MOVING TO RIGHTS BASED MANAGEMENT: GREEN-LIPPED MUSSEL CASE STUDY

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ABSTRACT

The strategic direction of fisheries management in New Zealand is changing from merely ensuring sustainability to enabling New Zealanders to maximize the value they obtain from the sustainable use of fisheries resources and protection of the aquatic environment. Allocating rights and responsibilities is crucial to achieving this goal of maximizing value. Introducing green-lipped mussel into the quota management system (QMS) illustrates how the Ministry is implementing its new strategic direction and what fisheries management in New Zealand may look like in the future.

Green-lipped mussel poses distinct fisheries management challenges as it is harvested at both the juvenile and adult life stages. This paper focuses on the juvenile green-lipped mussel fishery. The fishery supplies seed stock for the New Zealand mussel farming industry. Non-QMS management of the juvenile mussel fishery consisted of a stop-gap permitting regime, method controls and closed areas. Despite there being no pressing sustainability concerns with the fishery, it has been introduced into the QMS to provide for efficient utilization and future development. Managing green-lipped mussel under the QMS aims to provide fishers a greater role in managing their fishery. Green-lipped mussel quota holders propose to set up a Quota Management Company and to prepare a fisheries plan to manage their collective interests. The green-lipped mussel case study illustrates the opportunities that can be created by moving to rights based management, and the challenges of getting there.

Keywords: quota management system, fisheries plans, green-lipped mussel, New Zealand.

CHANGES IN FISHERIES MANAGEMENT IN NEW ZEALAND

The principal piece of fisheries legislation in New Zealand is the Fisheries Act 1996. The purpose of the Act is:

> "to provide for the utilisation of fisheries resources while ensuring sustainability".

The legislation establishes a framework for making centralized decisions on 'sustainability measures', such as the Total Allowable Catch (TAC). The Ministry of Fisheries' focus has been on supporting the annual decision making processes to ensure the sustainable management of fishstocks.

However, the Ministry is now looking to move beyond meeting the minimum requirements of the Act to developing a framework that enables New Zealanders to optimize the value they get from fisheries resources. This change is reflected in the single goal identified in the Ministry's new Strategic Plan:

> "To maximise the value New Zealanders obtain through the sustainable use of fisheries resources and protection of the aquatic environment."

The goal is consistent with the purpose of the Act. But it goes further in lifting the bar higher with regard to what we want to achieve. Rather than just providing for utilization, the new strategic direction for the Ministry is to provide the framework and incentives that enables fishers and other stakeholders to decide how best to maximize the value of fisheries resources. A crucial step in this process is allocating rights

and responsibilities. The Ministry has identified the QMS as the preferred tool to do this, and has brought approximately fifty more species into the QMS since 2001.

GREEN-LIPPED MUSSEL CASE STUDY

Background

Green-lipped mussel is one of the species introduced into the QMS in October 2004. Green-lipped mussel dominates marine farming in New Zealand. Farmed mussels are New Zealand's second biggest seafood export earner, with US$110 million in export earnings in 2002. The main mussel farming areas in New Zealand are the Marlborough Sounds and Coromandel (refer to Figure 1). As well as being farmed, green-lipped mussel is part of wild fisheries at both the adult and juvenile life stages. Wild adult green-lipped mussel is mainly taken as a bycatch of the scallop and oyster dredge fisheries in the top of the South Island. Juvenile green-lipped mussel is harvested attached to seaweed that washes up on 90 Mile Beach in the far north of New Zealand. The focus of this paper is on the juvenile mussel fishery.

