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PLENTY MORE FISH IN THE SEA? QMS - NEW ZEALAND'S SOLUTION TO THE 'TRAGEDY'

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CONTENTS

ABSTRACT

This paper looks at the 'tragedy of the commons' model as examined by Garrett Hardin, and analyses the theoretical responses to the 'tragedy'. These responses are then examined in the practical context of New Zealand fisheries management.

The paper argues that none of Hardin's theoretical reposes work in their pure form. Consequently, this paper assumes that a combination of the three responses, (private property rights, government regulation and internal stakeholder control) is necessary to effectively deal with the 'tragedy of the commons'.

The paper looks at the objectives of New Zealand fisheries management in order to conclude whether the combination of 'tragedy' responses used in New Zealand;

(a) deals effectively with the 'tragedy of the commons';

(b) achieves the statutory objectives set.

New Zealand fisheries management is presently in a state of change so this paper seeks to make comparisons between the current system and the newly introduced amendments. The paper also makes suggestions of further reform.

The text of this paper (excluding contents page, footnotes, bibliography and annexures) comprises approximately 13, 463 words.

> Picture a stretch of sea open to all. It is to be expected that each fisher will try to take as many fish as possible from the beds. Such an arrangement may work satisfactorily for centuries because tribal wars, poaching and disease keep the numbers of people below, and fish above the carrying capacity of the beds. Finally, however, comes the day of reckoning. At this point the inherent logic of the commons remorselessly generates tragedy.
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> As a rational being each fisher seeks to maximise his or her gain. She asks, "What is the utility to me of catching one more fish?" Since the fisher receives all the profits from the sale of the fish the positive utility is nearly +1. The negative component is the effect of taking one more fish from the ocean. Since the negative component is shared by all the fishers, the negative utility for any particular fisher is only a fraction of -1.
>
> Therefore, the rational fisher concludes that the only sensible course of action is to take another fish from the sea. And another, and another.... This is the conclusion reached by every fisher sharing the fishing beds. Therein is the tragedy. Each person is locked into a system that compels them to catch fish without limit - in a world that is limited. Freedom in a commons brings ruin to all.[1]

I INTRODUCTION

Garrett Hardin's 1968 article "The Tragedy of the Commons" describes the way in which sustainability is precluded in relation to a common field of cattle. Since the publication of his article, the "tragedy metaphor"[2] has been used to describe the problems of a 'commons' or open access situation in relation to a variety of natural resources, including fisheries and national parks. The problem of open-access fisheries fits well into the 'tragedy' model.

This paper looks at the 'tragedy of the commons' model as examined by Garrett Hardin, and analyses the theoretical responses to the 'tragedy'. These responses are then examined in the practical context of New Zealand fisheries management.

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[1] Garrett Hardin "The Tragedy of the Commons" (1968) 162 *Science* 1242,1244.

[2] David Hawkey *Property Rights, ITQs and the Slice of the Fish Pie: An Appraisal of Fishery Culture and Conflict in the Northland Region* (Policy Discussion Paper, Department of Economics, Auckland, 1994) 5.

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New Zealand was chosen as an appropriate state in which to look at the practical implications of Hardin's 'tragedy' because the New Zealand fisheries management system incorporates components from all three 'tragedy' responses. This paper is restricted to the consideration of fin fisheries as opposed to more sedentary species such as scallops and lobster because the issues to be addressed differ between the two groups.

II 'FREEDOM OF THE SEAS' AND THE DEVELOPMENT OF THE 'TRAGEDY'

A The Development of the 'Freedom of the Seas' Doctrine

The freedom to fish the high seas at will has been a feature of international law since the 1600's. In 1609, Dutch jurist Hugo Grotius formulated the doctrine of the 'freedom of the seas' and published his argument in the book *Mare Liberum*.[3] The doctrine argued that property could only exist in the seas if they were able to be occupied and defended against others.[4] On the assumption that such occupation or defence capacity was impossible at the time, Grotius argued that the seas belonged to no one. His idea was attractive to the English because at the time the

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[3] RP Anand *Origin and Development of the Law of the Sea* (Martinus Nijhoff, The Hague, 1982) 2.

[4] Peter H Pearse "Developing Property Rights as Instruments of Natural Resources Policy: the Case of the Fisheries" *Climate Change: Designing a Tradeable Permit System* (OECD Publications Service, France, 1992) 109,111.

Pope was intent on dividing the world's oceans between Spain and Portugal. England did not want to see its maritime powers curtailed and it therefore embraced the 'freedom' doctrine.[5]

The doctrine of "freedom of the seas" was not adopted as the general stance of international law until the end of the Napoleonic wars. The need for freedom of navigation in order to promote trade links and the increasing colonial empires slowly halted the fight for exclusive rights to certain areas of open sea. The doctrine of the "freedom of the seas" became the prevailing international law rule.[6]

For the past two hundred years the common law right allowing every person to fish the sea in an unrestricted manner has remained the general rule. This practice worked satisfactorily and remained sustainable for so long due to external factors. These factors were not identical to those used in the original 'tragedy model',[7] but were more technologically and sociologically based. Lack of technological advances such as refrigerated containers, onboard factory processing facilities and 'fish finders' meant that fewer fish could be caught at any one time. Prior to the invention of freezers and supermarkets, any fish caught had to be either processed or sold relatively quickly.

When these technological advances developed at the beginning of this century, the fishing industry changed from a relatively small domestic industry to a large scale, multi-national enterprise. As seafood products became a popular export commodity, the myth that fish stocks were inexhaustible began to erode. Thus the 'tragedy of the open-access fishery' unfolded.

B Conservation and Economics - Two Types of Tragedy

The fishing practices of the twentieth century have resulted in two general types of 'tragedy' occurring. Peter Pearse, in his article on the development of property rights in natural resources, considered that both a

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5 Peter H Pearse above n 4, 111.

6 RP Anand above n 3, 129.

7 The original factors discussed by Hardin were tribal wars, poaching and disease.

"conservation tragedy" and an "economic tragedy" commonly result from a policy of open access fishing.[8]

i The Conservation Tragedy

The "conservation tragedy" occurs largely because, due to increases in technology, new fish stocks and fish species are being constantly discovered and exploited. Fishers want to catch the most fish for the least effort, so consequently beds with an abundance of high quality fish are quickly depleted. Under an open access system fishers also want to catch more fish than their competitors. This means that boats are constantly in use in order for the fisher to keep ahead in a competitive market.

If the fishery looks profitable more potential fishers are drawn into the industry. They contribute to the tragedy by catching even more fish, thus further depleting the stocks. This pendulum between the abundance which occurs whenever new technology proves effective or new stocks and species are found, and depletion when the stocks are overfished, has resulted in a situation where resources and product demand fluctuate wildly.[9]

The pressure on fish stocks, not only in New Zealand, but around the world has continued to increase. In 1995, the United Nations Food and Agriculture Organisation found that 70 per cent of the world's fishstocks are now either fully exploited, over-fished, depleted or are rebuilding from previous over-fishing.[10]

ii The Economic Tragedy

Pearse also analysed the economic tragedy which usually accompanies stock depletion. Under a policy of open-access fisheries, a rational, self interested fisher will try to catch as many fish as possible and will expand the fleet or invest in new technology to do so. In the competitive atmosphere of an open access fishery, there is not only a race

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[8] Peter H Pearse above n 4, 112.

[9] Peter H Pearse above n 4, 112.

[10] *The State of World Fisheries and Aquaculture* (UN Food and Agricultural Organisation, Rome, 1995).

for fish, but a race for technology also. This continues even when there are enough boats and enough equipment to catch all the available product. The result is larger and better equipped fishing fleets competing with each other to catch the largest share of a limited stock population.

As a result of this race for fish, an economic problem of over expansion and inefficiency is created in the industry. A profitable fishery will attract newcomers keen to make some fast money. The resulting expansion in labour and capital will cause other fishers to increase their efforts in order to maintain their catch levels. The increased pressure on the fishery will result in increased effort for fewer profits. In times of depletion, fishers wanting to exit the industry will find it hard to sell their businesses and equipment. The eventual result is an industry that has overexpanded in terms of both capital and labour, consequentially reducing the profits for each fisher involved.

III THEORETICAL SOLUTIONS TO THE 'TRAGEDY OF THE COMMONS'

How then do we solve the twin tragedies of open-access fisheries? Garrett Hardin, in the original 'tragedy' model, raised three different suggestions as possibilities for solving the 'tragedy' in the context of population growth, these being:

(a) privatisation of the resource;
(b) government regulation;
(c) internal controls by stakeholders.

