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How Does Self-governance Complement ITQ under QMS in New Zealand? – A Case Study of the Self-governance Evolvment in the Foveaux Strait Oyster Fishery

Yu Wen (Ann), Yang

Commerce Division, Lincoln University, New Zealand

Tel: +64 3 3252811 – 8515, yangy7@lincoln.ac.nz

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How Does Self-governance Complement ITQ under QMS in New Zealand?

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Yu Wen (Ann), Yang

Commerce Division

Lincoln University

New Zealand

Tel: +64 3 3252811 - 8515

yangy7@lincoln.ac.nz

Summary:

This paper examines efforts to develop industry led self-governance in the Bluff Oyster Fishery. The paper focuses on participatory management and its ability to address some of the unintended consequences of management – for example high-grading. The Bluff oyster fishery's administrative and biological performances are analysed and then used to assess whether or not the participatory management model – fisheries self-governance in this case – complements Individual Transferable Quota (ITQ) for this inshore shellfish fishery.

The paper argues that the fishery's current self-governance model not only aids in improving the performance of the fishery, and that the Bluff oyster fishery has the capacity to shift towards an industry led self-regulated fishery.

Key Words:

Self-governance, ITQ, OMS, transaction costs

I. Introduction

In 1986, New Zealand adopted the Quota Management System (QMS), of which ITQs were an integral part, along with the application of Total Allowable Catch (TAC). The QMS enhances the fisheries in two ways. First, it protects the fish stock and eases over-fishing by determining the level of TAC. Secondly, it increases the efficiency of the catch sector through quota allocation. This internalises both the benefits and costs of fishing effort decisions to stakeholders. The current system has evolved since 1986 and become more complex, and yet the basic premises still remain.

However, the ITQ is not a panacea for all that ails fisheries, it is not without its own problems. Copes (1986) notes that amongst other drawbacks, ITQ gives fishers the opportunities to adopt practices such as high-grading and by-catch dumping (wastage). ITQ does not deal with several environmental externalities fishing. Equality of access is another issue raised with ITQ. This fairness concern touches a broader range of social problems from initial allocation of the quota to rent distribution (Cancino, 2007).

Because of those inadequacies embodied in the rights-based system, a number of authors have turned their attention to participatory management regimes. Hersoug (2002) notes the management cost (research, actual management, monitoring and compliance) might be effectively reduced in a co-managed fishery. Townsend and Shotton (2007) endorse this management framework by presenting several common property resources, such as the challenger scallops industry in New Zealand and the red sea urchin industry in British Columbia, successfully managed under either industry self-governance or co-management¹.

This paper aims to compare the current Foveaux Strait oyster fishery (QMA5 OYU5) management structure – ITQ complemented with self-governance - to those prior to the introduction of QMS. It also explores and comments on the management structure's strengths and weakness, and sets out a possible future direction available for fishery self-governance based on the finalisation of the "Foveaux Strait Dredge Oyster Fisheries Plan – proof of concept". The rest of the paper is structured as follows: the second section provides background of New Zealand fisheries management devolution; the third section gives an overview of Bluff oyster fishery; the fourth section presents the analysis of the fishery's performance and development potential; and the final section concludes with findings and recommendations.

¹ The difference between self-governance and other form of participatory management, for example co-management or advisory management depends on the degree of government involvement in funding, research, and compliance. Self-governance in this study is "self-funded, self-managed and facilitated, largely self-compliant, seeking self-control" Hughey et al. (2000, P122). Please see Townsend and Shotton (2007) and Hughey et al. (2000) for further details.

II. Fisheries Management Devolution in New Zealand

Townsend (2006) notes that New Zealand is a pioneer in recognising the significance of fishery's self-governance and has encouraged development in such activities. Bluff oyster fishery's self-governance has its own rationale for evolvement, but it is also promoted and induced by the overall fishing rights devolution in New Zealand.

The intention of fishing management devolution was shown in the early 1980s when the Fisheries Plans concept was introduced in the Fisheries Act 1983. The aim of the plan was to ease over-fishing and over-capitalisation with the inshore fisheries, and also devolve some fisheries management responsibilities (Hersoug, 2002). The intention was that the government would be responsible for providing policy direction while leaving the administration and resource allocation management to the fishery's users. However, this policy was shelved after the introduction of QMS in 1986, which primarily relies on market-adjustments rather than central planning (Hersoug, 2002).