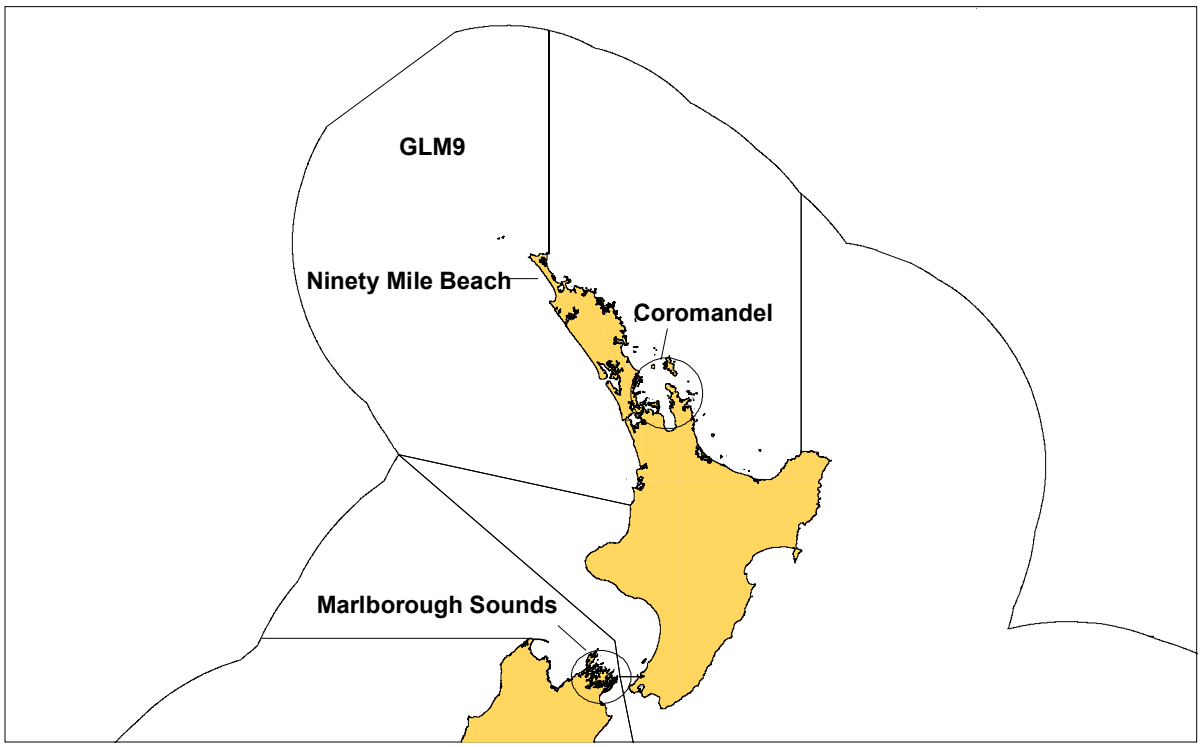

Figure 1. Location of the main mussel farming areas, the juvenile mussel fishery, and the GLM 9 quota management area

Since the 1970s juvenile mussels have been harvested at 90 Mile Beach to supply mussel farms in New Zealand. The juvenile mussels range in size from a pinhead to 2mm when harvested on seaweed scooped out of shallow water or collected off the beach. The juvenile mussels are placed on mussel farms for eighteen months, or until they have grown to a marketable size. The 90 Mile Beach fishery is of strategic importance to the mussel farming industry, as over 80% of juvenile mussels used on mussel farms in New Zealand come from 90 Mile Beach. In addition, the 90 Mile Beach fishery is a less expensive source of juvenile mussels than the alternatives of collecting mussel spat in the water column or using hatchery reared spat. The 90 Mile Beach fishery is currently small with around 90-120 tonnes of juvenile mussels (excluding the attached seaweed) harvested annually with earnings of US$500 000 a year.

Why take a rights based approach to green-lipped mussel?

Green-lipped mussel has been introduced into the QMS as part of the Ministry's strategy to allocate rights and responsibilities for managing fisheries. The QMS is the Ministry's preferred framework for managing fish stocks where the current management of the stock is likely to result in unsustainable fishing or inefficient utilization. The QMS is invariably the best framework for meeting the Government's management objectives and the purpose of the Fisheries Act. The Ministry sees little value in developing an alternative management framework outside the QMS with its transferable harvest rights, incentives for sustainable use, and established administrative regime. Consequently, 95 species have so far been brought under ITQ management, meaning there are few species outside the QMS that are targeted for sale.

When introducing a species into the QMS one of the first steps is to define the stocks that will be managed. For green-lipped mussel all life stages have been introduced into the QMS. Harvesting juvenile mussels without using structures in the water column, such as occurs at 90 Mile Beach, has been deemed to be fishing, and is included in the QMS. In contrast, using structures in the water column to collect mussel spat is deemed to be aquaculture, and will be managed under aquaculture legislation rather than the QMS. The quota management areas (QMAs) for green-lipped mussel are generally the same QMAs used for most other species. Thus, the GLM 9 QMA that includes the 90 Mile Beach fishery (refer to Figure 1) also includes historic adult green-lipped mussel fisheries. Management of GLM 9 therefore needs to cater for both juvenile and adult mussel fisheries.

