.2	0.5

Source: Wynne-Jones et al (2014) *National Panel Survey of Marine Recreational Fishers 2011–12: Harvest Estimates*, table 26, page 17

200. Ibid.

A parallel survey study was conducted in 2011–12 to test the relative reliability of three different approaches: the National Panel Survey; an aerial survey of boat-based fishing in FMA 1; and a combined bus route and fixed access point survey in the western Bay of Plenty. The catch estimates from these different approaches were mostly of a similar magnitude, which demonstrated their reliability.[201]

"Recreational fishers are often frustrated the information they provide regarding their catches is not used for managing fish stocks. The problems associated with using this information generally relate to data representativeness and quality"

The placement of web cameras at certain boat ramps, coupled with creel surveys,[202] provides more direct and regular estimates of trends in catch. Web cameras provide continuous monitoring of the incidence of trailer boats returning to boat ramps. This cost-effective method of monitoring recreational fisheries supplements the more expensive and infrequent broader scale National Panel Survey and aerial surveys.[203]

Other small-scale on-site surveys are undertaken to quantify the harvest of species such as rock lobster, paua and scallops, because the estimates from large-scale surveys do not tend to be precise, and their reliability is therefore uncertain.[204]

Several regional harvest surveys will be continued in between the National Panel Survey, and the web camera data from boat ramps in significant areas will help in estimating recreational fishing effort and catch levels.

Recreational fishers are often frustrated the information they provide regarding their catches is not used for managing fish stocks. The problems associated with using this information generally relate to data representativeness and quality. In contrast, the gamefish sector has provided valuable data that has, in some cases, informed fisheries management.

NIWA has reviewed potential and existing self-reporting tools for recreational fishers, and the number of options is increasing, given the emerging communications technologies available. However, several considerations need to be worked through if recreational self-reported data are to be used for managing fish stocks, such as ensuring that the sample of participating fishers is representative of the wider fishery.[205] The main issue with self-reported data is the reliance on the fisher to fully report all of their catch and effort, regardless of whether they caught a fish. The likelihood of all fishers reliably participating in a

201. Hartill, B. (In press). A review of approaches used to estimate recreational harvests in New Zealand between 1984 and 2017.

202. Creel surveys historically refer to inspections of creels, or the baskets that recreational fishers keep their fish in. Though most creel surveys occur at boat ramps, they can occur elsewhere, because not all boats pass through boat ramps and some effort is land based.

203. Hartill, B., Payne, Get al. (In press). Bridging the temporal gap: Continuous and cost-effective monitoring of dynamic recreational fisheries by web cameras and creel surveys. *Fisheries Research*.

204. Hartill, B. (In press). A review of approaches used to estimate recreational harvests in New Zealand between 1984 and 2017.

205. Hartill, B., and Thompson, F. (2016). *Review of self-reporting tools for recreational fishers*. New Zealand Fisheries Assessment Report 2016/06. Ministry for Primary Industries: Wellington.

self-reporting regime is very low, and survey methods will always be required to estimate the catch landed from a fishery.

"In comparison, commercial fishing can deliver protein far more cost effectively than recreational fishers, to the extent that fish in the supermarket typically costs a fraction (around $20 to $30 per kilogram) of what it costs for recreational fishers"

3.4.2 Economic value of recreational fishing

A point of contention for recreational fishing representative organisations is that the economic benefits from recreational fishing have not been explicitly accounted for in managing fish stocks.[206]

Broadly speaking, economic value is a measure of the benefit provided by a good or service for a person, business or society at large. It is often measured as the maximum amount that someone or a group would be willing or able to pay for the good or service, or in this case the fishing experience. While fishers must get at least enough enjoyment (value) from fishing to cover the costs of fishing, it is problematic quantifying the extra value of the experience.

An economic analysis by Westpac Bank in 2016 states a strong argument can be made for more recreational fishing. The main argument is the economic benefit that recreational fishing generates (per fish or kilogram) is many times higher than that of the commercial fishing sector.[207]

The analysis also states, without adequately quantifying the economic benefit, that the higher benefit occurs through fishers purchasing their own boats or chartering boats, fuel and fishing equipment. These expenditures are an indication of the value placed on fishing.

This implies the value of the fish that recreational fishers catch is far higher than the protein value of fish caught by commercial fishers and available in supermarkets, making recreational fishing highly inefficient if the purpose is simply to provide sources of protein. So, the economic utility derived from fishing is significantly higher than the cost of delivering seafood-sourced protein. In other words, the real value is in the fishing experience and the mana of being a successful hunter–gatherer.

In comparison, commercial fishing can deliver protein far more cost effectively than recreational fishers, to the extent that fish in the supermarket typically costs a fraction (around $20 to $30 per kilogram) of what it costs for recreational fishers.

A further consideration is the value of the opportunity cost of recreational fishing. Fishers choose to spend hours at a time engaged in fishing rather than doing something else with their free time. Even at a relatively low value per hour of their time, this component alone will often be of greater worth (or cost) than the price of the same weight of fish in the supermarket.[208]

206. Kerr, G.N., and Latham, N. (2003). The Value of Recreational Inshore Marine Fishing. Paper presented at the 2011 NZARES Conference, 25–26 August, Tahuna Conference Centre: Nelson.

207. Westpac Institutional Bank (2016). *Industries Insights: Fishing, Aquaculture and Seafood*, March (www.westpac.co.nz/assets/Business/Economic-Updates/2016/Bulletins-2016/Industry-Insights-Aquaculture-Fishing-and-Seafood-March-2016.pdf).

208. Personal communication, D. Norman, 19 July 2016.

© NZFisher e-magazine

An economic analysis in 2016 by NZMRF, with support from LegaSea, shows similar results. The summary report states the total expenditure for marine recreational fishing by New Zealanders and tourists is $946 million annually. This expenditure generates $136 million in goods and services tax and $52 million in personal income tax, supports the employment of 8,100 people and stimulates $1.7 billion in total economic activity.

The total annual direct expenditure associated with the snapper fishery was the highest at $403 million, followed by kahawai, gamefish, blue cod, kingfish, trevally, hapuku and bass. The summary report states the average spend on fishing by New Zealanders is $1,400 annually; $710 is spent by shore-based fishers and $1,800 by boat fishers. These figures appear to support the Westpac economic analysis that the act of recreational fishing is highly inefficient, if the aim is to simply have fish to eat. The value of the fish caught is far higher than the protein value of available commercially caught fish.

The summary report concludes that recreational fishing is a substantial industry that has growth prospects. Furthermore, the results emphasise these economic benefits are based on recreational fishers taking just 6 percent of all landed catches, compared with more than 90 percent taken by commercial fishers. The stated benefit of the results is that they provide increased public awareness of the economic contribution that recreational fishing provides, which can be used to improve the management of inshore fisheries and stewardship.[209]

209. NZMRF (2016). *Recreational Fishing in New Zealand: A Billion Dollar Industry*. New Zealand Marine Research Foundation: Hunua, South Auckland (http://nzmrf.org.nz/files/New-Zealand-Fishing-Economic-Report.pdf). The technical report titled, *Estimating Marine Recreational Fishing's Economic Contributions in New Zealand – Technical Steps*, is in peer review.

While economic impact assessments like the NZMRF summary report can give some measure of the amount of expenditure related to an activity as it percolates through the economy, they do not necessarily provide information about the benefits of that activity. Projects that fail cost–benefit analyses by substantial margins can, nevertheless, have large associated economic impacts, while other projects with smaller economic impacts can pass cost–benefit analyses.[210]

Seafood New Zealand's response to the summary report includes the assertion that, even when the recreational-related figures are lined up against seafood export figures and domestic sales figures, it would be irrational to argue that recreational fishing is more important.[211] However, the summary report does not make this comparison, though it does refer to the lack of economic data on recreational fishing having contributed to the government favouring commercial interests, and this favouritism is due, in part, to the commercial sector having quantifiable data.

As noted in section 3.2, in 1999, the estimated total expenditure on recreational fishing was $973.5 million for the five major recreational species alone. This is based on recurrent expenditure, not on any capital expenditure, such as boats and equipment. The estimated expenditure at that time was nearly as much as the total value of seafood exports (which mostly comprised deeper water species not targeted by recreational fishers).[212] The species with the highest average amount of recreational expenditure per trip was rock lobster, then kingfish, blue cod, snapper and kahawai.[213]

The 1999 figures also conclude the estimated value of recreational fishing as a social activity is measured as the value placed on the whole day, as well as on the actual fish caught, using marginal willingness to pay. However, questions have been raised about the methodology for estimating these values. Furthermore, they do not indicate the scale of consumer surplus generated from recreational fishing nor its contribution to the economy, which severely limits their use in decision-making processes, such as determining the most efficient TAC allocations.[214] MPI has stopped using these values for comparative purposes.

210. University of Calgary economist Trevor Tombe provides a popular critique of economic impact assessments for Canada's *Financial Post* (http://business.financialpost.com/fp-comment/trevor-tombe-how-to-create-two-jobs-for-every-canadian-worker). The New Zealand Institute of Economic Research explains the difference between economic impact assessments and cost–benefit analysis (https://nzier.org.nz/static/media/filer_public/74/78/74786bfd-2d6e-42c7-99ef-160e26c0d548/peer_review_of_wellington_runway_extension_analysis_310315.pdf).

211. Seafood New Zealand (2016). *Measuring the True Value of Our Shared Fisheries*, 8 April (www.seafoodnewzealand.org.nz/publications/tim-pankhursts-captains-blog/single/item/friday-08-april).

212. Hersoug, B. (2002). *Unfinished Business: New Zealand's Experience with Rights-based Fisheries Management*. Eburon: Delft, The Netherlands.

213. Lindsay, S., Damania, R., et al. (1999). *Value of New Zealand Recreational Fishing Project: REC9801*. Report written for the New Zealand Ministry of Fisheries. The South Australian Centre for Economic Studies, University of Adelaide: Adelaide.

214. Rob Greenaway and Associates (2013). *Report on the "Review of sustainability and other management controls for snapper 1 (SNA 1)"*. Prepared by Rob Greenaway for the New Zealand Sport Fishing Council. Rob Greenaway and Associates: Nelson (www.greenaway.co).