From the late 1990s up until 2005, planning made a come back (Lock and Leslie, 2007). The Fisheries Act 1996 Amendment Act 1999, section 11A made this policy available to the catch sector, and promoted stakeholder-led plans encouraging input from all users groups. The Ministry's initial proposal was to leave fisheries plans to commercial groups - the Quota Owner's Association (QOA) - the most organised body among all users, while gradually introducing the involvement of other stakeholder groups (Hersoug, 2002).

However, the complexity and informal status of industry-led fisheries plans created several challengers. First, there was confusion over who might the stakeholders be and therefore entitled to be involved in the fisheries plan (Gary, 2006; Rees, 2005). Additionally, distrust between commercial and non-commercial groups created communication carriers in both creating and implementing a commercial-led plan. Further, there were hesitations within the commercial groups in taking the leading position. Townsend (2006) notes that the lack of enthusiasm is mainly caused by the high transaction costs both within the fishery (difficulty in getting unanimous decisions), and with the government (the possibility of rejecting the commercial-led plan).

As a result of the aforementioned concerns, when the 2005-2008 Statement of Intent (SOI) made the planning concept well-recognised, the Ministry's attitude towards the plan changed from stakeholder-led to government-led. It is stated in the SOI that "Management plans will be facilitated by government, but developed in collaboration with relevant stakeholders, and will incorporate government, tangata whenua and stakeholder objectives ... If appropriate, tangata whenua-led and stakeholder-led initiatives could become s11A fisheries plans." (Ministry of Fisheries Statement of Intent, 2005 P.19).

Currently, there is an emphasis on government facilitated devolution in which MFish lead plan development, and provide direction. There is, however, still devolution of management responsibilities to the fishing industry to a certain degree. For example, MFish contracts out its registry services to an industry-owned company, FishServe. Scientific research is also contracted out under a contestable tender system to external providers and industry has successfully tendered for a number of projects.

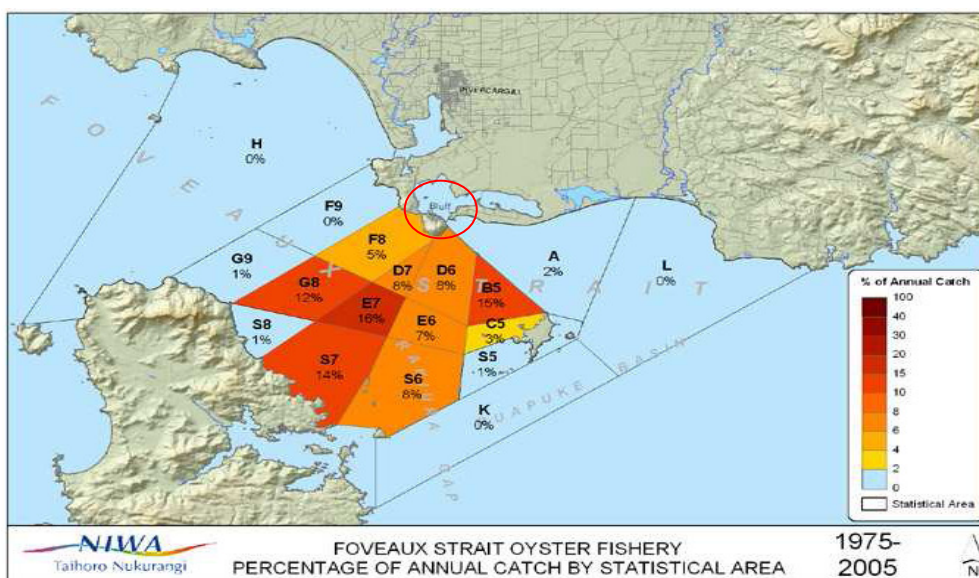
III. Bluff Oyster Fishery

Fisheries are varied in their nature (inshore or offshore; finfish, shellfish or crustacea; pelagic or demersal; mobile or sedentary etc.) and features (for example single or multiple users groups). In addition, the management, who make some key decisions, is often vested in institutions that do not fish the resource: government, ministries, scientists, policy analysts. If we are to understand how self-governance is evolving in Bluff and the role of the Bluff Oyster Management Company in self-governance of the industry, it is necessary to understand the background of the fishery.

i. Foveaux Strait and Bluff oyster

Foveaux Strait, as shown in the map below, is located at the bottom of South Island, between Stewart Island and the South Island. It is approximately 130 km long, and on average 25 km wide. There are three main islands within or around the Strait; Ruapuke Island is the largest, Dog Island near Bluff, and Centre Island near Riverton.