The rationale for managing the green-lipped mussel in GLM 9 under the QMS was founded on providing a framework to improve the efficiency of harvesting on 90 Mile Beach in the face of growing demand for juvenile mussels. In the past the 90 Mile Beach fishery was managed under aquaculture permits that had to be issued to anyone that applied, making it effectively an open access fishery. The marine farming industry aims to quadruple production by 2020, causing a race to access a finite supply of juvenile mussels on 90 Mile Beach. Since 2001 the Ministry has received applications for permits to harvest 600 tonnes of juvenile mussels a year, an increase of 500% on current harvest levels. At the same time, the supply of juvenile mussels is increasingly variable due to climatic conditions, and especially biotoxin events that have recently closed the fishery for lengthy periods. The race to harvest the economically scarce juvenile mussels under an open access regime would result in increasing inefficiencies.

Introducing green-lipped mussel into the QMS

The process to introduce green-lipped mussel into the QMS has been long and difficult, taking nearly two years from November 2002 until October 2004. The mussel farming industry generally opposed GLM 9 entering the QMS. They did not see the need for QMS management when there was no pressing sustainability concerns, and they feared QMS management would restrict the supply of juvenile mussels and increase the price. In contrast, most existing fishers and indigenous Maori groups supported QMS introduction, as it would provide them with more secure access to the juvenile mussel fishery. After lengthy consultation the Minister of Fisheries decided the QMS was the best management framework for GLM 9.

The Ministry then embarked on a further consultation programme to establish the most suitable means of transitioning from the existing permitting regime for the 90 Mile Beach fishery and into the QMS. To provide for a smooth transition legislative amendment was needed to revoke the old permitting regime. The consultation process culminated in a meeting of the representatives of all parties with a commercial interest in the 90 Mile Beach fishery and the Ministry. At this meeting agreement was reached on how GLM 9 would be introduced into the QMS. The agreement included:

- Revoking the existing permit regime and all outstanding permits;
- Introducing GLM 9 into the QMS by legislation;
- Allocating quota for GLM 9 to past and existing fishers by legislation; and
- Setting the total allowable commercial catch (TACC) for GLM 9 at 180 tonnes.

As part of this agreement the Mussel Industry Council (MIC) representing the mussel farming industry agreed to drop legal action trying to prevent GLM 9 entering the QMS. The agreement provided a means to avoid an alternative transitory regime that had many legal and administrative complexities. The agreement also provided certainty for stakeholders as to how quota would be allocated, 70% to ten existing or past participants in the fishery, 20% to indigenous Maori, and 10% to be tendered by the Crown.

However, the legislative amendment process was not straightforward. The Parliamentary committee hearing submissions on the relevant piece of legislation recommended that GLM 9 should not be introduced into the QMS as they could see no need for it when there is no pressing sustainability concerns. The Minister of Fisheries disagreed with the committee's recommendation and continued with having the relevant legislation enacted. The result was GLM 9 entering the QMS on 1 October 2004. A strong commitment to the Ministry's strategic direction has been necessary to see this difficult process through to its conclusion.

QMS Innovation

Designing the QMS framework for GLM 9 has required innovation given the particular characteristics of the fishery. The Ministry designed the GLM 9 management regime on the basis that the juvenile mussel fishery is far more profitable than the adult mussel fishery, and will dominate the harvest of green-lipped mussel in GLM 9. The total allowable commercial catch (TACC) for GLM 9 is therefore set to provide for the utilization of juvenile mussels. As there are no pressing sustainability concerns for the juvenile mussel fishery, the Minister has taken the advice of fishers and the mussel farming industry on what level to set the TACC. Those with an interest in the fishery are in the best position to know what catch level will provide for the most efficient use of the resource. The mussel farming industry was concerned that a low TACC might constrain the supply of juvenile mussels for the growing marine farming sector. The TACC was therefore set to meet the expected demand for juvenile mussels over the next five years. The TACC is set to provide for efficient utilization rather than to achieve a biological bottom line such as maximum sustainable yield (MSY).