"Whatever figures are used to estimate the number of recreational fishers, their total annual expenditure and the value they place on recreational fishing is important in economic terms. Recreational fishing is also important politically, because most fishers are likely to vote, and these potential votes are heavily concentrated around Auckland and other densely populated areas"

The 2016 technical report being prepared by the NZMRF, once peer reviewed, might provide a stronger basis for comparing recreational and commercial values for fisheries resources. If not, then the pressure will increase to sort out methodological problems in comparing the estimated values of commercial and recreational fishing, given the increasing importance placed on them for TAC allocation decisions.

3.5 Concluding remarks

Despite the QMS having been in place for 30 years, several inshore fish stocks lack appropriate management and monitoring measures. Some are considered overfished or depleted.

Successive governments have been unsuccessful in changing the management of recreational fisheries, though court determinations have clarified several TAC allocation issues. Nonetheless, the process for determining TAC allocations remains the most contentious fisheries management issue, characterised by competing self-interests and conflicts.

In the lead up to the 2014 general election, the government took more interest in the recreational fishing sector, proposing to establish recreational only fishing parks in two of the more important areas to recreational fishers. Recently, MPI has redirected some resources to the establishment of a small fisheries team dedicated to addressing issues important to the recreational fishing sector.

The National Panel Survey methodology and related surveys have significantly improved the reliability of information on recreational fishing catch estimates. It is hoped that this methodology, coupled with concurrent surveys using different methods, will provide ongoing sources of data for estimating recreational catch levels.

Whatever figures are used to estimate the number of recreational fishers, their total annual expenditure and the value they place on recreational fishing is important in economic terms. Recreational fishing is also important politically, because most fishers are likely to vote, and these potential votes are heavily concentrated around Auckland and other densely populated areas.[215]

Collectively, they can potentially exert significant influence on Ministerial decisions, if not the outcome of general elections. During the past few years, a significant improvement has also occurred in the capability of recreational fishing representation, including the formation of fisheries policy and commentary on fisheries management and science.

215 Hersoug, B. (2002). *Unfinished Business: New Zealand's Experience with Rights-based Fisheries Management*. Eburon: Delft, The Netherlands.

Box 1: Big catches and big numbers

A lot of numbers fly around about the value of different industries or sectors. Too often, the point seems to be to find a really big number to make your own sector seem more important or valuable than someone else's.

For the recreational fisher, the value is in the experience – and in the fish caught and brought home for dinner – less the costs of catching the fish. And, similarly, the value of the commercially caught fish is how much it is enjoyed by the ultimate consumer, less the cost of getting it to the plate.

Consequently, it is a bit of a mistake to add up all of the recreational fishers' spending on trucks, gear, and baches to come up with an estimate of the value of recreational fishing – or to point to employment in fishing as a measure of the value of the commercial fishing fleet. Neither number helps us decide whether recreational or commercial fishers should get a bigger share of next year's total allowable catch.

What we really need to know is whether the next fish caught would be more highly valued on a recreational fisher's hook or on a commercial long-line, after accounting for the costs of catching the fish. It is not an easy thing to figure out.

One the commercial side, when one commercial fisher pays $5 to buy a kilogram of quota from another commercial fisher, it is reasonable to expect that the quota buyer values the catch more than does the seller. The fact of the trade tells us. That quota price will depend on the value of the fish to the person eating it, less the costs of getting it to table.

But if the next fish out there really would have more value for a recreational fisher than for a commercial fisher, there just is no current way of getting that critical information into the system. Instead, both sides lobby the Minister to preserve or enhance their share of the total allowable catch, and the decision is politicised. Both sides will commission reports showing how valuable their sector is for the economy, but none of those kinds of reports can really answer the most important question: on whose hook does the next fish have most value?

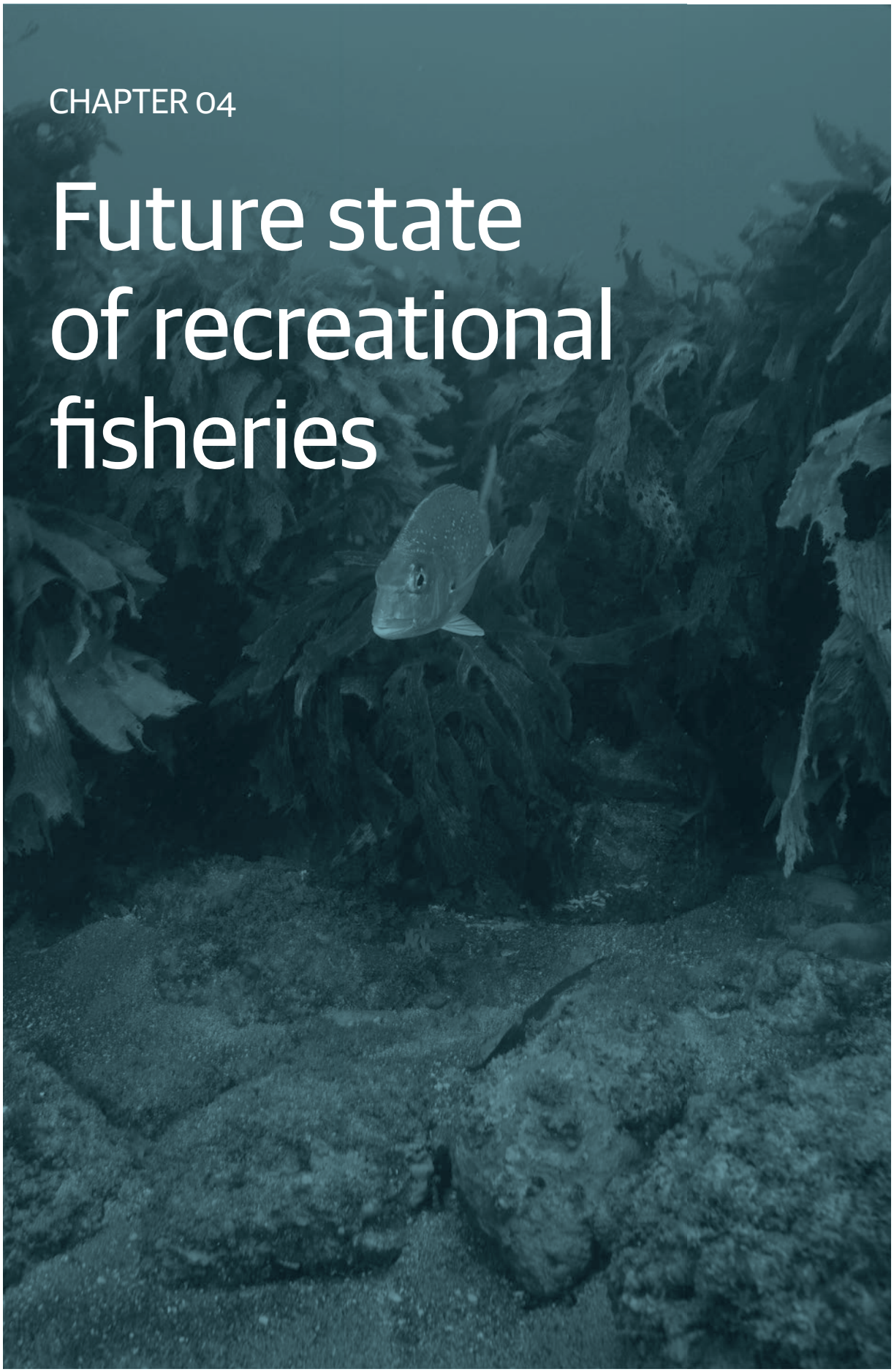
It is plausible that a recreational fisher values the next snapper more than a commercial fisher would, but it is not exactly easy to tell. Even harder to tell is this: if the next fish caught would have greater value on the recreational side than its $5/kilo commercial quota value, would that still be true for the next tonne of snapper, or the next hundred tonnes?

The problem is much harder than figuring out how much is spent by both sides.

Dr Eric Crampton, Head of Research,
The New Zealand Initiative

CHAPTER 04

Future state of recreational fisheries



Over the past 30 years, fisheries policy in New Zealand has been largely directed at improving and refining various management arrangements for the benefit of the commercial fishing sector. Despite several reviews of the fisheries management system, including two of the fisheries legislation, changes have been implemented in a piecemeal fashion and focused most notably at the commercial fishing sector. These reviews have been described as capturing the decision-making process rather than taking a collaborative approach. This may be due, in part, to public servants having self-interests in the outcome of reviews, just as each of the fishing sectors do.[216]

Public servants are vulnerable to getting absorbed in the job, which can lead to public-spirited zeal for certain policy objectives[217] (for example, the strong property nature of quota). However, increasingly, these objectives have been defined by Ministers, and it is in the self-interests of the public servant to exact obedience to them. It would seem the purpose for now is to do what it takes to ensure fisheries issues have a low profile in the public domain.

MPI is currently undertaking a review of the fisheries management system, which is presented as "high level" to "refresh" the QMS and fisheries legislation for the long term. MPI has not provided much in the way of substantive explanation of the management lessons learnt over the decades, nor what it intends to do in relation to the scope of the review. If the motive is to ensure fisheries issues have a low profile, then this type of low-level explanation of the review would fit that purpose.

The review's limited scope seems to be in line with the government having directed a greater portion of public resources to those primary industries that make, or have the potential to make, significantly increased contributions to the export economy. Commercial fisheries do not present opportunities to contribute further to the economy, while aquaculture, particularly salmon farming, presents much more favourable opportunities.

In response to this review, the commercial and recreational fishing sectors have presented submissions setting out their longstanding points of difference. Both advocate for their rights to prevail over the other's, with implications that the problems encountered are largely the consequence of the other's actions or inactions. Such conflicting perspectives are often the impetus for competing fishing sectors to eventually take up more collaborative efforts, which are the antithesis of the approach taken in the current MPI review.

216. Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. Unpublished PhD thesis. The University of Auckland: Auckland.

217. Finer, H. (1941). Administrative responsibility in democratic government, *Public Administration Review*, 1, 335–350.