Figure 1: The Foveaux Strait Dredge Oyster Fishery Showing the Quota Management Area, along with Percentage of the Total Combined Catch for Years 1975–2005 by Statistical Reporting area



Source: Foveaux Strait Dredge Oyster Fisheries Plan – proof of concept

The natural condition in the Strait is rough, stormy, and often treacherous. The prevailing westerly wind and swells come from the Ocean, and create a

persistent 3 knots tide to the east of the Strait. However, the disturbance of the bottom sediments and the fishers comes mainly from the greater velocities of water scouring the constricted parts of the bottom underneath the water.

In spite of the rough natural condition, Foveaux Strait has always been a productive fishery area. Whales and seals were hunted from the 19th century and when those were hunted down, oyster became the backbone for the Strait's fishery community, and a lifeline of the town of Bluff (Knight, 2003).

Foveaux Strait dredge oyster, *Ostrea chilensis*, or bluff oyster, is an iconic delicacy in New Zealand which has been prized for more than 140 years. It is well-known for its high quality and size and mainly serves the domestic market. It is unique even by world standards as "...it is the only existing naturally occurring oyster population which has not been fished to commercial extinction" (Cranfield, 1979a cited in Anderson et al., 1984, P. 35).

The fishing area, defined by the 1999 oyster survey, is relatively small (1054 km²), of which only a small part is actually fished (Michael, 2007). According to a survey in the 1970s, there were approximately 50 commercially viable oyster beds within the Strait, and while the beds themselves may change in size, there was no evidence showing the appearance of new beds (Oyster Planning group, 1995).

The spawning season for dredge oysters occurs during spring and summer months. Males become sexually mature in two to three years, and females in three to four years. One unique feature separating dredge oyster from other oysters is that the eggs are retained within the parent for 18-23 days before they are released into the water. Larvae do not move very far away from adult. While the growth rate may vary spatially and temporally, on average, the larvae grow to full size (45 to 75 mm) within 4-8 years time.

During recent years, *Bonamia exitiosa*, a parasitic protozoan, was identified to be the major reason for the oyster population shrinking (Oyster Planning group, 1995; Bluff Oyster Management Company Limited, 2005; Foveaux Strait Dredge Oyster Fisheries Plan, 2006). A survey in 1992 (Doonan et al., 1992) showed that after the outbreak of the disease in 1986, the oyster population was estimated to be about 319 million, only 21% of the size in 1975.

ii. Management Evolution in Bluff

The evolution of management of Bluff oyster fishery is loosely allied with the overall management framework that unfolded in New Zealand's recent fishing history. The fishery was managed under limited entry regime from 1937 to 1963, and boat numbers were limited to 5-12. After the opening of the fishing industry in 1963, the number of boats increased dramatically to 30 by the end of 1969. Although there was a yearly limit of 132 million oysters for the period between 1963 and 1968, the actual landings were

often below the limit (Michael, 2007). In 1970, Bluff oyster fishing once again went back to limited entry. The main reason, according to Riley (1982), was to preserve oyster beds and maintain a biologically healthy fishery. The fishery operated under licensing with the 23 vessels for nearly 30 years thereafter².

Between 1986 and 1992, the fishing was disrupted by the outbreak of *Bonamia exitiosa* and the fishery was closed by the government between 1993 and 1995 to allow the beds to recover. There were still 23 boats in the fisheries between 1986 and 1996, but when the fishery was reopened in 1996, the boat number dropped to only 15 followed by the enclosure of the industry to the QMS in 1998.

The introduction of QMS and the assignment of ITQ to the fishery reduced the fishery's over-capacity problem but did little for the shellfish stock, fishing effort management, or cost saving. However, ITQ did, along with the *Bonamia* disruption and the introduction of cost recovery in 1994, provide the industry with incentives to self-govern the fishery.

The earliest attempt at self-governing the fishery was addressed through the establishment of Bluff Oyster Enhancement Company in 1992, when the impact of the *Bonamia* was at its peak. Industry participants sought to find ways to enhance the fishery. Soon after that, in February, 1994, during the closure of the fishery, the Fishing Industry Board's Foveaux Strait Oyster Advisory Committee proposed the need to have a small scale coordinating committee. Two month later, the Oyster Planning Group had its first meeting and initiated the first plan – A Plan for the Foveaux Strait oyster fishery. The members of the group came from only two sources, MFish and commercial fishers (both the boat owners and the skippers).