Another innovation has been setting a low deemed value for GLM 9. A deemed value is a penalty that a fisher pays when he or she cannot balance their catch with quota. In New Zealand fishers can commercially fish without quota. All a commercial fisher needs is a fishing permit that is readily available to anyone. However, if a fisher cannot balance their catch with quota they have to pay the deemed value penalty. The deemed value system is designed to provide fishers with an incentive to balance catch with quota and to keep catches within the TACC to avoid sustainability problems. The deemed value system is being reviewed, but current Ministry policy is to classify a stock into one of three

groups. GLM 9 was categorized as a low knowledge fishery and a deemed value set at 60% of the market value of juvenile mussels for the 2004-05 fishing year.

The other option was to classify GLM 9 as a high value single species and to set the deemed value at 200% of market value. This option was rejected as the lack of sustainability concerns meant there was no need for a high deemed value. A lower deemed value also means it is easier for non-quota holders to gain access to the fishery and provide competition to quota holders. This added competition makes it more difficult for quota holders to artificially inflate the price of juvenile mussels, and it would encourage quota holders to act collectively to achieve efficiencies so they remain competitive. A low deemed value helps address the concerns of some mussel farmers that the QMS could lead to quota being aggregated and GLM 9 quota holders acting anti-competitively.

Another characteristic of the QMS design for GLM 9 is the many input controls in existence previously have been removed. Over the past two decades several closed area regulations were imposed on the adult and juvenile mussel fisheries based on where fishing traditionally took place. The Ministry removed the closed areas to give quota holders more flexibility to decide the most efficient way to utilize the resource, whether it is at the adult or juvenile life stage. The Ministry did not share the concern held by some that the removal of the closed areas for the adult fishery would cause sustainability problems for the parent stock and threaten the supply of juvenile mussels. The higher profitability of the juvenile mussel fishery, means GLM 9 quota holders will act to ensure the harvest of adult green-lipped mussel does not impact on the sustainability of the juvenile fishery. The control on mechanical harvesting for juvenile mussels has also been removed because of the relative low risk, and to give GLM 9 quota holders the opportunity to act collectively to address potential environmental issues.

A particular challenge for introducing the juvenile mussel fishery into the QMS was how to measure and report juvenile mussels when they are harvested attached to seaweed. It is not practical to separate the juvenile mussels and seaweed, or to accurately measure the weight of the juvenile mussels. The Ministry over came this problem by requiring all fishers harvesting seaweed on 90 Mile Beach to report their catch using a set ratio for converting the weight of the material landed into the weight of the juvenile mussels and seaweed. Based on the best estimates of fishers the ratio means 50% of the weight of landed material is to be reported as juvenile mussels. The flexibility available in the QMS means it can address a whole range of situations and problems.

Future Management of the Juvenile Mussel Fishery

Under the QMS the management of the juvenile mussel fishery at 90 Mile Beach will change significantly. The GLM 9 quota owners are working with the mussel farming industry to set up a Quota Management Company (QMC). The purpose of the QMC is to provide a governance structure for the quota owners to manage their interests in the fishery and to potentially take on some of the roles that Government traditionally performed in managing the fishery.

Through the QMC the quota owners propose developing a fisheries plan. A fisheries plan would set out the quota holders' objectives for managing the fishery and outline the strategies and services required to achieve these outcomes. A fisheries plan must be consistent with the purpose of the Fisheries Act and requires consultation with the stakeholders in the fishery. The Act recognizes fisheries plans by requiring the Minister of Fisheries to take them into account when making any decisions under the Act. A fisheries plan is all about stakeholders in a fishery setting their objectives for managing the fishery and then implementing the necessary strategies to achieve them. No fisheries plans have been approved yet, but a fisheries plan for GLM 9 may be one of the first approved. The reasons for this include the relatively few parties involved in the juvenile mussel fishery (there is no recreational or customary harvest of juvenile

mussels and there are few quota owners) making it easier to get agreement on a fisheries plan. In addition, there are many potential benefits to GLM 9 quota holders from collective action.