4.1 Government capability

"It is fair to say that, as a result of restructuring during this transition, the fisheries management function has returned to its earlier status as the poor cousin of the much larger primary industries"

The current government came into office in 2008 with the strong message that New Zealand could not afford the high cost of government organisations, and that efficiency gains would be achieved through the merger of some organisations.[218] This has resulted in a return to some large-sized government organisations, including the establishment of MPI in 2012, which structurally placed MFish back where it was before 1995.[219]

The government has emphasised that it has placed limits on the public resources available for central government functions, including centralised management of the primary industries. As part of its Business Growth Agenda, the government has increased the focus on resources going to those industries that make, or have the potential to make, significantly greater contributions to the export economy. The Business Growth Agenda includes the objective to increase exports as a percentage of gross domestic product from 30 percent to 40 percent by 2025.[220]

It has been commonly known since the 1990s that the volume of commercial fisheries has few, if any, growth prospects. Since then, almost all growth in volume and much of the growth in value of seafood exports, which comprise around 90 percent of production, can be attributed to growth in aquaculture. With the transition from MFish to MPI, the fisheries management function, including aquaculture, is measured on its contribution to the economy compared with that of the much larger primary industries (for example, agriculture, dairy and forestry). Those involved in each primary industry compete for policy and operational resources, as well as prioritisation for the Minister's time and consideration.

It is fair to say that, as a result of restructuring during this transition, the fisheries management function has returned to its earlier status as the poor cousin of the much larger primary industries. Fisheries management, along with enforcement, was once managed by a dedicated team comprising a chief executive officer and several senior leaders. The fisheries management function is now part of one senior manager's broad portfolio of responsibilities, while fisheries enforcement is part of another senior manager's broader responsibilities for other primary industries.

The fisheries policy, operational management and enforcement capabilities have significantly declined in size over the past few years, to reduce costs and resource other primary industry functions. Fisheries policy, for example, has transitioned from a team of 30 to 35 people to fewer than five who are dedicated to fisheries issues. In total, several hundred years of experience in fisheries management has ceased being a part of MPI. While the MPI Director-General

218. Bess, R. (2012). Public management in New Zealand and its effect on institutional arrangements for managing fisheries. *Marine Policy*, 36, 550–558.

219. MPI is made up of the former Ministry of Agriculture and Forestry, New Zealand Food Safety Authority and Ministry of Fisheries.

220. Ministry of Business, Innovation and Employment (2015). *Business Growth Agenda*, 19 October (www.mbie.govt.nz/info-services/business/business-growth-agenda).

has taken steps to recognise those who served their industries for the long term, it is conspicuous how few experienced, long-standing staff remain in the fisheries management function.

This reduction in leadership, capacity and capability is a pragmatic outcome of government reprioritising resources to grow the export economy, and a preference for reverting to larger, multi-purpose organisations. Other central government organisations have also undergone similar transitions, such as those that now comprise the Ministry of Business, Innovation and Employment.

"What this transition means for the fishing sectors is that MPI seems to be struggling to articulate its statutory purpose for managing fisheries. It has become increasingly constrained in its ability to generate new ideas for improving the way fisheries are managed"

What this transition means for the fishing sectors is that MPI seems to be struggling to articulate its statutory purpose for managing fisheries. It has become increasingly constrained in its ability to generate new ideas for improving the way fisheries are managed.

These constraints are apparent in the lengthy delays that customary fishing interests have encountered over the past few years regarding the backlog of proposed areas for customary food-gathering purposes. While the recreational fishing sector has recently been allocated a team of two staff, that is a low resource base for meeting the challenge of addressing recreational fishing issues nationwide. The commercial fishing sector also has not made much progress in furthering its initiatives for devolution of management responsibilities and services. During the past few years, not many observable improvements have been made in how fisheries are managed.

A steady decline has also been occurring in the resourcing available for fisheries research over the past 25 years, as inflation has eaten into a static budget for research and monitoring over that period. This decline in budget has coincided with a fivefold increase in the number of fish stocks managed under the QMS, and a broadening of research initiatives into areas such as biosecurity. The sustainable management of fisheries is therefore becoming increasingly dependent on limited and often out-of-date data.

4.2 Review of the fisheries management system

During the annual commercial fishing conference in 2015, the Minister announced the time was right to "refresh" the QMS and fisheries legislation with the long-term aim to "deliver greater net value to all sectors – commercial, recreational and customary, while enhancing the sustainability of our fisheries". For this purpose, the Minister announced an upcoming review that would "help strengthen public confidence and social license for fishing, and foster community support by providing opportunities for involvement in local area management". Furthermore, the Minister clarified this "high level" review would not address much in the way of details nor would it "undermine existing rights and interests".[221]

221. Guy, N. (2015). *Speech to the Seafood New Zealand 2015 Conference*, 19 August (www.beehive.govt.nz/speech/speech-seafood-new-zealand-2015-conference).

MPI is undertaking this operational review of the overall fisheries management system. However, early on, calls were made to clarify the review's limited purpose and scope before submissions could be made. Nonetheless, the review remained framed around rather vague language, such as ensuring the management system is "still fit-for-purpose" and "how to future-proof" it. The review focuses on five themes that are described as open-ended questions.

- Sustainability – How can the fisheries management system best ensure sustainability?
- Benefits for all New Zealanders – How can the fisheries management system best deliver benefits for all New Zealanders?
- Decision-making processes – How can we ensure decision-making processes are effective, efficient and timely?
- Monitoring and enforcement – What monitoring and enforcement is needed to ensure the fisheries management system operates as it should?
- Responding effectively to future challenges – What challenges will New Zealand's fisheries management system need to response [sic] to in future years?[222]

These themes and their brief descriptions are accompanied by positive, though somewhat leading, statements about what MPI considers is going well. No explanations are provided regarding the management lessons learnt over the decades or what MPI intends to do in relation to these themes. Because the operational review focuses on the fisheries management system as it stands, the following "core elements" are outside its scope:

- sustainable utilisation of fisheries resources as set out in section 8 of the Fisheries Act 1996;
- the QMS tools (quota and ACE);
- the rights of commercial quota ownership;
- the Crown's obligations under Treaty settlements;
- the rights and interests of tangata whenua, and customary management; and
- the right to fish for recreation.

The stated next step in the review entails MPI preparing a report for the Minister that summarises the submissions received. MPI will then produce additional briefings for the Minister before he decides on a course of action. However, the rumour is this operational review has widened to Cabinet now considering possible strategic and legislative reform that will not be completed before the 2017 general election.

222. MPI (2016). *Future-proofing Fisheries Management*, 6 April (www.mpi.govt.nz/law-and-policy/legal-overviews/fisheries/fisheries-management-system-review/future-proofing-fisheries-management).

The limited scope and brief description of the review themes did not constrain submitters' commentary on a range of issues. Some comments are directly relevant to the future management of recreational fisheries.

4.2.1 Seafood industry response

Seafood New Zealand's submission highlights the QMS as having undergone significant evolution during the past three decades. Because no management system is static, the QMS needs to evolve further so quota holders can better adjust their activities in response to changes in market demand for fisheries products and services. The next step in evolution is to operate "beyond sustainability" or producing the "icing on the cake", which refer to moving beyond minimum standards for sustainability and "into the realm of value-addition".[223]

Seafood New Zealand asserts that this step would require finer-scale management and real-time, direct control of fishing activities that would need a high degree of engagement across the

223. Seafood New Zealand (2015). Creating Value 'Beyond Sustainability': Initial Seafood Industry Contribution to Fisheries Management Review 2015–16, 11 December. Seafood New Zealand: Wellington.

commercial sector. Seafood New Zealand also asserts it is difficult to reconcile the enabling provisions of the fisheries legislation with MPI's highly centralised way of managing fisheries. Despite this, it was stated that quota holders have continued to invest in non-statutory arrangements to enhance the value of their fishing activities and related operations.

Seafood New Zealand proposes that further enhancement of value would require updated legislation to allow the commercial sector to make more significant contributions to the government's Business Growth Agenda objective of increasing exports as a percentage of gross domestic product. The proposed legislative change would also give quota holders the ability to take up an increasing scope of management activities.

The submission explains that while the intended scope of management activities is no different from what is currently available on an individual basis, under the proposed changes, the sector would be better placed to undertake these activities collectively (for example, to make rules by super-majority). This broadening of scope would occur without any reduction in the government's ability to regulate fisheries. This collective ability to manage would help to avoid the free-rider effect that occurs in the non-statutory arrangements, whereby some benefit from the actions of others and without bearing the costs.

Seafood New Zealand cites a recent international study on the security of property rights and asset values. This study highlights that such rights can be significantly eroded by disputes over ownership, illegal fishing and risk that government could revoke those rights.[224] While Seafood New Zealand expresses confidence in the reduction of risk to revocation of rights, concerns are noted about other sources of insecurity, namely:

- the risk that spatial access to fisheries would be reduced by government decisions to allocate marine space exclusively to non-commercial fishing, non-fisheries' users or marine protection;
- the risk that the current commercial share of the catch of particular species (that is, TACC) would be reduced by government decisions to allocate a greater share to non-commercial fishers (exacerbated by the lack of specification of recreational fishing rights); and
- illegal fishing, particularly for high-value species.

Seafood New Zealand highlights the occurrence of increased abundance of some fish stocks having contributed to the expansion of recreational catches well beyond the recreational TAC allocations. Seafood New Zealand objects to this type of passive reallocation and

224. Grainger, A., and Costello, C.J. (2014). Capitalizing property rights insecurity in natural resource assets. *Journal of Environmental Economics and Management*, 67, 224–240.

views it as a political rather than biological risk. It stresses the need to ensure fisheries reflect their highest and best uses between fishing sectors, and any reallocation between fishing sectors should be done without destroying commercial (quota and ACE) value.