Of these three possible solutions Hardin prefers "social arrangements that create responsibility"[11] or "mutual coercion mutually agreed upon"[12] in the context of population growth. However, his article suggests that the other two 'solutions' have a place in resolving problems stemming from other open access or open usage practices, such as overuse of national parks or pollution.

Hardin says of the fisheries tragedy, "the oceans of the world continue to suffer from the survival of the philosophy of the commons.

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11 Garrett Hardin above n 1, 1247.

12 Garrett Hardin above n 1, 1247.

Maritime nations still respond automatically to the shibboleth of the 'freedom of the seas'".[13] Is any one of Hardin's three solutions, like the tragedy metaphor itself, able to be applied to the case of fisheries?

This part of the paper examines the application of each of the three solutions, in their pure forms, to fisheries, and analyses whether the pure application of this theoretical model would work in practice.

A Privatisation of the Resource - Property rights in Fisheries

Adopting a pure private property regime as a solution to the problem of open-access fisheries would involve the creation of a property right in either the fish themselves or in a section of the sea or seabed. In theory, this would give each fisher an easily defined right which could be treated as that fisher wished.

1 Advantages of a Private Property Regime in Fisheries

The creation of a property right in fisheries would eliminate the 'race for fish'. It would also provide fishers with the right to protect their assets if another fisher tried to steal them or endanger their sustainability. In theory, if each fisher was allocated certain rights then self interested fishers would conserve their fishery. By taking only a small amount of stock each year, fishers would ensure that they did not exhaust the resource, and that their asset retained or increased its value.

A pure property rights system would result in the close of the commons and the resolution of many of the problems which accompany open access fisheries, however, in practice the solution in its pure form is unlikely to adequately resolve the 'tragedy'.

2 Disadvantages of a Pure Property Rights Regime in Fisheries

Under a property rights regime, the time may come when a self-interested fisher also finds that it is uneconomical to conserve part of his or her catch with the aim of ensuring future sustainability. The political circumstances or world markets may be so uncertain that a fisher decides that he or she is better to fish the species to commercial extinction[14] in the

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[13] Garrett Hardin above n 1, 1245.

[14] Commerical extinction occurs when the effort necessary to catch the fish stock is

present market than to wait for possible legislative changes to the property right or a possible downturn in world fish prices. The fisher may choose to take certain money today rather than risking the financial worth of the asset tomorrow. This incentive is increased when taking advantage of bank interest rates will prove to be a better investment than sustaining the fish stocks.

In the context of the doctrine of the 'freedom of the seas', a private property right allowing some people to exclude others from the fisheries is alien. This issue is of particular importance to indigenous peoples. In many cultures the concept of the 'property right' is foreign, especially with regard to fisheries. Under a property rights system the cultural concerns of indigenous peoples would have to be resolved.

Recreational fishers may also have a problem with a property rights regime as such as system would inevitably restrict the 'freedom of the seas' doctrine. Many recreational fishers would not want to pay for the privilege of doing what they have always done. The concept of buying property rights or allocating them based on a catch history model would also create problems for environmentalists. Under such an economically liberal regime environmentalists may have to buy property rights in the fisheries and then not use them in order to protect certain species. This is difficult as many environmental organisations may not have the money to pay for 'non-use rights' considering that they will not obtain any profit from not using the beds.

An additional problem with the practicality of creating a well defined property right in fish is the migratory quality of most fin fish. While a private property regime may be suitable for sedentary species, such as shellfish, or for freshwater species confined to certain lakes, it is impractical for most fin fish. As an alternative, there have been proposals to allocate portions of the seabed to fishers under a property rights regime, but this concept faces the same problem.[15] Fishers would race to catch as many fish as possible when the stocks passed through their property. No conservation efforts would be made because fishers would be afraid of other rights holders benefiting from their efforts. Technology may provide the answers by allowing us to genetically tag or track fish. However, not

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such that it is commerically unviable to do so.

[15] David Hawkey above n 2, 8.

only is this impossible at present but it also raises the possibility of costly fish custody battles in the future.

Therefore, while a pure property rights based fish management policy does solve the problem of the 'tragedy of the commons', it is impossible to achieve at present and may not provide suitable conservation measures.

B Government Regulation

This solution works on the theory that some sort of over riding authority is needed to curb fisher's self-interest, and to avoid the 'tragedy of the commons' for the greater community good. In practice, this results in limitations being placed on fisheries through government regulation or legislation.

Government regulation was the main method of fisheries control in New Zealand until 1986, and is still widely used in other states. Regulations commonly involve restrictions being placed on; the type of gear allowed to catch fish; the size of the fish; the fishing seasons; and the fishing locations. In time this often develops into a licence or permit system whereby a certain number of permits are given out either to vessels or individual fishers.

1 Advantages of Fisheries Management by Government Regulation

Licensing gives some exclusivity to the fishery. Damage to the commons is limited by the number of people who have access to it. Government regulation also provides some accountability to the general public and other non-commercial stakeholders. If the industry is regulated by a central, publicly elected body, the general public are able to lobby for change or vote for the party whose fisheries objectives most closely reflect their own.

If all involved obey the regulations governing fisheries then this system can be very effective. However, in practice the 'solution' of government regulation does not solve the problem of open access. It merely gives fewer people access to the commons. This brings a number of disadvantages.

2 *Disadvantages of Fisheries Management by Government Regulation*

Government regulation in the form of licences alone will not work in practice, as the 'race for fish' will still exist amongst licence holders. The race for better technology will also continue to flourish resulting in the 'economic tragedy' which characterises common access fisheries.

Even when government regulation also puts constraints on the permitted technology, the system in its pure form still results in problems for the commercial fisher. Using government regulation as a solution to the 'tragedy of the commons' is problematic in cases where such regulations require lengthy processes of consultation and drafting. In this situation, it is often difficult for legislators and government officials to keep up with the pace of new technology. This results in a catch twenty-two situation for fishers. They cannot refuse to take advantage of the technology, because in doing so they will lose their comparative advantage, yet, if they do take advantage of the technology, it may soon become restricted by legislation and will have limited worth. Either way the fisher is economically disadvantaged.

If government regulations are used to modify the behaviour of fishers, it is essential that they have some sort of coercive element to them. Hawkey writes of a "fear of authority that will keep free-rider behaviour in check".[16] In practice, it is very hard to introduce this coercive element to ocean fisheries. To begin with, government monitoring authorities are limited by incomplete scientific information on fish populations and locations. Secondly, the size of fishing zones is overwhelming compared to the resources available to be spent and the enforcement capabilities of the government. This is especially true of small island states like New Zealand. Governments are forced to use further regulation to make enforcement easier including compulsory paper trails, and the registration of commercial fish sellers.

Under a system characterised by central government regulation, it is very hard to successfully solve the problem of the 'tragedy of the commons' because fishers who want to cheat the system and are willing to make efforts to disguise their actions are difficult to catch. Effective government regulation and monitoring of ocean fisheries is a very expensive option.

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16 David Hawkey above n 2, 9.

C *Internal Stakeholder Controls*

This was Hardin's preferred response to the 'tragedy of the commons' in relation to population control - "mutual coercion, mutually agreed to" or "social arrangements that produce responsibility"[17] Hawkey looks at the issue of internal controls in relation to fisheries. He sees it as a situation where outcomes to other group members, or to the group as a whole are considered by individual group members to be their concern.[18]

1 Advantages of Managing Fisheries Through Internal Controls

Following from Hawkey's theory, if fishers developed a group identity whereby, the actions of each member concerned the group as a whole, then the group would act to prevent individuals jeopardising the future sustainability of the resource. The government could then leave the fishing industry to be controlled from within. This option would result in the taxpayer incurring few ongoing costs and would allow the fishery to operate in a commercially effective manner.

2 The Disadvantages of Managing Fisheries Through Internal Controls

The problems of allowing fisheries to be controlled on a purely internal basis arise when the intrinsic value[19] of fisheries is considered. If control of the industry was internalised, then the accountability which exists under government regulation would be lost. Complete internal control assumes that the only people which have an interest in commercial fisheries are those who are involved in the industry itself. This leaves out environmentalists, those concerned with the well-being of sea mammals and birds, and the general public. Leaving some control of fisheries with an overriding body such as central or local governments gives the true owners of the resource, the general public, a forum to voice complaints and to lobby for changes.

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[17] Garrett Hardin above n 1, 1247.

[18] David Hawkey above n 2,10.

[19] The intrinsic value of fisheries looks at their inherent value rather than their value to the human population as food or in science. It accepts that fisheries and their surrounding ecosystems are valuable in their own right.

In theory, a controlling group including representatives of all interests could solve the problems of isolating conservationists, scientists, and the general public. However, such a group is unlikely to be able to reach agreement on any major decisions relating to fisheries management. The lack of a group consensus would weaken the concept of 'group identity' and consequently could make voluntary compliance with group decisions less likely.