Research is one of the obvious areas where benefits can be derived from collective action. An approved fisheries plan allows stakeholders to set the research goals, determine the most efficient way to carry out the research (subject to appropriate checks), and provide more certainty through a long-term plan. There has been little research on the juvenile mussel resource due to the problem of free riders under the past management regime that removed the incentive for fishers to act collectively. With secure access rights under the QMS, GLM 9 quota holders are likely to collectively fund research on issues such as:

- Improving the reliability and quality of supply, e.g. minimizing the impact of the biotoxin events that have recently closed the fishery;
- Identifying the location of the parent stock of the juvenile mussels that land on 90 Mile Beach, to ensure the parent stock is protected; and
- Ways to avoid, remedy, or mitigate the potential adverse effects of harvesting on the environment.

GLM 9 quota holders may also use a fisheries plan to set their own management controls. These are likely to be enforced through civil contracts between the QMC, quota holders, and fishers. Under QMS management many of the detailed regulations have been removed to provide stakeholders the flexibility to determine how best to maximize the value of the resource. For instance, innovation is expected in harvesting techniques now there is no method restriction. The new harvesting techniques are likely to be more efficient, and may have less adverse impact on the environment. For example, using helicopters or boats to gather the seaweed could reduce the impact of harvesting vehicles on the shellfish beds on 90 Mile Beach. A code of practice to address the potential environmental impacts caused by harvesting is likely to be developed by quota holders.

The quota holders may also look at finer scale management. The GLM 9 management area is large. The opportunity exists for quota holders to subdivide the area into smaller management areas to improve the efficiency of utilization. There may be areas where the harvest of adult green-lipped mussel is the most profitable use of the resource, while in other areas fishing for adult mussels may be restricted to protect the parent stock of the juvenile mussel fishery. Such stakeholder management using civil contracts can be far more responsive to changing needs than government regulation.

Another area where flexibility is important is in setting catch levels for a resource with variable supply and demand. The GLM 9 quota holders have already agreed to shelve 25% of the 180 tonne TACC, because 135 tonnes is the estimate of the maximum amount of juvenile mussels that will be demanded during the 2004-05 fishing year. The quota is shelved proportionately across all quota owners, with the quota being held by the QMC. This allows quota holders to adjust catch levels to retain value in their quota. If demand for juvenile mussels exceeds 135 tonnes the QMC would release more quota.

Another significant change in the juvenile mussel fishery under the QMS will be increased integration in operations both vertically and horizontally. Mussel farming interests are already looking to buy GLM 9 quota or to enter long-term supply contracts with quota owners to secure their access to juvenile mussels from 90 Mile Beach. The Ministry expects this will lead to better coordination between fishers and farmers to ensure the right quality and quantity of juvenile mussels is supplied. QMS management is expected to maintain a limited number of operators and processors on 90 Mile Beach as quota owners look to cooperate to reduce costs and remain competitive. The GLM 9 quota owners are already looking to centralize administration for the fishery in the QMC to cut costs.

Conclusion

The green-lipped mussel case study shows how the Ministry of Fisheries in New Zealand is implementing its strategy of enabling people to get the best value from the sustainable and efficient use of fisheries. The Ministry has changed its focus from merely managing fish stocks to ensure sustainability to creating a framework to enable New Zealanders to maximize the value they obtain from the sustainable use of fisheries. Allocating rights and responsibilities through the QMS is a crucial step to achieving this goal.

Green-lipped mussel is one of fifty species introduced into the QMS since 2001. Bringing green-lipped mussel into the QMS has shown the flexibility of the QMS to address a range of issues and situations. The GLM 9 fishery in particular is distinctive as it has no pressing sustainability issues, the stock is harvested at both the juvenile and adult life stages, and there are difficulties with measuring and reporting juvenile mussels attached to seaweed. These characteristics have required innovation in the design of the QMS for GLM 9. For instance, the TACC has been set in consultation with stakeholders to provide for efficient utilization rather than MSY, and a low deemed value is in place to enhance competition and given the sustainability risk is low.

The idea that the QMS can be used to address economic efficiency issues rather than just sustainability issues has not been readily accepted by some parties. Disagreement over quota allocation and the likely impacts of QMS management have also meant introducing green-lipped mussel into the QMS has been a difficult process requiring a strong commitment to the Ministry's strategic direction. The Ministry is satisfied QMS management of the juvenile mussel fishery will provide a stable base for expanding the mussel farming industry. The GLM 9 quota owners have already begun the process of establishing a quota management company and looking at how they can take more responsibility for managing the fishery through a fisheries plan. The challenge is now for the stakeholders in the juvenile mussel fishery to work together to make the most of the opportunities created by the QMS.