The specific proposed changes for moving "beyond sustainability" are framed around further enhancement of wellbeing and value "that New Zealanders obtain from fisheries resources". In other words, if quota value increases, it is assumed the overall value of fisheries will increase and, hence, the wellbeing that can potentially accrue to all users, including those who favour non-extractive use. Quota value is, therefore, proposed as a proxy for the wellbeing all New Zealanders in relation to fisheries.[225]

"In other words, if quota value increases, it is assumed the overall value of fisheries will increase and, hence, the wellbeing that can potentially accrue to all users, including those who favour non-extractive use. Quota value is, therefore, proposed as a proxy for the wellbeing all New Zealanders in relation to fisheries"

In its submission to the review, Fisheries Inshore New Zealand says it would not want to see the Minister's significant level of discretion in deciding TAC allocations diminished by any provisions that provided the recreational fishing sector with preferential treatment – either through TAC allocations that fulfil recreational fishing demand or exclusive spatial access to inshore areas.[226]

Fisheries Inshore New Zealand raises several questions regarding the proposed recreational fishing parks, including, for example, why a permanent commercial closure is being contemplated when most recreational effort (around 75 percent) occurs between November and March. It cites LegaSea as referring to small recreational-only fishing parks being largely irrelevant and a distraction to its commitment to rebuilding abundance and ecosystem strength in depleted near-shore waters.[227]

Fisheries Inshore New Zealand is concerned about TAC allocation decisions needing more accurate data on recreational demand, while also noting support for quality recreational fishing and collaborative processes that allow the sharing of views and discussion on how to improve fisheries management. Common interests in shared fisheries should be managed by way of sound management, not spatial exclusion.

Furthermore, Fisheries Inshore New Zealand expresses concern about MPI's current management and resourcing structure, which lacks strong accountability or ownership of specific fish stocks by its staff. Fisheries Inshore New Zealand emphasises that, before 2010, MPI had a structure for managing fish stocks in particular regions, which was suitable for establishing relationships with the commercial and recreational fishing sectors and obtaining detailed knowledge and oversight of the stocks and overall fishery.

225. Seafood New Zealand (2015). Creating Value 'Beyond Sustainability': Initial Seafood Industry Contribution to Fisheries Management Review 2015–16, 11 December. Seafood New Zealand: Wellington.

226. Fisheries Inshore New Zealand (2015). Fisheries Inshore New Zealand's Response to the Operational Review of the New Zealand Fisheries Management Framework, 11 December. Fisheries Inshore New Zealand: Wellington.

227. LegaSea (2015). *LegaSea Update 33*, July edition (www.legasea.co.nz/documents/BayFisher-Update-33.pdf).

In contrast, the current structure has fisheries management staff primarily in Wellington and Auckland, and their duties are assigned as required and as issues emerge. These changes have led to a substantial loss of knowledge and capability, and, consequently, many inshore fisheries are under-managed or not managed at all.[228]

4.2.2 Recreational fishing interests' response

The New Zealand Angling and Casting Association, LegaSea and the NZSFC presented a combined submission in response to the current review of the management system.[229] The submission first refers to Iceland and its longstanding experience with a quota-based management system. Iceland is compared with New Zealand on three matters that could provide national benefits, including: improved transparency in commercial transactions; use of coastal zones; and payment for commercial access to fisheries resources.

First, Iceland is more transparent with information on commercial catches. The example given is that catches are unloaded using a qualified, independent weigh master, and landings and sale price data are publicly available on a website. In comparison, New Zealand's system for unloading commercial catches has a Licensed Fish Receiver (LFR). The LFR is often the quota holder who sets contractual arrangements for fishers fishing against the ACE and who acts as both the weigh master and receiver of the catches. The implication is that financially enmeshing the LFR in this way could create perverse incentives with respect to misreporting and under-reporting of catches.

Second, Iceland established a 25-mile inshore buffer zone to protect and enhance opportunities for small regional ports for commercial and non-commercial uses of fisheries resources. In comparison, New Zealand's inshore zone is "sometimes described as being economically inefficient …" with there being compelling social and cultural reasons for establishing similar coastal zones.

Finally, Iceland requires a resource royalty (dividend) of around 10 percent to be paid for the commercial use of fisheries resources. New Zealand, in comparison, does not require this type of royalty, though quota holders pay cost recovery levies to MPI that cover a significant portion of management costs, totalling around $35 million annually.

The combined submission asserts that, after 30 years, the QMS requires a major review not just a "refresh". Several issues are also noted regarding dissatisfaction with the overall management system and interpretation of the fisheries legislation (for example, overall lack of transparency, strategies for low levels of fish stock abundance leading to depletion, changes to research funding, the TAC setting

228. Fisheries Inshore New Zealand (2015). Fisheries Inshore New Zealand's Response to the Operational Review of the New Zealand Fisheries Management Framework, 11 December. Fisheries Inshore New Zealand: Wellington.

229. NZSFC, New Zealand Angling and Casting Association and LegaSea (2015). Submission to Achieve Abundance in New Zealand's Inshore Marine Environment: Review of the Fisheries Act 1996 and Regulations, 14 December. New Zealand Sport Fishing Council: Hunua, South Auckland.

process, TACCs remaining unchanged despite being well in excess of annual catches, and objection to compensation for quota holders).

With respect to TAC allocations, the combined submission expresses disapproval of any notion regarding the use of an automated or formulaic approach. The objection is based on the need to balance the expectations of fishers and the public, consideration of the uncertainty in available information, effects on non-target species and trends in use and value. The submission expresses strong support for TAC allocation decisions remaining with the Minister, who has been identified as the most significant outdoor recreation natural resource manager nationwide.[230]

"The submission concludes that co-management will evolve in New Zealand once an inshore coastal zone "suspends the QMS from the near shore and is replaced by a more sensitive management regime"

The combined submission comments on co-management in New Zealand, referring to it as generally entailing community or stakeholder groups having some level of management involvement. The submission refers to the work of Ostrom in reference to co-management, including a stewardship role that sets aside self-interest to strive for improved ecological conditions and catches for all sectors.[231]

Finally, the submission refers to the QMS as preventing co-management from occurring because it creates a sense of strong private rights, including spatial rights, that are incompatible with the public right to fisheries resources. This is viewed as preventing commercial fishers from setting aside their self-interest and forgoing immediate benefits from fishing to work towards long-term sustainable benefits for all sectors. The submission concludes that co-management will evolve in New Zealand once an inshore coastal zone "suspends the QMS from the near shore and is replaced by a more sensitive management regime".[232] The submission does not describe the replacement regime intended.

Our Fishing Future submitted, amongst other things, that the establishment of a professional representative and accountable organisation would better enable effective, efficient and timely fisheries management decision making. This organisation would be designed to support the participation of public fishing interests, integrate local

230. Rob Greenaway and Associates (2013). *Report on the "Review of sustainability and other management controls for snapper 1 (SNA 1)"*. Prepared by Rob Greenaway for the New Zealand Sport Fishing Council. Rob Greenaway and Associates: Nelson (www.greenaway.co).

231. At the time interest in quota-based management systems began to increase, Ostrom was developing ground-breaking evidence on group dynamics that showed the often cited Tragedy of the Commons could be avoided without top-down regulation or privatisation. This evidence showed that, despite competing uses, groups of people are capable of sustainably managing common pool resources when certain conditions are met. Ostrom developed eight core design principles that can benefit any group with members who cooperate to achieve shared goals. The principles are intended to be general to allow adaptation to various conditions and apply across all social scales, from small to large groups (see Ostrom, E. (1990). *Governing the Common: The Evolution of Institutions for Collective Action*. Cambridge University Press. Cambridge; Wilson, D.S., Ostrom, E. and Cox, M.E. (2013). Generalizing the core design principles for the efficacy of groups. *Journal of Economic Behavior & Organization*, 90S, S21–S32).

232. NZSFC, New Zealand Angling and Casting Association and LegaSea (2015). Submission to Achieve Abundance in New Zealand's Inshore Marine Environment: Review of the Fisheries Act 1996 and Regulations, 14 December. New Zealand Sport Fishing Council: Hunua, South Auckland.

public views, and align them with the management frameworks delivered through various legislative and regulatory processes.

The organisation's efforts would facilitate the building of trusting relationships with other stakeholder groups. These efforts would include analysing information to inform the public voice, supporting local management initiatives, engaging with other stakeholders in both consultation and negotiation processes, raising awareness through education, and implementing agreed decision making.

4.3 Concluding remarks

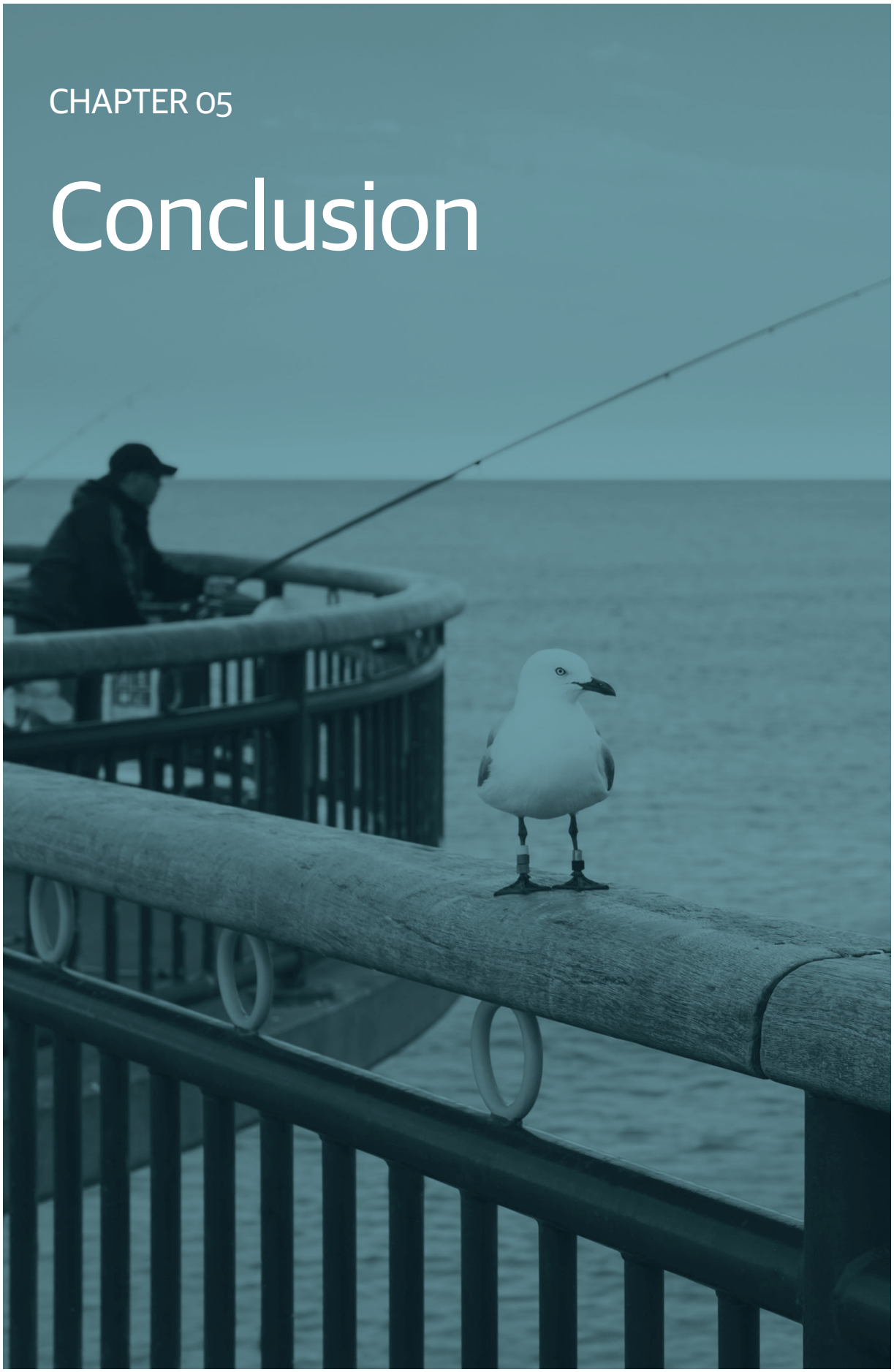
The summary above of three submissions to the current MPI review of the fisheries management system depicts the longstanding rift between the commercial and recreational fishing sectors. Both advocate for their rights to prevail, with the implication that the problems encountered are mainly the consequence of the other's actions or inactions. These self-interested views present ongoing challenges to both sides gaining a full understanding of the issues important to each other and the prospect of working collaboratively to improve fisheries management to the benefit of all sectors.