That plan was only drafted on a trial basis and did not become the general manual for the fishery, but a number of the fishing-related protocols have been implemented since then. Some of the examples are, changing total catch recording mechanism from sacks to individual number of oysters to avoid high-grading, funding for scientific research on minimising incidental mortality of juvenile oyster during dredging (Oyster Planning Group, 1995; Frazer pers. comm., 2008).

During the late 1990s, when planning regained popularity, two QOAs, the Challenger Scallop Enhancement Company and the Orange Roughy Company, submitted their Plans to the Ministry of Fisheries (Hersoug, 2002). Soon after that in 2003, BOMC started the second attempt at self-governing of the shellfish fishery by drafting the commercial-led Management Plan – Foveaux Strait Dredge Oysters (OYU 5) through fisheries Consultancy (NZ) Ltd. The draft plan was finalised in 2005 and informally handed to the Ministry for review.

² Further details of this policy transition for this period and its effect on Bluff oyster fishery can be found in Riley (1982), and the general management of the fishery can be found in Anderson et al. (1984).

Since the participants of the company are solely commercial stakeholders, other groups (recreational, environmental, and customary) did not have input towards the plan except some general consultation offered by the company on issues that may arise. In addition, government policy changes from industry-led to government-led plans during 2005-2008, meant the BOMC was left with two choices: refine their plan and wait for the Minister's verdict, or follow an MFish-led plan.

MFish offered at the time (2006), to put forward the industry-led plan as a new initiative to develop "Proof of Concept" MFish-led plans, with Foveaux Oyster fishery one of the three fisheries (the other two were Southern Blue Whiting fishery and Coromandel Scallop Fisheries). The directors of Bluff Oyster Management Company chose to accept the MFish-led plan option and work along with the representatives from other groups in developing the "Foveaux Strait Dredge Oyster Fisheries Plan – proof of concept".

Built on, yet fundamentally different from the BOMC's 2005 Plan, this proof of concept plan invited all users groups' participation in the creation process. The plan covers most aspects of the fishery with an emphasis on its sustainability, environmental concerns, as well as value maximisation for all users groups. However, the daily operation, including both harvesting and processing, is managed by the Bluff Oyster Management Company.

iii. The Bluff Oyster Management Company (BOMC)

Bluff Oyster Management Company Limited (3rd June 1997), the former Bluff Oyster Enhancement Company Limited (July 24th 1992 - 1997), is a Quota Owners Association (QOA) formed by the quota-holders with 100 percent of the quota in the fishery (BOMC plan, 2005). It was established out of the crisis of *Bonamia*, as a means of seeking to enhance the fishery, and operated under a special permit during the closure of the fishery (1993-1996). The company mandates almost every aspect of the fishery, from fishing stock and effort management, information gathering and assessment, to compliance, communication and consultation with all industry stakeholders (quota holders, ACE holders, fishers, and processors etc).

The company manages fishing stock through various means such as the alteration of the overall regulations set by the Government, and maintaining daily fishing statistics. Under the QMS, the Minister sets the TAC and TACC, but the company maintains the right to modify the "maximum catch limit" by in-season adjustments of Annual Catch Entitlement (ACE) in both directions. For example, it halved the TACC for the fishing year from 2002 to 2004, after the second outbreak of the *Bonamia* between 2000 and 2002. The fishery statistics are gathered by various oyster stock assessment surveys. Further the logbook programme is also used by the fishers after each days fishing to record the oyster beds' condition.

Fishing effort management is designed to match the unique feature of the fishery. Because it takes about 4 years for the oysters to become mature, the company organises harvesting by rotating of fishing beds on an annual basis. It also suggests refining fishing gear and methods to minimise the

harvesting effects on the seabed; initiating re-examination of the oyster stock enhancement and seeding programme based on previous small scale and localised studies.

Because the ecological system has a significant impact on the oyster fishery, documents like the Environmental Policy (voluntary guidelines for addressing environmental issues the fishery may face) and Code of Practice (specific issue that must be followed such as by-catch and habitat protection), are designed to implement the company's environmental strategy. Furthermore, through the assistance of SeaFIC and NIWA, the aforementioned logbook programme is also used to educate fishers on the value of the data.

Compliance is achieved at a voluntary basis. Although the overall compliance is based on self-management and self-enforcement, BOMC's operations manager could introduce penalties for non-compliance and to monitor the compulsory logbook registration under agreements between the quota holders and the company.