The size of the controlling body is also a problem which stands in the way of a communal solution to the 'tragedy'. The greater the size of the controlling body, the greater the likelihood of conflict within the group and of dissenting break-off groups. Such a body is only as good as its internal culture. If an internal control group grows in size, members may not feel that their opinions are adequately represented. Feelings of alienation or a lack of consensus among group members could result in a breakdown of internal cohesion.

The scope of the authority of a controlling group would also have to be accurately defined. There would need to be clear procedures to deal with those who break group policies or rules, and punishment options to deal with serious breaches. The group would need the authority to impound property and remove the right to fish from those who consistently chose to break the rules. In turn this would create the need for a court-like investigation capability and a forum for disputes between members.

Finally, the 'tragedy' solution of control from within lacks the distance and bias which a disinterested regulator would provide. This criticism has also been levelled at centralised government regulation of the fishing industry.[20] Although those involved in the industry are able to have the best access to hands on information, it is also difficult for them to be objective about industry issues and to take other interests (such as those of conservationists) into account.

D Conclusion

The three responses to the 'tragedy of the commons' outlined in Garrett Hardin's article represent theoretical solutions to a model problem. It is unlikely that any of these solutions alone and in their pure form would work in practice. It then becomes a question of how to mix the solutions.

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[20] David Hawkey above n 2, 11.

Which combination of the three responses should be used to enable the theory to work in practice?

The combination of responses to the 'tragedy' model could vary extensively. The mix of solutions will differ depending on many things, including:

(a) the type of 'commons' being dealt with;
(b) whether the problem is connected to a commercial activity;
(c) whether the problem is able to be contained within state boundaries; and
(d) the political climate of the controlling body.

IV THE 'NEW ZEALAND SOLUTION' - QMS

The following part of this paper looks at the way that the 'tragedy of the commons' has been dealt with in New Zealand fisheries since the introduction of the Quota Management System (QMS). After examining the current law and its objectives, the paper will analyse the criticisms of the New Zealand system which gave rise to the 1998 Independent Review of the Fisheries Act 1996 and the Fisheries Amendment Act 1999.

A The Background to QMS

Prior to the implementation of the QMS, New Zealand fisheries were controlled by an almost purely regulatory scheme. Up until the 1960's the New Zealand fishing industry was relatively small. The 12 mile territorial sea limit and the lack of foreign fishing vessels in New Zealand seas were both factors in limiting the size of the industry.[21] From the mid-1960's foreign vessels were encouraged to fish within New Zealand waters, but the area outside the territorial sea was still not exploited by the New Zealand industry.[22]

During the 1970's pressure began to increase on fishstocks and some popular New Zealand inshore species such as snapper and gurnard became severely depleted. In 1978, the system of Exclusive Economic

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[21] Ian Smith and Rowan Taylor (eds.) *The State of New Zealand's Environment* (Ministry for the Environment, Wellington, 1997) 9.96.

[22] Smith and Taylor above n 21, 97.

Zones (EEZs) was established, giving New Zealand exclusive control of the area within 200 nautical miles of the coastline. This resulted in New Zealand having the fourth largest EEZ in the world. With New Zealand's small population, this provided not only a great opportunity for the fishing industry, but also an overwhelming responsibility as far as enforcement measures were concerned.

After the New Zealand EEZ was established, exploitation of deep water species such as orange roughy and hoki became more common. However, the government, realising that inshore fisheries were becoming increasingly depleted, was placing greater and greater restrictions on the over-capitalised fishing industry.[23] Both the conservation and economic tragedies described by Pearse were being realised in New Zealand. From the early 1980's it became clear that the regulatory approach in its present form was not working effectively. Either the type of regulation would have to be substantially changed, or an alternative solution to government intervention would have to be found.

B How does QMS work?

The Quota Management System was introduced in 1983 for deep water fisheries and in 1986 for inshore fisheries. At first only a small number of fish stocks were part of the system, but this has been gradually increased with the aim of encompassing all commercially fished species into the QMS.

The system works by dividing New Zealand's EEZ into ten Quota Management Areas (QMAs). Within each area, every fishstock governed under the QMS is given a name, for example, SNA1 (Snapper in Quota Management Area One), or BNS2 (Bluenose in Quota Management Area Two). Every year the Minister of Fisheries calculates a Total Allowable Catch (TAC) for each fishstock in each area. This calculation is based on advice from departmental staff and NIWA researchers[24]. The TAC may be increased or reduced each year as a result of the Minister's decision. The Minister has a checklist of several things which must be taken into account

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[23] Smith and Taylor above n 21, 99.

[24] Much of the research work undertaken by the Ministry of Fisheries has been contracted out to NIWA (National Institute of Water and Atmospheric Research Limited).

when he or she makes a TAC decision. This includes the purpose section and sections 11 to 14 of the Fisheries Act 1996.

Following the setting of the TAC, allowances are made for recreational fishing, Maori customary fishing and illegal fishing. After these figures have been taken into account the remainder of the TAC forms the Total Allowable Commercial Catch (TACC). The TACC is then separated between the commercial fishers who hold the quota for that fishstock in that area. These separated amounts are called Individual Transferable Quota (ITQs). They confer on an individual fisher or fishing company, the right to catch a specified tonnage of a certain species of fish, from a certain area, in one fishing year. Fishers caught fishing without quota or fishing above their quota limits are punished.

Originally the ITQ for each fisher was fixed and allocated in perpetuity. This meant that, where the sum of the ITQs exceeded the TACC, the government would buy back the surplus. However, this proved too costly. Consequently, in the Fisheries Amendment Act 1990, the ITQ system was changed to form a percentage amount. This was intended to reflect the amount of quota each fisher held in relation to others in that species and area. Under the Fisheries Amendment Act 1990, the government was able to reduce or increase the TACC without having to worry about expensive buyback provisions and without having to compensate fishers for the loss resulting from TACC reductions (if the TACC was increased fishers would also get a 'bonus' increase in their quota amount at no cost).

Originally quota was allocated on the basis of catch histories of fishers during specified years. This created problems at the time because not every commercial fisher was eligible for quota. Some part-time and infrequent fishers whose catch statistics were not high enough were not awarded quota.

C How does the QMS fit into the 'Tragedy of the Commons' Solutions?

1 Property Rights Aspects

The QMS system confers a type of property right on holders of individual quotas. The rights were allocated by the government and given to fishers. This represents a contrast to the way in which other natural resources have been privatised. For example, broadcasting rights to

airwaves were opened to tender rather than being given away based on the previous use histories of the resource users.

In theory, a system of defined property rights will prevent users from interfering with the production of others.[25] Users will know how much fish they are entitled to catch, and open access to fisheries, with the problems that it brings will come to an end.

The ITQs of New Zealand commercial fishers are able to be treated like most other property rights. They are able to be sold, bequeathed or used as security on a mortgage. The government runs a registry services which, like the Land Transfer Office, keeps a record of quota owners and amounts.

However, it is essential to remember that the property rights conferred under the QMS are not pure property rights. The fishers do not 'own' the fish until they are caught, nor do they own sections or portions of the sea or seabed. The rights which have been allocated under the QMS are essentially rights of 'withdrawal' as opposed to rights of 'access'. Fishers are entitled to 'withdraw' a certain amount of fish from certain areas. The right has a degree of exclusivity in that, only those holding quota are allowed to fish, for that species, in that area, in a commercial manner. However, recreational fishers and Maori customary fishers are still able to fish for any species in any area, subject to statutory and common law controls.

Another limit to the QMS property rights regime is that it confers only "operational" rights. David Hawkey examines the difference between "collective-choice" property rights and "operational" property rights.[26] He sees "collective-choice" rights as those which allow participation in the making and enforcing of rights and rules. By contrast, "operational" rights allow only the use of the resource. At present, the property rights conferred upon fishers in New Zealand are of the operational rights type.

2 *The Government Regulation Component*

This is where the solution of government regulation enters the equation. The QMS is managed by the Ministry of Fisheries and is

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25 Peter H Pearse above n 4, 110.

26 David Hawkey above n 2, 11.

controlled by the Fisheries Act 1983, the Fisheries Act 1996, the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 and various other statutes and regulations. The Ministry plays a large regulatory role under the QMS regime, from implementing the legislation to maintaining a registry of the transfer of ITQs. The Ministry is also responsible for setting the TAC and TACC, and for obtaining the necessary research information to set these figures.

To cover these and other industry related costs, the government began to collect a levy from the fishers and boat owners in 1994. This was called the 'cost recovery system'. Under this system, the industry reimburses the government for money spent on maintaining the commercial fishing industry. The 'cost recovery system' is run on an 'avoidable cost principle'. This means that the cost of any government expenditure which would not have been undertaken, but for the industry, is attributable to the industry.