The recreational fishing sector perspective put forward in the joint NZSFC, New Zealand Angling and Casting Association and LegaSea submission proposes the cessation of the QMS within an undefined inshore coastal zone. The commercial fishing sector viewpoint put forward by Seafood New Zealand is appealing to all to agree to having their wellbeing in relation to fisheries resources measured as movements in quota value. It is unlikely either perspective will win out as currently proposed.

Fisheries Inshore New Zealand's viewpoint appears conciliatory, so long as quota holding rights are respected and both commercial and recreational rights are seen as legitimate and neither prevails over the other (for example, the recreational fishing sector is not given preferential treatment in TAC allocation decisions). Similarly, Our Fishing Future's is conciliatory and its view is based on a collaborated approach. Conflicting perspectives are often the impetus for fishing sectors eventually taking up a more collaborative, or co-management, approach. However, the recreational fishing sector has expressed doubts about this possibility.

CHAPTER 05

Conclusion



New Zealand's history of marine fisheries is one of ongoing challenges and change. For much of the past 30 years, MPI, its predecessors, and the commercial fishing sector have consistently praised the QMS as world leading. Early on, the QMS stood out worldwide, because no other nation had implemented a QMS-type system to the same extent, covering most commercially valued species. The QMS was regarded as a model for reform for other nations to follow.[233]

It is fair to expect a world-leading management system would have fish stocks at or above management targets. In this respect, New Zealand is well regarded worldwide for its sustainable management of most fish stocks.[234, 235] Well managed fish stocks underpin the view that New Zealand's recreational fisheries could initially appear to be almost surreal to a foreign recreational fisher. However, much is still to be done to get some inshore fish stocks nearer to or above the target of 40 percent of the unfished biomass, and to address those inshore stocks considered to be under-managed or not managed at all.

If the ability to accommodate Treaty-based claims is any indication, the fisheries management system is deserving of some recognition. The attention given to settling those claims was primarily directed in ways that conveniently fit with the rights associated with quota holdings, which strengthened the quota rights for both Māori and non-Māori. However, it is taking a long time for successive governments to sufficiently understand what is meant by the right to take and manage for customary food-gathering purposes. With each type of Treaty-based settlement that arises, a greater understanding is gained of what constitutes customary rights and the institutional changes needed.[236]

If economic growth is expected of a world-leading system, then changes in the value of quota are a good indication of expected growth in future returns. Similarly, stability in total catch levels could signal the management system is working well. Though the economic problems associated with overcapacity have been addressed, the continued reliance on foreign partners and the failure to take action against the mistreatment and underpayment of foreign fishing vessel crews were an indictment against the fishing industry and successive governments. Without the University of Auckland having investigated these problems, they would likely have persisted, potentially

233. Harte, M. (2008). Assessing the road towards self-governance in New Zealand's commercial fisheries. In Townsend, R., Shotton, R., and Uchida, H. (eds) *Case Studies in Fisheries Self-governance*. FAO Fisheries Technical Paper 504. Food and Agriculture Organization of the United Nations: Rome, 324–334.

234. Worm, B., Hilborn, R., Baum, J.K., Branch, T.A., Collie, J.S., Costello, C., Fogarty, M.J., Fulton, E.A., Hutchings, J.A., Jennings, S., Jensen, O.P., Lotze, H.K., Mace, P.M., McClanahan, T.R., Minto, C., Palumbi, S.R., Parma, A.M., Ricard, D., Rosenberg, A.A., Watson, R., and Zeller, D. (2009). Rebuilding global fisheries. *Science*, 325(5940), 578–585.

235. Adler, J., Cullis-Suzuki, S., Karpouzi, V., Kaschner, K., Mondoux, S., Swartz, W., Trujillo, P., Watson, R., and Pauly, D. (2010). Aggregate performance in managing marine ecosystems of 53 maritime countries. *Marine Policy*, 34, 468–476.

236. Bess, R. (2001). New Zealand's indigenous people and their claims to fisheries resources. *Marine Policy*, 25, 23–32.

causing further negative publicity for seafood export markets and New Zealand's reputation overall.

Similarly, the University of Auckland, in conjunction with other universities, has investigated the possible extent of past discarding, high grading, misreporting and under-reporting of commercial catches. Not much is in dispute regarding reported catches being less than actual catches. Perhaps what is most disturbing about the report released by the University of Auckland is that MPI reacted poorly, but predictably, by shooting the messenger instead of acknowledging the problems exist and doing something to fix them.[237]

"Little attention has been given to understanding the extent to which recreational fishing occurs and the various values placed on it"

Illegal discarding, high grading, misreporting and under-reporting of commercial catches are clearly not indicative of a world-leading management system. Plus, when the information revealed in the leaked MPI investigation reports is taken into consideration, serious questions need to be raised regarding the inherent weaknesses of the QMS versus the poor performance in its implementation.

Conflict between commercial and recreational fishing sectors is almost unavoidable, especially considering the experiences of other fishing nations. The source of conflict may well be related to how good the catch is in several fisheries. Another consideration is that it takes two to tango over the recognition of respective rights and differences regarding what each sector should pay as their fair share of management costs.

Inter-sectoral conflicts often become exacerbated if the fishing sectors consider that government officials are not listening to their concerns and ideas, and are failing to establish policy and institutional structures that better define the legal status of rights, responsibilities and standards for effective performance.[238] It is disturbing, but not entirely surprising, that the development of standards for determining when fishing had an adverse effect on the seabed was abandoned after fishing industry leaders met with the Minister.

Little attention has been given to understanding the extent to which recreational fishing occurs and the various values placed on it. During the first 20 years of the QMS, research and monitoring was mostly focused on the larger commercial fisheries. MPI has spent a limited amount of effort attempting to understand the values recreational fishers place on the fishing experience and how best to compare them with commercial values. In all fairness, however, significant improvements have recently been made in estimating recreational catches in certain fisheries.

The recreational fishing sector is contributing its own funds to supply fisheries management decision makers with better estimates of the economic expenditures and the contribution that recreational fishing provides to the economy.

237. Science Media Centre (2016). *NZ Fisheries Catch Under-reported – Expert Reaction*, 16 May (www.sciencemediacentre.co.nz/2016/05/16/nz-fisheries-catch-under-reported-expert-reaction).

238. Pomeroy, R.S. and Berkes, F. (1997). Two to tango: The role of government in fisheries co-management. *Marine Policy*, 21(5), 465–480.

Unfortunately, economic impact assessments give little guidance for policy making. The amount of spending by recreational fishers on boats, fishing equipment, baches and vehicles does not reveal much about whether the last fish caught by a commercial fisher would have been more highly valued by a recreational fisher.

While the courts have determined that the Minister has significant discretion in deciding TAC allocations amongst competing fishing sectors, the prospect of this discretion changing to provide preferential treatment to recreational fishers is the single biggest threat to the future of inshore commercial fisheries. Changes could be made to the TAC allocation process based on better economic data on recreational fishing.

Awareness is increasing of the consequences to the government from having redirected resources away from the fisheries management function to the larger primary industries that contribute more to the export economy. It is apparent to Fisheries Inshore New Zealand, for example, that MPI's current management and resourcing structure lacks strong accountability and the ability to establish relationships with the fishing sectors, due to a loss of local knowledge and oversight of the fish stocks and fisheries.[239]

Fisheries Inshore New Zealand is approaching the current situation in a conciliatory way, while protecting the rights of its quota holders. It is conceivable that Fisheries Inshore New Zealand and the recreational fishing sector, along with customary fishing interests, could adopt a more collaborative approach for resolving their differences and identifying their shared interests.

However, the government would likely consider this approach too lengthy and costly, compared with the return on investments made in the larger primary industries that have economic growth opportunities. Although it might depend on the extent to which fisheries become a public issue of concern for the 2017 general election.

The New Zealand Initiative will be examining the processes used in other fishing nations for new ways of working with all fishing sectors and how the recreational fishing experience can be enhanced. The second report in this series will present overseas solutions to several of the problems identified in this report.

239. Fisheries Inshore New Zealand (2015). Fisheries Inshore New Zealand's Response to the Operational Review of the New Zealand Fisheries Management Framework, 11 December. Fisheries Inshore New Zealand: Wellington.