Under the proof of concept plan it is the company's responsibility to communicate with other parties involved in the fishery. Because the company is solely owned by commercial users, communication between the company and other users groups is vital. In order to gain non-commercial groups' cooperation, it is important that those users are also involved in managing the fishery. As well as the concerns within the fishery, there are quite a number of external interests in this iconic species, and the company is therefore accountable in keeping the general public and the media informed.

IV. Analysis

It is obvious that the Bluff oyster fishery has been seeking a self managed framework since the 1990s, and its existing management structure reveals a gradually evolving self-governance regime. In this section, the administrative and biological performance of the fishery is analysed by checking against the criteria set by Arbuckle (2000) for Challenger scallops fishery - a well-regarded sophisticated industry self-governance model. The further development of the fishery's self-governance is then examined by applying Townsend and Shotton's (2007) arguments on conditions that shape industry devolution.

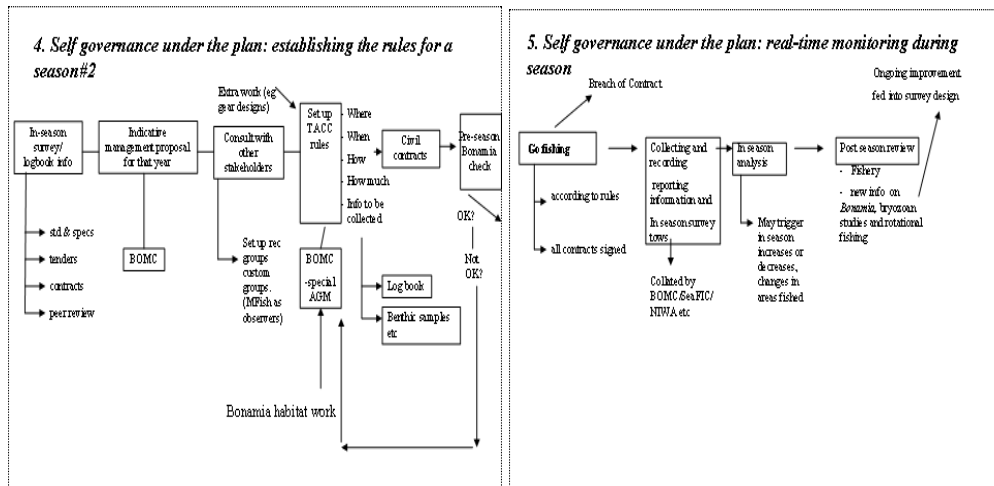
i. Performance

Arbuckle (2000) applies three criteria in rating the performance of Challenger Scallops Fishery: The level of agreement within the fishery and between different sectors that utilise the resource; stock biomass trend; and implicit discount rate. This paper examines only the first two factors for the Bluff oyster fishery because of lack of data on lease prices.

The level of agreement is three-fold in the fishery. First, the company represents one hundred percent of the quota shares in the fishery; agreement amongst the commercial sector can be achieved relatively easily because of

the common profit-seeking objective. Additionally, the current decision-making process invites all stakeholders into the management circle. Figure 2 step 3 shows BOMC will have to consult with non-commercial groups before reaching any decisions, and that is guaranteed by MFish's monitoring position. Finally, contracts or agreements are reached between the company and harvesters before going fishing, figure 2 step 7, to make sure certain protocols, logbook registration for instance, are followed.

Figure 2: Current Annual Decision Making in the Foveaux Strait Dredge Oyster Fishery

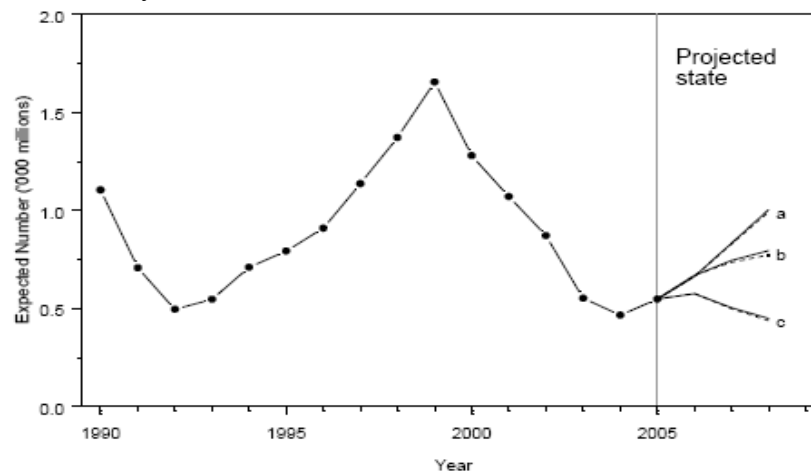


Source: Foveaux Strait Dredge Oyster Fisheries Plan, Draft “proof of concept”

Another indicator, oyster stock abundance, shows less of the management influence because of the *Bonamia* parasite. However, it still can be used to examine the management effectiveness if the *Bonamia* impact can be factored out. Figure 3 shows the overall trend of the expected number of oysters since 1990 and projected into the future.