Under the present QMS there is a lot of discussion between the government and the commercial fishing industry as to the levies to be paid, the setting of the TAC and TACC, the incorporation of the other species into the QMS and more recently, talks of the devolution of non-core functions under the Fisheries Act to the industry.

3 *The Industry Control Component*

This brings in the third of Hardin's responses to the 'tragedy of the commons'. The commercial fishing industry in New Zealand is already fairly well organised into groups which represent the interests of commercial fishers. These include the New Zealand Seafood Industry Council Ltd (SeaFIC), Seafood Consortium Limited and the New Zealand Rock Lobster Industry Council. Some groups conduct their own research and others collectively lobby the government for changes to the QMS system. There are also a number of publications published by the industry to discuss current issues and keep fishers informed of new policies and regulations as well as the latest TAC and TACC settings.

At present the involvement of these organisations in fisheries management decision making is usually as a party to government consultation or as a lobby group. Currently there are calls from the industry and some government officials to devolve certain government provided functions into industry control. The argument in favour of this is that, if the industry is paying the government levies under the cost recovery

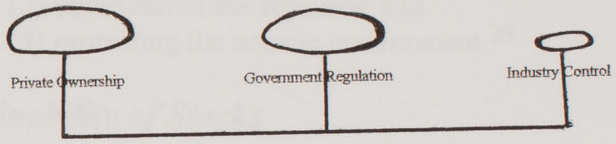
programme, they should, have some reciprocal responsibility and control regarding the way that the money is spent.

If the proposed devolution goes ahead it would result in greater emphasis being put on the third response to Hardin's 'tragedy' model, although property rights and government regulation would still play a part.

4 Conclusion

At present the New Zealand system of QMS is a mixture of all three of Hardin's solutions. The components work together in a system of limited property rights governed by a central Ministry, with a consultation and discussion relationship between the various parties.

The present QMS in New Zealand can be diagrammed as follows:



This illustrates that the two biggest parts of the system are government regulation and private property rights. At present the amount of control exercised by stakeholders is much more limited.

V WHAT ARE THE OBJECTIVES OF NEW ZEALAND FISHERIES MANAGEMENT?

The goal of solving the 'tragedy of the commons' is part of a wider picture of ensuring the sustainability of the natural resource in question. The essence of the 'tragedy' is that it compels each person involved to exploit the resource without limit - in a world that is limited.[27] This results in undermining the sustainability of the resource. Dealing with the problem of open access is a part of ensuring its sustainability, but there are also other considerations to be taken into account.

This section of the paper examines the objectives of New Zealand fisheries management under the Fisheries Act 1996. The paper then

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27 Garrett Hardin above n 1, 1244.

analyses whether the current combination of private property rights, government regulation and internal control achieves these aims.

A Section 8 of the Fisheries Act 1996

Section 8 of the Fisheries Act 1996 indicates that the purpose of that Act is to "provide for the utilisation of fisheries resources while ensuring sustainability". The section goes on to indicate that 'ensuring sustainability" means meeting the reasonably foreseeable needs of future generations and avoiding, mitigating or remedying any damage to the aquatic environment.[28]

This purpose provision incorporates several ideas which are important to fisheries management in New Zealand. These ideas are;

(1) sustainability of stocks;
(2) utilisation of the resource; and
(3) protecting the aquatic environment.[29]

B Sustainability of Stocks

This represents the 'environmental bottomline' in New Zealand fisheries management. Without sustainability as a primary objective, the other two goals of fisheries management have no anchors or limits. The sustainability objective ensures that fish populations are able to replenish themselves and that the aquatic environment retains some balance between different species. Both the environmental and commercial aspects of New Zealand fisheries depend on this.

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[28] **8. Purpose** - (1) The purpose of this Act is to provide for the utilisation of fisheries resources while ensuring sustainability.

(2) In this Act -

"Ensuring sustainability" means -

(a) Maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and

(b) 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 well-being.

[29] Section 8 and s 9 Fisheries Act 1996.

Adequately dealing with the problem of open access fisheries is essential for maintaining sustainable fish stocks. One of the primary methods of ensuring sustainability in fisheries is to adequately define the rights, responsibilities and roles of each stakeholder (including the government), and to then effectively enforce those rights and obligations. Another connected objective of New Zealand fisheries is to obtain enough accurate information to adequately assess the condition of various fish stocks and the compliance of fishers around New Zealand. This enables conclusions to be drawn concerning the effectiveness of the sustainability policies.

C Utilisation of Fisheries

After sustainability, this is perhaps the most important objective for New Zealand fisheries. This is reflected in the way that the purpose section specifically provides for the utilisation of fisheries. The fishing industry plays a large part in our national economy. With the fourth largest Exclusive Economic Zone (EEZ) in the world, New Zealand's fishing industry is a very important asset, both to those involved in the harvesting of fish and to the general public.

The industry earns more than $1.2 billion in exports plus $125 million in domestic sales per year. More than 10,000 people are employed by the industry and approximately 1800 vessels are used in commercial fishing.[30]

Commercial fishing is not the only utilisation of fish stocks in New Zealand. Recreational fishing is also very important with more than 1 million New Zealanders considered to be recreational fishers.[31] Maori customary fishers are also fundamental stakeholders in New Zealand's fisheries. The rights of these fishers to continue to access the nation's fisheries and exercise their rights to fish should also be a very important objective of New Zealand fisheries management.

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[30] Luxton, John "1998 Conference Address" (July 1998) 6:6 Seafood New Zealand, 28.

[31] New Zealand Recreational Fishing Council (Inc), Submission to Primary Production Select Committee on Fisheries Amendment Bill 1998, 1.

D Protection of the Aquatic Environment

Although this paper focuses on commercial fish stocks under the QMS, it is important to remember that these do not exist in isolation. Each fish stock forms part of a complex ecosystem which makes our marine life so valuable. "Scientists world-wide now recognise New Zealand marine collections to be amongst the most comprehensive of their kind for any EEZ....almost daily species new to New Zealand or to science in general are being discovered..."[32]

The protection of New Zealand's marine biodiversity is important for several reasons. First, it is important in its own right because the intrinsic value of the marine environment is something to be valued and preserved. Secondly, the medical and scientific uses of many of these marine species are at present undiscovered. These plants, animals and organisms could potentially be very important in developing new technology or in curing disease. Thirdly, the manner in which the marine ecosystem interlinks means that the future viability of our commercial and recreational fishing industry depends on the delicate balance of the marine foodchain being maintained.

E Conclusion

Based around a central tenet of sustainability, the objectives of the Fisheries Act 1996 also provide for: the utilisation of fisheries resources by several sectors of society, the protection of the aquatic ecosystem and the gathering of information to monitor and achieve the objectives of the Act.

VI DOES THE FISHERIES ACT 1996 ACHIEVE THESE OBJECTIVES?

A Events Which Followed the Passing of the Fisheries Act 1996

The Fisheries Act 1996 was passed after a lengthy process of review which began following the general election in 1990. The first effort

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[32] O'Shea, Steve "The Deepsea Finned Octopoda of New Zealand" (October 1998) 6:9 *Seafood New Zealand* 26, 28.

to review the legislation was made by a task force which reported back in 1992. The recommendations of that task force were the subject of a draft bill in 1994, but this did not receive endorsement from the government. The cost recovery portion of that bill was introduced later that year and a revised bill was presented by the Ministry in 1995. This version of the bill was passed in August 1996 to become the Fisheries Act 1996. The Act was to come into force over a period of time as implementation procedures were established.

As the Bill was passed, the Ministry of Fisheries had just completed a split from the Ministry of Agriculture to become a separate government department. Under a new Minister of Fisheries, the Honourable John Luxton, the Ministry began to enquire into the costs which would be involved in implementing the legislation. Due to concern over the costs of implementing the Act, several discussion papers and cabinet papers were circulated voicing options for reform.

In early 1998 an independent reviewer was appointed to "simplify the Act and determine how best to improve the efficiency of the commercial fisheries regime whilst building effective partnerships with commercial fishers and other stakeholders."[33] The reviewer found that the Fisheries Act 1996 did not meet the government's fisheries management objectives. He stated that if the 1996 Act was to be implemented in its current form it was likely that the purpose of the Act would be undermined.[34]

The problems in the legislation fall into two broad categories.[35] The first of these concerns the "framework" problems with the organisation and administration New Zealand fisheries management. These include decision making processes and transparency of decision making. The second group of problems relates to the "operational" provisions of the Act including the cost recovery regime and fisher compliance with the Act.