References

Ackroyd, P., Hide, R.P., and Sharp, B.M.H. (1990). *New Zealand's ITQ System: Prospects for the Evolution of Sole Ownership Corporations*. Report to the Ministry of Agriculture and Fisheries. Ministry of Agriculture and Fisheries: Wellington.

Adler, J., Cullis-Suzuki, S., Karpouzi, V., Kaschner, K., Mondoux, S., Swartz, W., Trujillo, P., Watson, R., and Pauly, D. (2010). Aggregate performance in managing marine ecosystems of 53 maritime countries. *Marine Policy*, 34, 468–476.

Anderson, L.G. (1994). An economic analysis of highgrading in ITQ fisheries regulation programs. *Marine Resource Economics*, 9, 209–226.

Arlinghaus, R., and Cooke, S.J. (2005). Global impact of recreational fisheries. *Science*, 307, 1561–1562.

Arlinghaus, R., Tillner, R., and Bork, M. (2014). Explaining participation rates in recreational fishing across industrialised countries. *Fisheries Management and Ecology*, 22, 45–55.

Arnason, R. (2015). Rights-based Approaches to Fishing: Theory and Experiences. Presentation to the Tenure and Fishing Rights 2015 Conference, Apsara Angor Hotel, Siem Reap, Cambodia, 23–27 March (www.fao.org/about/meetings/user-rights-2015/speakers/en).

Arnason, R. (2014). *Best Practice in the Use of Right-based Management to Reduce Discards in Mixed Fisheries: In-depth Analysis*. Policy Department, Structural and Cohesion Policies. European Parliament: Brussels.

Arnason, R. (2005). Property rights in fisheries: Iceland's experience with ITQs. *Reviews in Fish Biology and Fisheries*, 15, 243–264.

Arnason, R. (2000). Property rights as a means of economic organization. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations, Rome, 14–25.

Arnason, R. (1994). On catch discarding in fisheries. *Marine Resource Economics*, 9, 189–208.

Belich, J. (1996). *Making Peoples: A History of New Zealanders from Polynesian Settlement to the End of the Nineteenth Century*. Penguin: Auckland.

Bess, R. (2016). Fix fishing from the top. *National Business Review*, 10 June.

Bess, R. (2012). Public management in New Zealand and its effect on institutional arrangements for managing fisheries. *Marine Policy*, 36, 550–558.

Bess, R. (2011). New Zealand's Treaty of Waitangi and the doctrine of discovery: Implications for the foreshore and seabed. *Marine Policy*, 35, 85–94.

Bess, R. (2005). Expanding New Zealand's quota management system. *Marine Policy*, 29, 339–347.

Bess, R. (2001). New Zealand's indigenous people and their claims to fisheries resources. *Marine Policy*, 25, 23–32.

Bess, R., and Harte, M. (2000). The role of property rights in the development of New Zealand's seafood industry. *Marine Policy*, 24, 331–339.

Borch, T. (2010). Tangled lines in New Zealand's quota management system: The process of including recreational fisheries. *Marine Policy*, 34, 655–662.

Bromley, D.W. (2009). Abdicating responsibility: The deceits of fisheries policy. *Fisheries*, 34(6), 280–290.

Charles, A.T. (1992). Fishery conflicts: A unified framework. *Marine Policy*, 379–393.

Clark, L. (2014). Case study on foreign fishing agreements in the western Pacific, Appendix B. In T*rade in Fishery Services: Emerging Perspectives on Foreign Fishing Arrangements*. Environment and Natural Resources Global Practice Discussion Paper #01. World Bank: Washington, DC, 61–72.

Clucas, I. (1997). Incentives and disincentives to discarding. In *A Study of the Options for Utilization of Bycatch and Discards from Marine Capture Fisheries*. FAO Fisheries Circular, No 928. Food and Agriculture Organization of the United Nations: Rome.

Colmar Brunton (2007). Omnibus Recreational Fishing Survey. Prepared for the New Zealand Seafood Industry Council Ltd.

Connor, R. (2000). Are ITQs property rights? Definition, discipline and discourse. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/2. Food and Agriculture Organization of the United Nations: Rome, 29–38.

Connor, R.D. (2006). Necessary but not sufficient: Allocation of allowable catch as a management tool in shared fisheries. Paper presented at the Sharing the Fish '06 Conference, Fremantle, Western Australia, 27 February to 2 March.

Copes, P. (1986). A critical review of individual quota as a device in fisheries management. *Land Economics*, 62, 278–291.

Cox, S., and Walters, C. (2002). Maintaining quality in recreational fisheries: How success breeds failure in management of open-access sport fisheries. In Pitcher, T.J., and Hollingworth, C.E. (eds) *Recreational Fisheries: Ecological, Economic and Social Evaluation*. Blackwell Science: Oxford.

Craig, A., and Soboil, M. (2008). Self governance in New Zealand's developmental fisheries: Deep-sea crabs. In Townsend, R., Shorton, R., and Uchida, H. (eds) *Case Studies in Fisheries Self-governance*. FAO Fisheries Technical Paper No. 504. Food and Agriculture Organization of the United Nations: Rome, 269–276.

Douvere, F., and Ehler, C. (2009). Ecosystem-based marine spatial management: An evolving paradigm for the management of coastal and marine places. *Ocean Yearbook*, 23(1), 1–26. United Nations Educational, Scientific and Cultural Organization: Paris.

FAO (2005). *Discards in the world's marine fisheries: An update*. Fisheries Technical Paper 470. Food and Agriculture Organization of the United Nations: Rome.

Finer, H. (1941). Administrative responsibility in democratic government, *Public Administration Review*, 1, 335–350.

Fisheries Inshore New Zealand (2015). Fisheries Inshore New Zealand's response to the Operational Review of the New Zealand Fisheries Management Framework, 11 December. Fisheries Inshore New Zealand: Wellington.

FISHinFuture Search (2013). *Positive change for recreational fishing*.

Gibbs, M.T. (2008). Network governance in fisheries, *Marine Policy*, 32, 113–119.

Grainger, A., and Costello, C.J. (2014). Capitalizing property rights insecurity in natural resource assets. J*ournal of Environmental Economics and Management*, 67, 224–240.

Greenaway, R. and Associates (2013). *Report on the "Review of sustainability and other management controls for snapper 1 (SNA 1)".* Prepared by Rob Greenaway for the New Zealand Sport Fishing Council. Rob Greenaway and Associates: Nelson (www.greenaway.co).

Guy, N. (2015). *Speech to the Seafood New Zealand 2015 Conference*, 19 August (www.beehive.govt.nz/speech/speech-seafood-new-zealand-2015-conference).

Hanna, S.S. (2009). Evolution of property rights: Lessons of process and potential for Pacific Northwest recreational fisheries. In Leal, D.R., and Maharaj, V. (eds) *Evolving Approaches to Managing Marine Recreational Fisheries*. Lexington Books: UK, 3–21.

Harte, M. (2008). Assessing the road towards self-governance in New Zealand's commercial fisheries. In Townsend, R., Shotton, R., and Uchida, H. (eds) *Case Studies in Fisheries Self-governance*. FAO Fisheries Technical Paper 504. Food and Agriculture Organization of the United Nations: Rome, 324–334.

Hartill, B. (In press). A review of approaches used to estimate recreational harvests in New Zealand between 1984 and 2017.

Hartill, B (2009). The evolution of recreational harvest estimation in New Zealand from indirect to direct approaches. In Scandol, J.P., Gray C.A., Steffe, A.S., and Ferrel, D.J. (eds) *Assessing Recreational Fisheries – Current and Future Challenges. Australian Society for Fish Biology Workshop and Conference Proceedings*. Sydney, NSW, September 2008, Australian Society for Fish Biology, 33.

Hartill, B., Payne, G.W., Rush, N., and Bian, R. (In press). Bridging the temporal gap: Continuous and cost-effective monitoring of dynamic recreational fisheries by web cameras and creel surveys. *Fisheries Research*.

Hartill, B., and Thompson, F. (2016). *Review of self-reporting tools for recreational fishers*. New Zealand Fisheries Assessment Report 2016/06. Ministry for Primary Industries: Wellington.

Heatherington, M.J. (2000). Property rights and recreational fishing, a New Zealand perspective – past, present and future. *Use of Property Rights in Fisheries Management*. Proceedings of the FishRights99 Conference, Fremantle, Western Australia. FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 284–287.

Hersoug, B. (2002). *Unfinished Business: New Zealand's Experience with Rights-based Fisheries Management*. Eburon: Delft, The Netherlands.

Holland, S.M., and Ditton, R.B. (1992). Fishing trip satisfaction: A typology of anglers. *North American Journal of Fisheries Management*, 2(1), 28–33.

Hooper, M. (2002). Indigenous fishing rights in New Zealand – From rhetoric to reality. Proceedings of the International Institute of Fisheries Economics and Trade Conference. Victoria University of Wellington: Wellington.

Ingram, K. (2006). The right to fish for food or fun. Paper presented at the Sharing the Fish '06 Conference, Fremantle, Western Australia, 27 February to 2 March.

Jarrett, A. (2015). User-rights in Australia's Northern Prawn Fishery (NPF): A Southern Hemisphere Development Country Experience. Presentation to the Tenure and Fishing Rights 2015 Conference, Apsara Angor Hotel, Siem Reap, Cambodia, 23–27 March (www.slideshare.net/FAOoftheUN/userrights-in-australias-northern-prawn-fishery-npf-a-southern-hemisphere-developed-country-experience-by-annie-jarrett).

Kearney, R.E. (2001). Fisheries property rights and recreational/commercial conflict: Implications of policy developments in Australia and New Zealand. *Marine Policy*, 25, 49–59.

Kerr, G.N., and Latham, N. (2003). The Value of Recreational Inshore Marine Fishing. Paper presented at the 2011 NZARES Conference, 25–26 August, Tahuna Conference Centre: Nelson.

Kim, H.N., Woodward, R.T., and Giffin, W.L. (2009). Can transferable rights work in recreational fisheries? In Leal, D.R., and Maharaj, V. (eds) *Evolving Approaches to Managing Marine Recreational Fisheries*. Lexington Books: UK, 47–76.