The first out break of the *Bonamia* (1986-1992) saw a sharp decline of the oyster population, followed by a stock rebuilding during 1993-1995 when the fishery was closed. Importantly, since the establishment of the company and implementation of fishing-related protocols in 1995 (discussed earlier in this paper), the stock size has grown faster than in the closed period even with fishing activity, until the second out break of the *Bonamia* from 2000 to 2002. The figure also shows that without the disturbance of the disease, the stock is in a recovery process under scenario (a) no *Bonamia* disturbance and (b) minor *Bonamia* disturbance.

Figure 3: Model Showing Projected Stock Abundance for 2006-2008, with Catch of Nil (solid line) and 15 Million Oysters (Dashed Line), under Assumptions of (a) No *Bonamia* Disease Mortality, (b) Disease Mortality of 0.20 y⁻¹, and (c) Disease Mortality of 0.40y⁻¹



Source: Foveaux Strait Dredge Oyster Fisheries Plan – proof of concept

ii. Does the fishery have the potential to devolve further?

Townsend and Shotton (2007) note three conditions that shape self-governance. First, limited entry creates incentives for self-governance because a closed set of users makes the efficiency gain attainable. In addition, the number of users and their characteristics (homogenous or heterogeneous) are also important and affect transaction costs in both directions. Finally, the features of the fishery matters because it has great influence on competition amongst users groups.

In the Bluff oyster fishery, the commercial group is regulated under QMS with a set total number of shares and with limited number of quota owners within the lucrative fishery. There were nine quota transactions during 2002 and 2007, in which four were in-house trading between parent companies and their harvesters; the rest of the quota purchasing showed a consolidation trend. Therefore, the incremental benefit brought about by the efficient management may be realised amongst existing users. This explains BOMC's enthusiasm to develop a plan of their own around 2002, and why it is still maintaining its management role of the fishery's daily operation under the current proof of concept plan.

Additionally, the number of users (16 commercial players) is relatively small in comparison to some of the successful self-management cases in other parts of the world, e.g. 100 participants in the British Columbia red sea urchin fishery (Townsend and Shotton, 2007). Further, all quota holders are commercial users, their homogeneity in profit-seeking makes it easier in decision-making because there are low transaction costs. Lastly, immobile spatially-limited species, such as oysters, are better candidates for self-governance as the benefit of investing in conservation and enhancement are more certain.

The analysis in this section shows that the Bluff oyster fishery has a robust administrative structure that involves all user-groups into the management circle, and that the biological status of the oyster stock, is in a sustainable condition. Although the fishery is not guaranteed to be successful in self-governing, it has the necessary conditions to develop into a sophisticated self-governed fishery.

V. Conclusion

This study concludes that the self-governance component in the management of the Bluff oyster fishery is developing gradually and could be regarded as a successful case in the catch sector. The New Zealand government's intension of devolving fisheries management responsibility to the users has certainly played an important role in such development. Equally important is the unique nature and features of the Bluff oyster fishery. The challenging fishing conditions in the Strait create a natural barrier to entry; the sedentary nature of the oysters returns management benefits to the investors; the limited number of users makes the efficiency gain attainable.

However, in order for BOMC to achieve the required maturity in leading the fishery, there are still quite a number of adjustments that need to be put into place. Townsend (2006) notes that in determining the success of industry self-governance lowering transaction costs is the key, and there are three main measures to achieve that. First, clearly defined requirements and approval processes for a plan could significantly improve the vertical communication between the management agency and the stakeholders. Additionally, the de facto position of the commercial group entails unanimous decision-making, and can only be improved by the support of the government. Finally, a predetermined outcome sharing rule, such as equal sharing or ITQ, lowers players' incentive to cheat since the allocation of benefits is certain.

Conflict amongst the users groups remains a major problem mainly resulting from different management objectives. There does not seem to be an effective way to solve this in the near future and it may require a long and painful negotiation process within the fishery. Having said that, so long as the benefits of self-governing are greater than when regulated by the government, or in competing against each other, there is still room for negotiation.

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