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[33] Tony Hartevelt, Fishing for the Future: Review of the Fisheries Act 1996 - Report of the Independent Reviewer of the Fishereis Act to the Minister of Food, Fibre, Biosecurity and Border Control (Wellington, September 1998) 17.

[34] Tony Hartevelt above n 33, 18.

[35] Tony Hartevelt above n 33, 18.

B The "Framework" Problems Present in the Fisheries Act 1996

1 The Problem of Piecemeal Legislation

The Fisheries Act 1996 was drafted with the aim of simplifying the law relating to fisheries. It has not done this. Instead, it has contributed to a body of legislation which is becoming increasingly convoluted and confusing. The 1996 Act was intended to replace the Fisheries Act 1983 and its many amendments. However, many provisions of the 1996 Act are not yet in force. Some of these provisions will be repealed without ever being used. In general, the review and substantial amendment of legislation, within a short period of it being passed indicates that the practicalities of the content were not given detailed thought.

The piecemeal nature of the legislation coupled with the frequency of amendments and the complexity of the subject matter, means that very few people without a legal background have a thorough understanding of the law relating to New Zealand fisheries. As many of the people affected by fisheries legislation; for example, fishermen, fish retailers, skippers and boat owners, do not have legal experience, it is very difficult for them to know their exact legal obligations.

Complex legislation tends to alienate those affected by it. Legislation which takes long periods of time to understand, removes compliance incentives. This in turn can affect the likelihood of fisheries management objectives being achieved.

Complex and frequently updated legislation is also hard to annotate. It runs the risk of being hard to access in the correct form. This type of legislation also results in increased costs for the Ministry involved, in terms of producing brochures to explain the legislation, and fielding enquires regarding individual's rights and obligations.

It is interesting to note that the continuation of piecemeal fisheries legislation comes at a time when the government is trying to abandon its formerly confrontational relationship with fisheries stakeholders in favour of a more co-operative approach. The Fisheries Act 1996 does nothing to help achieve this objective. It merely serves to further alienate those interested in New Zealand fisheries.

2 Vague definition of "sustainable management of fisheries resources"[36]

Section 8 of the Fisheries Act sets out a general definition of the purpose of the Act. However, this definition is not given a concrete footing in government policy papers or reports of TAC decisions. This lack of clarity relates especially to the provisions requiring the mitigation, avoidance or remedying of any adverse effects to the environment. Does this provision include all effects of fishing? Are very minute effects eliminated? Must attempts be made to avoid or remedy the effect before exercising the mitigation option?

A comparison can be made here with the similar purpose provision of sustainability under the Resource Management Act 1991.[37] In that case, there has been considerable academic discourse on the meaning and implementation of the purpose provision.[38] The interpretation to be given to the section has also been considered in many decisions of the Planning Tribunal and the Environment Court.[39] The same is not true of the purpose of the Fisheries Act 1996.

Although a general purpose statement is acceptable, and indeed is desirable in the Act itself, it is necessary to elaborate on this to "ensure that stakeholders share a common understanding of the outcomes sought by government for fisheries management".[40]

3 Lack of transparency in decision making

This especially concerns TAC and TACC decisions made by the Minister, but also applies more generally to other sustainability decisions. Decisions regarding an increase or reduction in TAC or TACC are usually accompanied by a small explanation of stock levels justifying the decision.

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36 Tony Hartevelt above n 33, 19.

37 Part II Resource Management Act 1991.

38 For example, Simon Upton "Purpose and Principle in the Resource Management Act" (1995) 3 Waikato LR 1995, 17.

39 For example, *Marlborough Ridge Ltd v Marlborough District Council* [1997] NZRMA 25 and *NZ Rail v Marlborough District Council* [1994] NZRMA 70.

40 Tony Hartevelt above n 33, 19.

According to the Fisheries Act 1996 there are various considerations that the Minister must take into account before making sustainability and utilisation decisions. These include the maintenance of dependent or associated species at a level which ensures long-term viability, the maintenance of biological diversity, the protection of significant habitats and the certainty or adequacy of the scientific information available.[41] The Minister must also have regard to regional plans and policy statements, and management strategies made under the Conservation Act 1987.[42] Consultation with interested groups is also required under the Act[43] and usually takes place in the six months prior to the decision being made.

If the Minister wrote a report as part of his decision, detailing the considerations he has taken into account, the weight he has put on each consideration and the reasons for this decision, the process of making TAC and TACC decisions would seem less arbitrary. This could be similar, although in a less detailed manner, to the reports made by District Councils regarding plans, plan changes and resource consents under the Resource Management Act 1991. The reasons behind ministerial decision making would be clearer and this would lead to increased accountability for the decisions by the Minister. At present no provision requiring such reports is included in the Fisheries Act 1996.

4 Lack of rights definition

Another major problem with the Fisheries Act 1996 is that it fails to clearly define the rights and obligations of each stakeholder. For those involved in the commercial fishing industry this means that their livelihood is less secure. Without the knowledge that legislation will not be drastically changed to reduce the value of their assets[44], industry stakeholders are more reluctant to invest in research and sustainability

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41 Section 8, s9 and s10 Fisheries Act 1996.

42 Section 11 Fisheries Act 1996.

43 Section 12 Fisheries Act 1996.

44 One example where this has already happened was the change from fixed ITQs to percentage based ITQs. This made quota holders subject to the fluctuations of TAC levels. These are more likely to decrease than increase. These changes were made in 1990 without compensation for quota holders.

measures. They are also less likely to work with the government in a consultative manner over future fisheries developments.

Despite the lack of certainty concerning the rights and obligations of commercial fishers, the Fisheries Act 1996 retains a commercial focus. Other interest groups such as recreational fishers, marine scientists, those exercising Maori customary fishing rights and conservationists are even less certain of their rights and obligations under the Act. For example, what right does a conservation group have to request research into sustainability measures? How fully are recreational fishers allowed to participate in consultation processes?

The rights and responsibilities of the government under the Act are also poorly defined. The extent to which the government can interfere in the running of the commercial fishing industry is unclear. The extent to which the government can modify the rights of other parties without compensation is also unclear.

Defining the rights of the different interest groups involved with New Zealand fisheries management paves the way for development and reform to be undertaken on a consensual basis as opposed to the confrontational, adversary approach which is currently taken.

5 *Lack of Scientific Information*

The provision of scientific information is very important in achieving the goals of New Zealand fisheries management, especially with regard to the sustainability provisions. The Fisheries Act 1996 includes provisions which state that, in the absence of adequate scientific information, a precautionary approach to decision making should be taken, but the Act neglects to place an obligation on the government to collect as much information as possible on various species.

The government is restricted by numerous other demands on a fixed pool of resources, but it must be acknowledged that New Zealand fisheries management cannot move forward without further research regarding fishstocks, biodiversity and the influence of fishing on the environment. The maintenance of current data is also important to ensure that changes in populations or activity are noted.

C The "Operational" Problems Present in the Fisheries Act 1996

These problems relate to the practical running of the QMS. There is some overlap between the "framework" and the "operational" provisions, but these are in general more practically based.

1 Cost Recovery System Principles

The Cost Recovery system was introduced in 1994 and is based on a principle of "cost avoidance". This means that all costs which would be "avoided" were it not for the commercial fishing industry, are recoverable.

This principle neglects to attribute costs to those who actually incur them and instead levies these off the industry as a whole. This results in inequities of cost recovery payments, under which some fishers, company owners and boat owners pay a cost recovery levy which is disproportionate to the benefit they receive.

The cost recovery scheme has always been an issue of contention between the Crown and the commercial fishing industry. This is in part because of the complex methods of allocating and apportioning the costs. "Presently, cost recovery is one of the main drivers of the Ministry's workload, rather than being a mechanism to recover costs."[45]

Industry representatives have also argued that the cost recovery scheme is overly expensive and is inefficient because the Crown has no incentive to contract for competitively priced services.[46] Many of the services for which costs are recovered are provided directly by the Crown. The industry argues that, in this capacity, the Crown is a monopoly provider and that this situation results in inefficient and ineffective management of fisheries services.

2 Quota Busting

This is one of a number of compliance problems which continue to occur under the Fisheries Act 1996. A lack of compliance with the

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[45] Tony Hartevelt above n 33, 59.

[46] Report of the Joint Working Group to Develop Fisheries Cost Recovery Rules (unpublished, Wellington, 22 July 1999) [Fisheries Cost Recovery].

fundamental rules of the QMS endangers the sustainability of fishstocks and risks contamination of data collected by researchers assessing fish populations.

Quota busting occurs when fishers catch more fish than are allocated to them under their ITQ. The Fisheries Act 1996, provides that fishers have to sell their fish to registered suppliers and both parties must keep records of the fish they sell or receive. However, it is tempting for fishers, especially smaller quota holders, to quota bust because the chances of getting caught are very small.