LegaSea (No date) *New Zealand Marine Research Foundation* (www.legasea.co.nz/nzmrf.php).

LegaSea (2015) *LegaSea Update* 33, July edition (www.legasea.co.nz/documents/BayFisher-Update-33.pdf).

Lindsay, S., Damania, R., Kosturjak, A., Whetton, S., Bright, M., and Coombs, G. (1999). *Value of New Zealand Recreational Fishing Project: REC9801*. Report written for the New Zealand Ministry of Fisheries. The South Australian Centre for Economic Studies, University of Adelaide: Adelaide.

Lock, K., and Leslie, S. (2007). *New Zealand's Quota Management System: A History of the First 20 Years*, Motu Working Paper 07-02. Motu Economic and Public Policy Research: Wellington.

Luxton, Hon. J. (1997). Speech given at the 1997 Seafood Industry Conference. Plaza International Hotel: Wellington, 14–17 May.

Mace, P. (2014). Interim update of the status of New Zealand's fish stocks. In Mace, P., and Vignaux, M. (eds) *Fisheries Assessment Plenary. May 2014 – Supplement. A Celebration of 30+ Years of Fisheries Science*. Ministry for Primary Industries: Wellington, 55–59.

Mace, P.M. (1996). Developing and sustaining world fisheries resources: The state of the science and management. In Hancock, D.A., Smith, D.C., Grant, A., and Beumer, J.P. (eds). *Proceedings of the Second World Fisheries Congress, Developing and Sustaining World Fisheries Resources*. CSIRO Publishing: Collingwood, Vic, Australia.

Mace, P., Sullivan, K.J., and Cryer, M. (2014). The evolution of New Zealand's fisheries science and management system under ITQs. *ICES Journal of Marine Science*, 71(2), 204–215.

Macinko, S. (2014). Lipstick and catch shares in the Western Pacific: Beyond evangelism in fisheries Policy? *Marine Policy*, 44, 37–41.

MAF (1989). National Policy for Marine Recreational Fisheries. Wellington, Ministry of Agriculture and Fisheries.

Marchal, P., Lallemand, P., and Stokes, K. (2009). The relative weight of traditions, economics, and catch plans in New Zealand fleet dynamics. *Canadian Journal of Fisheries and Aquatic Sciences*, 66(2), 291–311.

Maritime New Zealand (2014). *Annual Report 2013–14*. Maritime New Zealand: Wellington.

Maritime New Zealand (2009). *Recreational vessel activity in New Zealand: Fact Sheet*, October (www.maritimenz.govt.nz/Publications-and-forms/Recreational-boating/recreational-vessel-activity-fact-sheet.pdf).

McMurran, J. (2000). Property rights and recreational fishing: Never the twain shall meet? *Use of Property Rights in Fisheries Management*. Proceedings of the FishRights99 Conference, Fremantle, Western Australia. FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 184–187.

MFish (2009). *Fisheries 2030: New Zealanders Maximising Benefits from the Use of Fisheries within Environmental Limits*. Ministry of Fisheries: Wellington.

MFish (2009). *Shared Fisheries: Proposals for Managing New Zealand's Shared Fisheries – A Public Discussion Paper*. Ministry of Fisheries: Wellington.

MFish and NZRFC (2000). *Soundings. Cast your line! Sounding out New Zealanders' views on the future of recreational fishing*. Ministry of Fisheries: Wellington.

Mikalsen, K.H., and Jentoft, J. (2001). From user-groups to stakeholders? The public interest in fisheries management. *Marine Policy*, 25, 281–292.

Ministry for the Environment (2016). *A New Marine Protected Areas Act – Consultation Document*. Ministry for the Environment: Wellington.

Ministry of Business, Innovation and Employment (2016). *Key Tourism Statistics*, 10 August. Ministry of Business, Innovation & Employment: Wellington (www.mbie.govt.nz/info-services/sectors-industries/tourism/documents-image-library/key-tourism-statistics.pdf).

Ministry of Business, Innovation and Employment (2015). *Business Growth Agenda*, 19 October (www.mbie.govt.nz/info-services/business/business-growth-agenda).

Mitson, E. (2016). MPI appoints QC to look into its own fishing investigations. *National Business Review*, 19 May.

MPI (2016). *Future-proofing Fisheries Management*, 6 April (www.mpi.govt.nz/law-and-policy/legal-overviews/fisheries/fisheries-management-system-review/future-proofing-fisheries-management).

MPI (2016). *Situation and Outlook for Primary Industries 2015.* Ministry for Primary Industries: Wellington.

MPI (2016). *The Status of New Zealand's Fisheries 2015.* Ministry for Primary Industries: Wellington.

MPI (2015). *Fisheries Assessment Plenary May 2015: Stock Assessments and Stock Status.* Ministry for Primary Industries: Wellington.

MPI (2015). *National Plan of Action – Seabirds 2013* (www.fish.govt.nz/en-nz/Environmental/Seabirds/default.htm).

MPI (2013). *Operation Achilles: Preliminary Investigation Report Dumping/Discarding.* Ministry for Primary Industries: Wellington.

MPI (2010). *New Zealand Fisheries at a Glance* (www.fish.govt.nz/en-nz/Fisheries+at+a+glance/default.htm).

NIWA (2016). *Water & Atmosphere,* June. National Institute of Water and Atmospheric Research: Wellington (www.niwa.co.nz/sites/niwa.co.nz/files/WandA_15_June_2016_web.pdf).

NIWA (2013). *Counting Fish*, 16 December (www.niwa.co.nz/publications/wa/water-atmosphere-9-december-2013/counting-fish).

NZMRF (2016). *Recreational Fishing in New Zealand: A Billion Dollar Industry*. New Zealand Marine Research Foundation: Hunua, South Auckland (http://nzmrf.org.nz/files/New-Zealand-Fishing-Economic-Report.pdf).

NZRFC (2015). *New Zealand Sport Fishing Council. Board Policy Document Versions – September 2015*. New Zealand Sport Fishing Council: Hunua, South Auckland (www.nzsportfishing.co.nz/index.cfm/PageID/361/ViewPage/NZSFC-Policy-Document).

NZSFC (2014). *Fisheries Management Annual Report: July 2013 to June 2014*. New Zealand Sport Fishing Council: Hunua, South Auckland.

NZSFC (2012). *Fisheries Management Annual Report: Year ending 30 June 2012*. New Zealand Sport Fishing Council: Hunua, South Auckland.

NZSFC, New Zealand Angling and Casting Association and LegaSea (2015). Submission to Achieve Abundance in New Zealand's Inshore Marine Environment: Review of the Fisheries Act 1996 and Regulations, 14 December. New Zealand Sport Fishing Council: Hunua, South Auckland.

One News (2016). *Fishing Trawlers Accused of Killing Precious Dolphins: 'I've seen dolphins rotting in nets'*, 29 July (www.tvnz.co.nz/one-news/new-zealand/fishing-trawlers-accused-killing-precious-dolphins-ive-seen-rotting-in-nets).

Option 4 (2005). *Proportional Allocation of Fisheries Resources in NZ: Option 4 Final Submission* (www.option4.co.nz/Fisheries_Mgmt/proportions.htm#work).

Parliamentary Commissioner for the Environment (1999). *Setting Course for a Sustainable Future: The Management of New Zealand's Marine Environment*. Office of the Parliamentary Commissioner for the Environment: Wellington.

Pearce, P. (2006). Allocation of catches among fishing sectors: Opportunities for policy development. In Metzner, R., Isokawa, D., and Liu, Y. (eds) *Sharing the Fish '06: Allocation Issues in Fisheries Management*. FAO Fisheries and Aquaculture Proceedings 15. Food and Agriculture Organization of the United Nations: Rome, 123–135.

Pearce, P. (1991). B*uilding on Progress: Fisheries Policy Development in New Zealand*. A report prepared for the Minister of Fisheries. Ministry of Agriculture and Forestry: Wellington.

Pinkerton, E. (2015). Neoliberalism and the politics of enclosure in North American small-scale fisheries. *Marine Policy*, 61, 303–312.

Pomeroy, R.S. and Berkes, F. (1997). Two to tango: The role of government in fisheries co-management. *Marine Policy*, 21(5), 465–480.

Ririnui, T., and Memon, A. (1997). *Recognition of Maori Customary Fisheries in New Zealand's Fisheries Management Regime.* Revised paper presented at the Regional and Urban Development Conference, Wellington, 10 December.

Science Media Centre (2016). *NZ Fisheries Catch Under-reported – Expert Reaction*, 16 May (www.sciencemediacentre.co.nz/2016/05/16/nz-fisheries-catch-under-reported-expert-reaction/).

Scott, A. (2010). New directions in fishery management. In Leal, D. (ed) *Political Economy of Natural Resource Use: Lessons for Fisheries Reform*. Prepared for the Global Program on Fisheries (PROFISH), Agriculture and Rural Development Department. The World Bank: Washington, DC.

Scott, A. (2000). Introducing property rights in fisheries management. In Shotton, R. (ed) *Use of Property Rights in Fisheries Management*, FAO Fisheries Technical Paper 404/1. Food and Agriculture Organization of the United Nations: Rome, 1–13.

Scott, A. (1993). Obstacles to fishing self-government. *Marine Resources Economics*, 8, 187–199.

Scott, A. (1988). Development of property in fisheries. *Marine Resource Economics*, 5, 289–311.

Seafood New Zealand (2016). *Measuring the True Value of Our Shared Fisheries*, 8 April (www.seafoodnewzealand.org.nz/publications/tim-pankhursts-captains-blog/single/item/friday-08-april).

Seafood New Zealand (2015). *Creating Value 'Beyond Sustainability': Initial Seafood Industry Contribution to Fisheries Management Review 2015–16*, 11 December. Seafood New Zealand: Wellington.

Seafood New Zealand (2014). *Economic Review of the Seafood Industry*, 8, 6. (www.seafoodnewzealand.org.nz/fileadmin/documents/Economic_reviews/economic-review-quarter-1-2014.pdf).

Seafood New Zealand (No date). Key Facts (www.seafoodnewzealand.org.nz/industry/key-facts).

Seafood New Zealand (No date). *Our Sectors* (www.seafoodnewzealand.org.nz/our-industry/related-organisations).

