

**ASSESSMENT OF
WESTERN ROCK LOBSTER
STRATEGIC MANAGEMENT OPTIONS
(4 volumes)**

**HOW DO QUOTA MANAGEMENT SYSTEMS WORK
IN ROCK LOBSTER FISHERIES?
Volume4**

**A comparative analysis of the experience in
New Zealand, Tasmania and South Australia**

by

Tim Bray, Steven Gill and Ron Edwards

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Assessment of Western Rock Lobster
Strategic Management Options

Volume 4
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EXECUTIVE SUMMARY	3
INTRODUCTION	5
NEW ZEALAND	7
Fishery facts.....	7
Target species.....	7
Access:	8
Sustainability.....	8
Season	8
Fisheries Management.....	9
Performance against objectives of the new system.....	9
Cost of Management and Compliance	14
Industry Dynamics and Fishing Patterns	15
Industry size	15
Value of entitlement.....	17
Changes in fishing patterns	17
TASMANIA.....	21
Fishery Facts.....	21
Target species.....	21
Access	22
Sustainability.....	22
Season	22
Fisheries Management.....	23
Performance against objectives of the new system.....	23
Cost of management and Compliance Issues.....	25
Industry Dynamics and Fishing Patterns	26
Industry size	26
Value of entitlement.....	27
Changes in fishing patterns	28
SOUTH AUSTRALIA.....	32
Fishery Facts - Southern Zone.....	33
Species	33
Access	33
Sustainability.....	34
Season	34
Fishery Facts – Northern Zone.....	34
Species	34
Access	34

Sustainability.....	35
Season	35
Fisheries Management.....	35
Performance against objectives of the new system.....	35
Cost of management and compliance issues.....	40
Industry Dynamics and Fishing Patterns	42
Industry size	42
Value of entitlement.....	44
Changes in fishing patterns	46
FINDINGS.....	48
Fisheries management	49
Industry dynamics and fishing patterns	50
BIBLIOGRAPHY	52
APPENDIX 1	56
APPENDIX 2	62

Executive Summary

Quota management systems are now in place for the New Zealand, Tasmanian and South Australian rock lobster fisheries. New Zealand was the first to move to QMS (1989), followed by the Southern Zone of South Australia (1993), Tasmania (1998) and Northern Zone South Australia (2001).

Throughout the world of fisheries management, there are a number of assumptions made about quota management systems. Most common are that under a QMS the fleet size falls, the ownership of commercial fishing access rights will concentrate and there will be vertical integration through the catching and processing sectors. These assumed effects are made because the economic theory is that there are strong incentives for fishing fleets to restructure in order to become more efficient and focus on maximising the value of their catch as opposed to investing in inputs to maximise their catch.

As part of a review of the system of management used for the West Coast Rock Lobster Fishery, a West Australian delegation visited New Zealand, Tasmania and South Australia in 2004 to learn more about the management systems in place for their respective rock lobster fisheries.

Each of the fisheries visited targets the southern rock lobster (*Jasus edwardsii*) and the delegation found that common to all these management systems is the use of a total allowable commercial catch (TACC) to constrain the industry's annual catch. The TACC is then divided into transferable quota units held on licences that are renewed annually. All fisheries complement the TACC with the use of biological controls, i.e. size limits and protection of animals in a breeding condition.

Further analysis reveals that, beyond these common areas, the regulatory approach differs. Key differences include the presence or absence of zones within the fishery; closed seasons; limitations on pot use; pot design and restrictions on the transferability of units of entitlement (both pots and quota).

The delegation observed that the absence or presence of these “add on” measures influences the behaviour of the industry both with respect to investment and fishing strategy decisions. Relevant literature supplied to the delegation supports many of these observations.

The transition into QMS for the New Zealand, Tasmanian and South Australian fisheries has, on the whole, been positive. Where the systems have been in place for a number of years, it is clear that the setting of a TACC can be a very effective tool for managing sustainability, provided that the TACC setting process is underpinned by quality research and reinforced by a comprehensive compliance program.

Where fleet over-capacity is an issue, the move to a QMS can accelerate the process of restructuring when combined with a management system that allows the trade and lease market to function relatively freely.

The value of entitlements in the fishery inevitably rises. On the one hand, this has a positive effect with respect to return on investment. However, it will inevitably make the cost of entry high.

It is possible for within season price premiums to be realised through changed fishing behaviour when market signals are provided directly to fishers via processors.

There are opportunities under QMS for participants to improve their quality of life by reducing the amount of time spent fishing while maintaining profitability.

Introduction

The existing West Coast Rock Lobster Fishery management system employs a variety of measures. On a broad level, the capacity of the fishery (total number of usable pots) is limited, thereby placing an overall cap on effort – a Total Allowable Effort (TAE). Unitisation of the effort in the fishery and relatively liberal transferability provisions allow market forces to determine what is the most efficient use of licences and available entitlement (pots). This system of management is known as an Individually Transferable Effort (ITE) system.

The fishery is also divided into zones of access. This distributes effort across the entire fishery, rather than permitting the fleet to concentrate effort on areas of seasonally high productivity which result in a higher than acceptable exploitation rate. Zonal management also enables management controls aimed at addressing zone specific issues to be implemented. For example, there are currently different maximum size restrictions in the northern and southern regions of the fishery.

A form of zonal management known as “closed areas” has also been used in a number of instances – Rottnest and Quobba Point closures to commercial fishing; and Fish Habitat Fish Protection Areas at Cottesloe, Yallingup and Lancelin Island have all been implemented. There are further examples of closed areas under the marine park management system administered by the Department for Conservation and Land Management (CALM).