The vast size of the New Zealand EEZ and the number of fishers compared to the physical and monetary monitoring resources, makes effective monitoring and enforcement extremely difficult. To effectively monitor New Zealand's entire EEZ would not be economically justifiable. For fishers wanting to break the law by quota busting the benefits often seem to out weigh the costs.

3 The By-catch Problem

The by-catch problem is also a feature of the current QMS in New Zealand. The nature of many fishing areas means that it is difficult to target one species of fish without catching sizeable quantities of other fish. However, many fishers do not have the quota to cover these other fish catches. This is in part due to the way in which fisheries quotas were allocated when new species were introduced to the QMS.

The quota allocation was based on previous catch histories and did not include fish stocks which had not been discovered or were not commercially exploited at the time. Fishers with very small quota allocations were also encouraged to sell them to the government when QMS was introduced.

The by-catch problem has been dealt with by the Fisheries Act 1996 through the implementation of a by-catch trade off regime. Under this system, fishers who do not have quota for all of the by-catch they harvest, are able to trade the by-catch for some of their quota. The aim of this scheme is to encourage fishers to land the fish instead of dumping them, but at the same time to discourage deliberate overfishing. However, the by-catch trade off often results in the catch figures for common by-catch species far exceeding their TAC. This endangers the future sustainability of the species.

4 High Grading

This involves the dumping of fish which are not of marketable quality or size because they take up quota space. This occurs particularly in high value fish stocks such as snapper. The practise threatens the sustainability of the species because more stock is caught than is actually recorded. This practice also damages the integrity of catch data which is used to establish sustainability measures.

Fishers argue that it is economically ineffective to land and process fish that are unable to be used because they do not meet their quality criteria.[47]

5 Localised Race for Fish

This is a common feature of most QMS systems. The 'race for fish' which occurred under open access regimes is transferred into a race to get the most fish for the least effort. This means that areas where fishstocks are abundant, high quality and well established, will be quickly depleted because fishers are able to catch more high quality fish for less effort.

This practice carries serious consequences. As a result of the depletion of fish stocks in certain areas, there are consequential effects on the surrounding ecosystems, dependent species and the ability of stocks to redevelop in that area. There is also additional damage caused by a multitude of fishing boats operating in the area.

D Conclusion: Does the Fisheries Act Achieve its Objectives?

The Fisheries Act 1996 has not achieved the objectives set out in sections 8, 9 and 10 of the Act. The Act remains cluttered and clumsy. Some of its provisions pose a danger to the main purpose of the Act - sustainable utilisation. The Act fails to define the rights and obligations of parties involved in New Zealand fisheries management, and it does not provide for transparent and accountable government decision making.

However, many of the problems associated with the Fisheries Act 1996 do not necessarily stem from the combination of tragedy responses

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47 Sealord Group Limited, Submission to the Primary Production Select Committee on the Fisheries Amendment Bill 1998, 19.

which have been used in New Zealand to manage fisheries. The cost recovery regime established mixture between government regulation and private property rights Compliance problems are a common feature of the government regulation response, but these would occur to a certain extent with the use of any combination of the responses.

The amendment to the Fisheries Act 1996 seeks to change the combination under which New Zealand fisheries are managed. Presently under the 1996 Act, fisheries are largely managed through private property rights combined with government regulation. The amount of control from the stakeholders is minimal, and is mostly limited to consultation on matters such as TAC and TACC setting, cost recovery issues and by-catch provisions.

E Review and Reform of the Fisheries Act 1996

In 1998 an independent review of New Zealand fisheries management was originally contemplated due to the costs of implementing the Fisheries Act 1996, however, following internal department reviews, discussion papers and cabinet reports it was found that amendments to the Fisheries Act 1996 would need to be more far-reaching.

Following the presentation of the independent review in September 1998, an amending bill was drafted incorporating most of the reviewer's recommendations. It was proposed to make changes in several stages, addressing the definition of the rights of the parties involved, cost recovery and partial devolution in the 1998 Bill, and then continuing to discuss plans for co-management and recreational fisheries at a later stage.

This move represents a continuation of the creation of piecemeal legislation which can only add complexity to a part of the law which seems to be in a constant state of reform. The way in which reform matters were separated has also attracted criticism from environmental groups who believe that the partial devolution to fall within the Fisheries Amendment Bill 1998, effectively pre-empts the consultation procedures which will take place to discuss co-management.[48]

The Fisheries Amendment Bill 1998 was introduced to the House of Representatives in December 1998, and was referred to the Primary Production Select Committee on 15 December 1998. The Bill was

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[48] Interviewee 4.

amended in Select Committee and was passed through the House under urgency on 4 September 1999.

VII THE FISHERIES AMENDMENT ACT 1999

The Fisheries Amendment Act 1999 seeks to change the balance upon which New Zealand fisheries are presently operated. This change involves the reduction of the role that the government plays and an increase in the role of industry and other stakeholders. The change leans more towards a combination of private property rights and internal control of those rights by stakeholders.

The Bill makes several significant changes to the Fisheries Act 1996. This section of the paper identifies those changes and looks at whether they improve the quality of the regime in terms of it achieving its objectives, or whether they simply bring new problems to the legislation.

A The Changes Incorporated in the Act

This section of the paper looks at three major changes which have been made under the Fisheries Amendment Act 1999. The changes are then analysed to find whether they succeed in solving any of the current problems with the Fisheries Act 1996, or whether they create new problems in their own right. These changes are:

(a) Devolution of certain functions of the Ministry of Fisheries CEO to the industry;[49]

(b) The provisions allowing the setting of an alternative TACC to permit fishing below B_{MSY};[50]

(c) The provisions allowing for the development of fisheries plans.[51]

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49 Part 15A Fisheries Act 1996.

50 Section 14A to 14C Fisheries Act 1999.

51 Section 11A Fisheries Act 1999.

B Devolution of Functions to Approved Service Delivery Associations

The devolution of fisheries services, particularly research services, has been one of the most contentious issues surrounding New Zealand fisheries management. The idea is controversial for many reasons.

1 Reasons for Concern Over Devolution

First, there is a concern that allowing the users of a resource to control themselves puts the sustainability of New Zealand fisheries at risk. This concern is connected to the assumption that commercial fishers are primarily interested in the economic gains to be achieved from fishing, rather than in the conservation of fishstocks and sustainable management.

Secondly, there is a concern that there will be a loss of accountability if services are devolved. At present the Minister of Fisheries is an elected Member of Parliament who is accountable to the general public for his actions. The same cannot be said of the fishing industry. It is thought that if research services are devolved to the industry, then the integrity of the databases could be compromised and research could become increasingly client driven

Thirdly, there is a concern that New Zealand fisheries will be completely dominated by the commercial industry leaving no room for other interested parties such as scientists, conservationists, recreational fishers and Maori fishers to have their say in management decisions.

2 Devolution Under the Fisheries Amendment Act 1999 - What Does It Involve?

Part 15A of the Fisheries Act contains the provisions which relate to devolution. The Act provides that any functions, duties or powers of the Chief Executive which are either:

(a) exclusively associated with the administration of quota; or

(b) primarily associated with the administration of commercial fisheries,

may be transferred to an approved service delivery organisation.

The powers are to be transferred by order-in-council at the discretion of the Minister of Fisheries, in consultation with the Minister responsible for the administration of the Environment Act 1986. The

definition of "specified functions, duties and powers" expressly provides that none of the functions, duties or powers of the Minister are to be devolved. This also applies to the powers conferred on fishery officers, honorary fishery officers and examiners.

An "approved service delivery organisation" (ASDO) must be an incorporated company made up of quota owners. It must be able to ensure that the functions devolved, will be carried out to acceptable standards. Prior to the transfer of any functions under Part 15A, the Minister must be satisfied that standards and specifications have been issued in relation to the specified duties, functions or powers. The Minister may request a bond from the ASDO which is sufficient to cover the transfer costs of the Crown.

The ASDO is responsible to the Minster for the delivery of the services devolved. They may perform those services either through their own employees or by entering into a contract with another individual, agency or body. The Minster can terminate the transfer of power by giving notice to the ASDO. Notice can only be given if the ASDO has failed to comply with the standards and specifications, failed to comply with directions, failed to increase the bond if requested to, or if there is a serious problem with the organisation.

3 *Critique of the Devolution Provision*

The argument in favour of devolution is that the fishing industry has reached a point where the agencies suitable to administer fisheries management have been established by the industry. The industry[52] and the Ministry of Fisheries[53] are of the opinion that many of the transaction costs associated with the cost recovery regime could be avoided if the industry either, provided certain services itself, or employed others to provide the services on their behalf.