Sharp, B.M.H. (2009). Recreational fishing in New Zealand's evolving rights-based system of management. In Leal, D.R. and Maharaj, V. (eds) *Evolving Approaches to Managing Marine Recreational Fisheries*. Lexington Books: UK, 23–46.

Simmons, G., Bremner, G., Whittaker, H., Clarke, P., Teh, L., Zylich, K., Zeller, D., Pauly, D., Stringer, C., Torkington, B., and Haworth, N. (2016). *Reconstruction of Marine Fisheries Catches for New Zealand (1950–2010)*. Working Paper Series, #2015-87, Institute for the Oceans and Fisheries, University of British Columbia: Vancouver (www.seaaroundus.org/doc/PageContent/OtherWPContent/Simmons+et+al+2016+-+NZ+Catch+Reconstruction+-+May+11.pdf).

Soboil, M., and Craig, T. (2006). *Growing pains of the Quota Management System*. Paper presented at the Sharing the Fish '06 Conference, Fremantle, Western Australia, 27 February to 2 March.

Standards New Zealand (2010) Terms of Reference between Benthic Impact Standards Committee and Standards New Zealand Version 0.1 – Draft. Standards New Zealand: Wellington.

Statistics New Zealand (2016). *The Kiwi Factor in Record Net Migration*, 14 July. Statistics New Zealand: Wellington (www.stats.govt.nz).

Stevenson, B.C., and Millar, R.B. (2013). Promising the moon? Evaluation of indigenous and lunar fishing calendars using semiparametric generalised mixed models of recreational catch data. *Environmental and Ecological Statistics*, 20(4), 591–608.

Stewart, C. (2004). *Legislating for Property Rights in Fisheries*. FAO Legislative Study 83. Food and Agriculture Organization of the United Nations: Rome.

Stewart, J., Walshe, K., and Moodie, B. (2005). The demise of the small fisher? A profile of exiters from the New Zealand fishery. *Marine Policy*, 30, 328–340.

Sutinen, J.G., and Johnston, R.J. (2003). Angling management organizations: Integrating the recreational sector into fishery management. *Marine Policy*, 27, 471–487.

Symes, D. (1996). Fishing in troubled waters. In Crean, K., and Symes, D. (eds) *Fisheries Management in Crisis*. Fishing News Books, Blackwell Science: Oxford.

Townsend, R.E. (1995). Fisheries self-governance: Corporate or cooperative structures? *Marine Policy*, 19(1), 39–45.

Turner, D. (2016). Ministry Notebook. *New Zealand Fishing News*, August, p. 85.

Van Poorten, B.T., Cos, S.P., and Cooper, A.B. (2013). Efficacy of harvest and minimum size limit regulations for controlling short-term harvest in recreational fisheries. *Fisheries Management and Ecology*, 20, 258–267.

Veiga, P., Pita, C., Leite, L., Ribeiro, J. Ditton, R.B., Gonçalves, J.M.S., and K. Erzini (2013). From a traditionally open access fishery to modern restrictions: Portuguese anglers' perceptions about newly implemented recreational fishing regulations. *Marine Policy*, 40, 53–63.

Walrut, B.P. (2006). Sharing the fish – whose fish? Paper presented at the Sharing the Fish '06 Conference, Fremantle, Western Australia, 27 February to 2 March (www.fishallocation.com/papers/pdf/papers/BernardWalrut.pdf).

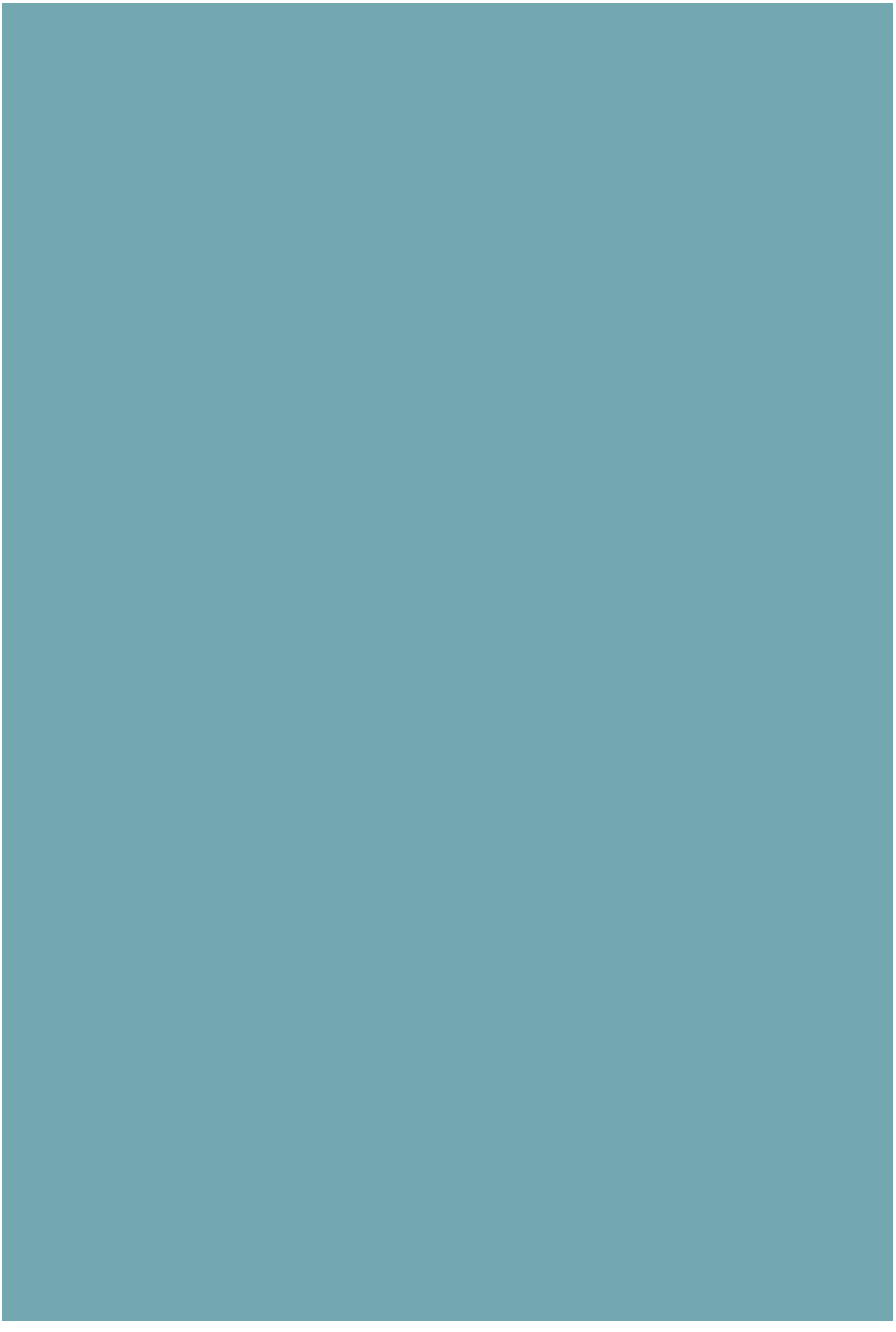
Walshe, R.A.R. (2010). The Fisheries' Trinity: Re-conceptualising New Zealand's Inshore Fisheries Management. PhD thesis. The University of Auckland: Auckland.

Westpac Institutional Bank (2016). *Industries Insights: Fishing, Aquaculture and Seafood*, March (www.westpac.co.nz/assets/Business/Economic-Updates/2016/Bulletins-2016/Industry-Insights-Aquaculture-Fishing-and-Seafood-March-2016.pdf).

Worm, B., Hilborn, R., Baum, J.K., Branch, T.A., Collie, J.S., Costello, C., Fogarty, M.J., Fulton, E.A., Hutchings, J.A., Jennings, S., Jensen, O.P., Lotze, H.K., Mace, P.M., McClanahan, T.R., Minto, C., Palumbi, S.R., Parma, A.M., Ricard, D., Rosenberg, A.A., Watson, R., and Zeller, D. (2009). Rebuilding global fisheries. *Science*, 325(5940), 578–585.

Wynne-Jones, J., Gray, A., Hill, L., and Heinemann, A. (2014). *National Panel Survey of Marine Recreational Fishers 2011–12: Harvest Estimates*. New Zealand Fisheries Assessment Report 2014/67. Wellington: Ministry for Primary Industries.

Yale Law School (2010) *Our Exhibit Produces an Article: "Grotius and the Freedom of the Seas"* (http://library.law.yale.edu/news/our-exhibit-produces-article-grotius-and-freedom-seas).



The management of recreational fishing in New Zealand is a contentious topic. Recreational fishing (whether freshwater or marine) is close to the hearts of many New Zealanders. However, over the last 20 to 30 years a number of inshore fisheries have become fully or over harvested, and recreational fishers (along with the commercial sector) have faced inevitable cutbacks in catch limits and increased regulation.

The recreational fishing right has a centuries old lineage but has remained largely unchanged in character and definition. By comparison, over the last 30 years the commercial and Māori customary rights have become better defined and evolved. This divergence in evolution between recreational and commercial/Māori customary has raised concerns that recreational fisheries are being left behind in a 'rights-race'. For others, the unchanging character is one of the strongest virtues of the recreational right. However, the development of rights in isolation has created problems, because the development of one sector's rights can adversely impact on another sector's right.

Poor intra-sector management and lack of unity are characteristic of the history of New Zealand's marine recreational fisheries. One New Zealand Minister of Fisheries remarked that an organised recreational fishing sector was an oxymoron. But this result is not inevitable as the resource management and sector cohesion by the freshwater recreational fisheries sector attests to.

Dr Bess' report covers all these issues and more, giving a refreshing perspective on our recreational fishing history and management and providing fresh insights into an analysis and synthesis of the current problems in the marine recreational fishing sector.

Dr Kim Walshe
Manager Fisheries Certification Program
Department of Fisheries Western Australia

THE NEW ZEALAND INITIATIVE

www.nzinitiative.org.nz

ISBN
978-0-9941365-2-7 (print)
978-0-9941365-3-4 (online)

The New Zealand Initiative
PO Box 10147
Wellington 6143