The industry also argues that it is more likely to comply with management initiatives which it has had a say in developing. Industry

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52 New Zealand Seafood Industry Council (SeaFIC), Submission to Primary Production Select Committee on Fisheries Amendment Bill 1998 (22 February 1999) 17 [SeaFIC].

53 Fisheries Cost Recovery above n 47, 2.

members believe that fisheries management will be enhanced through industry management.[54]

However, there are also disadvantages to the devolution of fisheries services under the provisions of the Fisheries Amendment Act 1999. Originally the devolution provisions in the Fisheries Amendment Bill 1998 allowed for the possible devolution of the functions of both the Chief Executive and the Minister.[55] This was opposed by conservation groups and marine scientists.[56] The scope of the devolution under the Fisheries Amendment Act 1999 has been reduced to the functions of the Chief Executive, but the provisions themselves remain very vague.

The functions of the Chief Executive which may be devolved have not been named in the Act. The functions of the chief Executive were to be included in a Schedule to the Act, but this provision was removed in the Select Committee stage.[57] It is specified that the functions may be statutory or non-statutory. This which leaves the scope very wide for devolution. The provisions in Part 15A are narrowed a little by the restrictions on the type of functions to be devolved, but the wording "[p]rimarily associated with the administration of commercial fisheries"[58]lends itself to wide interpretation.

The Part 15A amendments stipulates that appropriate specifications must be in place before any function can be devolved. The setting of these specifications and standards involves a consideration of the purpose section and the environmental and information principles of the Fisheries Act 1996. The Ministry will also be responsible for monitoring and auditing any devolved service delivery to ensure that these specifications are met. The

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54 SeaFIC above n 53, 17.

55 Environmental and Conservation Organisations of New Zealand, Submission to Primary Production Select Committe on Fisheries Amendment Bill 1998 (21 February 1999) 10 [ECO Submission].

56 ECO Submission above n56 and New Zealand Marine Science Society, Submission to Primary Production Select Committee onFisheries Amendment Bill 1999 (20 February 1999).

57 Interviewee 2.

58 Section 296A Fisheries Act 1996.

cost for this auditing and monitoring will largely be met by the industry under the cost recovery scheme.[59]

The risk with this system is that the costs of accurately and effectively auditing and monitoring the ASDO could make the devolved service more expensive than the government provided service. As one of the aims of devolution is to reduce the costs to the industry, a situation in which industry expenditure is increased could lead to the industry handing the functions back to the Minister for a return to government administration.

Part 15A of the Act specifies that an ASDO must be made up of quota holders. This effectively prevents other interested groups from taking part in devolution and having a hand in fisheries management. The Select Committee was of the opinion that this was appropriate considering the commercial rights holders had the greatest interest in the efficient and effective delivery of such services.[60] This is correct to an extent, but it can also be argued that other groups such as environmentalists have the greatest interest in seeing that the purpose of the Act (sustainable utilisation) is achieved.

At this time non-commercial organisations do not commonly have the resources or the management structure to provide many of the services which may be devolved. A consultation process regarding the making of standards and specifications could be a useful compromise, giving other interest groups some input while allowing the quota holders to mange the services within those specifications.

Under Part 15A of the Fisheries Amendment Act 1999, fisheries research is not likely to be devolved, however section 294 of the parent Act enables the Ministry of Fisheries to allow research services to be "directly purchased" by the industry.[61] There is little difference between devolution and direct purchase. In the case of direct purchase the Ministry is accountable for ensuring that the service is delivered, as opposed to accountability resting with the ASDO under devolution.[62] The

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59 Interviewees 2 and 3.

60 Fisheries Amendment Bill 1998, no 258-2, xi (Expanatory note).

61 Fisheries Amendment Bill 1998, no 258-2, xi (Explanatory note).

62 Ministry of Fisheries, Departmental Report on Fisheries Amendment Bill and Supplementary Order Paper No 164, 1 [Departmental Report].

Departmental Report on the Fisheries Amendment Bill and Supplementary Order Paper No 164 indicates that direct purchase will be used for research services.

The proposed devolution of research raises concerns that research will become client driven. This would mean that organisations contracted to provide the research would be reluctant to provide findings which could result in TACC lowering for fear of not having their contracts renewed the following year. Using direct purchase to provide research services could also result in some research being delayed or curtailed because the findings are likely to be detrimental to the industry.

C *Fishing Below BMSY*

The MSY or the Maximum Sustainable Yield is the greatest yield that can be achieved over time, while maintaining the stocks productive capacity, having regard to population dynamics and environmental factors influencing stock. The Fisheries Act 1996 provided that the Minister was to set the TAC at a level which would maintain MSY or work towards achieving MSY.[63]

1 The "Fishing Below BMSY" Provision

Sections 14A to 14C of the Fisheries Amendment Act 1999 provide for an "Alternative Total Allowable Catch" (ATAC) to be set for some by-catch stocks. This ATAC will be set at a level below BMSY, but at a level high enough to ensure the long-term viability of the fishstock. The aim of this change is to enable a higher TAC to be set so that fishers in that area can catch a sufficient quantity of their target fish.

The Act provides that an ATAC will not be set unless it has the approval of at least 95% of quota holders. The Ministry believes that the provision will reduce dumping of excess by-catch stock which are no longer able to be traded for quota under the by-catch trade off

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63 Section 13 Fisheries Act 1999.

provisions.[64] In turn this will increase the accuracy of the information obtained on stock levels by way of increased reporting.

Before setting the ATAC the Minister must be satisfied that the stock is a by-catch species and not a target species, that the total benefits of the ATAC outweigh the costs, that there will not be any detrimental effects to non-commercial interests, that the stock will be maintained at a level which ensures long-term viability and that the purpose of the Fisheries Act 1996 would be better achieved by setting an ATAC.

2 *Critique of Fishing Below BMSY*

The explanatory note to the Fisheries Amendment Bill 1998 explains that the policy of ATACs was introduced in order to allow fishers to take larger quantities of their target stocks. Without this mechanism it is argued that the TACs of some by-catch stocks will often be breached. This could result in two situations. First, it could result in the closure of some target fisheries and secondly, in the face of probable closure fishers would be more likely to dump by-catch, damaging the integrity of population databases and creating sustainability risks.

Fishing certain by-catch species below BMSY may have several economic and reporting advantages, but there are also serious disadvantages associated with the practices. Ministry officials have commented that, due to the strict criteria that must be achieved to the satisfaction of the Minister before an ATAC can be introduced,[65] the provision is unlikely to be exercised often.[66] However, there is pressure from the industry to make the use of below BMSY fishing applicable a wider range of situations.[67]

The primary disadvantage of setting ATACs is that it does not place enough emphasis on the role of each fish species within the marine ecosystem. "Species may have important ecological functions. If you reduce them significantly and depress populations substantially, these

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64 Departmental Report above n 62, 1.

65 Especially the provisions in s14A (5) (e) which relate to the BMSY level better achieving the purpose of the Act.

66 Interviewee 3.

67 Fisheries Amendment Bill 1998 No258-2, vi (Explanatory note).

ecological functions may cease, with consequential adverse effects occurring through the ecosystem..."[68] The Ministry does not yet have enough information on the functions of marine ecosystems to be able to confidently state that they will not be irreversibly affected by ATACs.[69]

This lack of information also affects the certainty that the stock levels will not be driven so low as to result in the collapse of the stock in that area. The explanatory note of the Fisheries Amendment Bill acknowledges a low risk of collapse. Are economic factors important enough under the purpose provisions of the Act to allow even a "low" risk of collapse?

The purpose of the Fisheries Act 1996 is to provide for the utilisation of fisheries *while* ensuring sustainability. Ensuring sustainability includes avoiding, remedying or mitigating any adverse effects of fishing on the aquatic environment. Utilisation includes conserving, using, enhancing and developing resources to enable people to provide for their social, economic and cultural well-being. The setting of ATACs allows a select group of people to provide for their economic and social well-being while increasing the adverse effects of fishing on the aquatic environment. Fishing stocks below B_{MSY} goes against the purpose of the Fisheries Act 1996.

D The Development of Fisheries Plans

1 How do Fisheries Plans Work?

Section 11A of the Fisheries Act 1996 makes provision for the implementation of fisheries plans. This is one of the only changes which has, prima facie, received support from most interest groups. Differences among submitters tended to focus on the contents of the plans rather than the plans themselves.

Fisheries plans may include management objectives to support the purpose of the Act, strategies to achieve those objectives, performance criteria, conservation or fisheries services or contingency services. Therefore, plans can include recommendations for the settings of TACs and TACCs, rules to manage interaction between different sectors and

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68 ECO Submission above n 57, 5.

69 Departmental Report above n 63, 2.

criteria to measure the achievement of objectives. Plans can be made for one or more fish stocks, fishing years or fishing areas, or a combination of these[70].

Plans are to be given to the Minister for approval. Once approved the Minister must take the plans into account before setting or varying any sustainability measure, or before making any decision or recommendation under the Fisheries Act 1996. This means that, although plans are not binding on the Minister, they will carry some weight when decisions are being made.

2 Critique of Fisheries Plans

In general, the provision for fisheries plans are a good idea. They can help to clearly set out the objectives of New Zealand fisheries management and can define the roles and responsibilities of various stakeholders. They can also provide a forum within which the voices of all interest groups can be heard. The potential of fisheries plans is great, however, it is debatable whether they will live up to that potential.

The Fisheries Amendment Act 1999 neglects to mention who will draft the fisheries plans, and what sort of consultation provisions the draft plans will be subject to. The Ministry of Fisheries has not allocated money for the formulation of fisheries plans so it is likely that these plans will be drafted by the industry.[71] If the plans are made by the industry two situations may occur.

First, the plans may be made by the industry after efforts have been made to consult all interested parties and take account of their views. Considering the polarisation of opinion which has characterised most fisheries issues it is unlikely that the stakeholders will reach a consensus on any matters of significance. This would result in plans which, although weighty, would not contain guidelines and information on key areas of fisheries management.

Secondly, the industry could make fisheries plans which address the fundamental management issues, but which have not been made in consultation with other stakeholders. These plans would hold limited

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70 Section 11A Fisheries Act 1996.

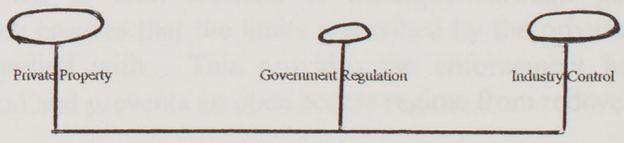
71 Interviewees 2 and 3.

weight with the Minister when decisions were made and would effectively serve as an additional industry lobbying tool.

The Primary Production Select Committee considers that "it is unnecessary to limit the source of proposals for fisheries plans by requiring all plans to be developed by the Government in consultation with stakeholders."[72] However, a system similar to that undertaken by District Councils when producing district plans would ensure that all parties were consulted, and their views were taken into account by an unbiased, distanced decision maker. Making plans along these guidelines would be a more costly exercise, but it would result in plans which fairly reflected the opinion of all parties interested in New Zealand fisheries management. These plans would carry considerable weight when the Minister made decisions. Such plans could mark a big step forward for the clarity, transparency and accountability of New Zealand fisheries management.

VIII CONCLUSION

The Fisheries Amendment Act 1999 marks a fundamental shift in New Zealand fisheries management. The New Zealand approach to fisheries management is made up of a combination of the three responses to Hardin's 'tragedy of the commons'. It operates primarily as a government regulated private property regime with consultation amongst interested parties. However, the latest set of ammedments provides for a shift in the dynamics of this combination. The Fisheries Amendment Act 1999 puts mechanisms in place to transfer many of the government's fisheries management obligations onto the industry. This will be a continuing process with discussion and consultation regarding co-management to take place early in the year 2000.[73] The amended system of New Zealand fisheries management can now be diagrammed as follows:



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72 Fisheries Amendment Bill 1998 No258-2, iii (Explanatory note).

73 Fisheries Amendment Bill 1998 No258-2, ii (Explanatory note).

This paper set out to examine the theoretical responses to Hardin's 'Tragedy of the Commons' in the practical context of New Zealand fisheries management. After reaching the conclusion that none of Hardin's three responses of privatisation, government control or internal control could work effectively on their own in a pure form, the paper proceeded on the assumption that, to effectively deal with the problem posed by the 'tragedy of the commons', a combination of all three responses was needed.

New Zealand provides an interesting example of the practical effects of the 'tragedy' problem because the fishing industry is important to the economy and because the size of New Zealand's EEZ is disproportionate to the population and monetary resources of the country. New Zealand's fisheries management is also going through a period of change which aids in providing useful comparisons.

The second part of this paper looked at the practical implementation of a combination of 'tragedy' solutions. The paper studied not only whether the combination solves the 'Tragedy of the Commons', but also whether it achieves wider objectives of sustainable utilisation.

A Does New Zealand's Fisheries Management System Adequately Deal With the Tragedy of the Commons?

New Zealand deals with the tragedy of the commons by allocating a private property right to fishers. This system works better than a licence or permit system because it, not only restricts the number of people able to use the fishery in a commercial manner, but also restricts the tonnage and the species of fish which they are able to catch. A personal property right gives fishers an asset which can appreciate or depreciate in value depending on their conduct. It provides an economic incentive, backed up by civil and criminal penalties, to fish sustainably.

The QMS in New Zealand is managed through government regulation which ensures that the limits prescribed by the private property rights are complied with. This provides the enforcement behind the 'tragedy' solution and prevents an open access regime from redeveloping.

Once the changes to New Zealand fisheries management have taken place, the limits on access to the commons and the amount of fish able to be taken from the commons will remain. However, the industry may have the power, through client driven research and persuasively presented fisheries plans, to change the limits of extraction from the commons. This would result in an increased risk to the sustainability of fishstocks. The key

to maintaining sustainability under industry control is the cohesiveness of the group.

If the positive utility to a single fisher of taking one more fish from the commons is +1 and the negative utility of the effect on the commons to that single fisher is only a fraction of -1, he or she will take the fish. However, if the group views the activities of one being the activities of the group as a whole then the positive utility of that one fisher taking another fish is lowered and the negative utility of the effect on the commons rises. Theoretically, this could lead to voluntary compliance amongst fishers with the catch limits set.

Both the New Zealand system as it stands and the new combination of responses to the 'tragedy of the commons' are able to adequately solve the problems of open access. However, this does not necessarily guarantee sustainability.

B Does New Zealand's Fisheries Management System Achieve its Objectives?

The main objective of New Zealand fisheries is "sustainable utilisation". When asking the question, "has New Zealand achieved sustainable utilisation of fisheries?", the real answer is that we do not know. The nature of the fisheries resource means that it is very hard to assess the exact populations of our fishstocks and compare them to populations in previous years on the basis of size, number and quality. The long-term effects of fishing on the marine ecosystem is also an area about which little is conclusively known.

Much of the current knowledge about New Zealand fish populations is based upon the catch and effort statistics of commercial fishers. An effort must be made to ensure that these figures are as accurate as possible. This means dealing effectively with the problem of by-catch, high grading, data fouling and over fishing. The industry is likely to present an optimistic picture of fish numbers because this information directly reflects the setting of the TAC which directly affects the income of its members.

To develop a truly sustainable fishery it is necessary to abandon the adversary approach which has characterised New Zealand fisheries to date. However, a co-operative approach does not equal a closed club which has only government and industry as members. Environmentalists, scientists, and recreational and Maori fishers also have a lot to offer the industry in

terms of experience and information. The rights and obligations of these parties must be clearly laid out. The current amendments to the Fisheries Act 1996 go some way to achieving this, however improvement is needed in defining the roles of non-commercial stakeholders.

C Conclusion

In conclusion, this paper argues that the best way to sustainably mange fisheries in New Zealand is on a more localised level through detailed fisheries plans which have been developed in consultation with all parties involved. This would inevitably include contributions from the industry, but would also allow scientists, environmentalists, recreational and Maori fishers to have important input.

The factors which influence fisheries change around New Zealand depending on the aquatic life which exists in the area, the importance of the biodiversity, the species which dominate the area, the depth of the water and numerous other factors. Controlling this on a national basis does not provide enough attention to detail, or allow for localised knowledge. The fisheries plans would still have to be administered and drafted by government officials to ensure that they represent an accurate picture of the area's fisheries, but this could be done either on a local government level.

It is important to remember that human nature and the nature of fisheries resources precludes a perfect system. There will always be uncertainty as to the exact number of fish there are in certain areas, and the extent to which the marine ecosystem has been altered by fishing. There will always be people who will overfish, misreport data or dump fish in the ocean.

By accepting that there is a need for more information about fisheries, by accepting that there are many interest groups in fisheries which lie outside the commercial sphere, and by accepting that the concept of sustainability represents the bottomline of New Zealand fisheries management upon which all other interests depend, New Zealand can develop a co-operative, participatory fisheries regime which ensures the sustainability of our fish stocks and the ecosystem which surrounds them.

LIST OF INTERVIEWEES

The names of interviewees have not been disclosed at the request of some interviewees in order to facilitate an open and honest exchange of information.

Interviewee 1:	Public law specialist
Interviewee2:	Ministry of Fisheries Official
Interviewee 3:	Ministry of Fisheries Official
Interviewee 4:	Member of environmental group concerned with fisheries