Other management tools of note are those of a biological nature, specifically: protection of females in breeding condition, minimum carapace length and maximum carapace length.

The rock lobster management system is generally recognised as successfully meeting key sustainability objectives, but the extent to which the fishery has optimised the economic and sociological benefits from the fishery are a matter of considerably more debate.

Consequently, the Government of Western Australia committed to a review of the management arrangements for the West Coast Rock Lobster Fishery in 2003.

The purpose of this review is to determine what is the best system of management for the fishery within the context of the established and well-documented principles of *Ecologically Sustainable Development* (ESD)¹. Three broad categories of management options are being considered: (i) status quo (ii) an expanded individually transferable effort system; and (iii) a quota management system (QMS).

Given that a QMS is a possibility, it is important to understand the experience of other fisheries that have adopted a QMS.

¹ In Australia, ESD is widely recognised as a natural resource management philosophy that seeks to provide balance to the competing ecological, social and economic objectives associated with the utilisation of renewable resources.

To gain an understanding of other management systems and how they have performed from a biological, economic and sociological perspective, a Western Australian delegation visited New Zealand, Tasmania, and South Australia. The delegation comprised Tim Bray – Department of Fisheries; Steven Gill – Western Rock Lobster Council; and Ron Edwards – Rock Lobster Industry Advisory Committee (trip one only).

Prior to arriving for meetings and interviews with government and industry representatives, two documents were sent in advance. The first document (Appendix 1) explained the context for the management review and the process to be followed in order to produce advice for government. The second (Appendix 2) listed a series of “focus questions” to provide guidance on the specific information regarded most useful to the review process.

The delegations were very warmly received at all locations, and the success of this exercise is due in no small part to the very helpful and hospitable way host government and industry representatives received the delegation.

This paper reports on the delegations’ findings. It is one of four documents that the West Coast Rock Lobster Industry and the Western Australian Government will use to consider the strategic management direction for the fishery. The other documents are:

- *An Overview of Bio-Economic, Sociological and Comparative Analyses;*
- *A Bio-Economic Evaluation of Management Options for the West Coast Rock Lobster Fishery; and*
- *A Social Assessment of Coastal Communities Hosting the Western Rock Lobster Fishing Fleet.*

New Zealand

Soon after the declaration of its Exclusive Economic Zone (EEZ) in 1978, there was a realisation in New Zealand that it did not have the domestic capacity to fully utilise its newly acquired offshore white fish resources – while inshore there was a very different problem. Input management arrangements had not halted increases in fishing effort and, as a result, there was too much capacity to catch the sustainable catch(Connor, 2001).

To address these issues, New Zealand adopted the Quota Management System (QMS), and in the mid 1980s moved the majority of its commercially significant fisheries into the QMS and allocated fishery specific individually transferable quotas (ITQs). The rock lobster fishery joined the QMS in 1989.

The rock lobster fishery was not unlike many of New Zealand's inshore fisheries. Basic input controls on vessel size and numbers, combined with biological catch controls (minimum size and berried female protection), had not been successful at constraining catch and were generally regarded as promoting inefficient fishing.

When the rock lobster fishery entered the QMS, it was recognised that in setting a TACC that would constrain the catch in each of the quota management areas there would be a restructure of the fleet to a lower and more efficient level.

One of the underlying philosophies of New Zealand's approach to fisheries management is that a rights based system is the best system in which the rights holders can maximise the economic returns from the sustainable use of the resource.

These large changes in the fishing industry were set against the backdrop of large-scale reform across the entire New Zealand primary production sector. These reforms were designed to ensure that New Zealand industry is efficient and competitive on a global scale.

Consistent with these reforms, it is interesting to note that the *Fisheries Act 1996* does not explicitly contain any social objectives and consequently no data or studies on sociological effects of the QMS in New Zealand exist.

Fishery facts

Target species

- Southern rock lobster, *Jasus edwardsii*²

² There is also a small fishery for pack horse lobster.

Access:

- There are 487 rights holders spread over 10 quota management areas of the fishery. Access rights are area specific.
- To operate in the fishery, there is a requirement to hold at least three tonnes of quota and no single quota holder is permitted to hold more than 10 per cent of the quota in any one area.
- Only New Zealand residents can hold quota, or companies that are not more than 25 per cent foreign owned.
- Access rights have been issued in perpetuity and units of individually transferable quota give rise at the beginning of each season to annual catch entitlement (ACE) for a given area. ACE is transferable.

Sustainability

- There is a total allowable catch (TAC) for each quota management area, the TAC is shared by Maori, recreational fishers and commercial fishers with an allowance also made for the estimated illegal take.
- The Total Allowable Commercial Catch (TACC) for all quota management areas in 2004 was 2,848 tonnes.
- The Minister for Fisheries can adjust the TACC for a given quota management area to meet sustainability objectives. In New Zealand, fisheries law sustainability is defined as at or above a biomass that can produce the maximum sustainable yield (B_{MSY}). In recent years, industry organisation has been used to voluntarily to adjust TACCs independent of government processes.
- Catch is taken by pot (trap). Fishers may use as much (or as little) gear as they like and there are no restrictions on pot design.
- Catch can only be provided to a licensed fish receiver and detailed catch disposal records are required.
- There is a minimum legal length for both male and female animals: 54mm and 57mm tail width respectively.
- Berried females cannot be taken.
- There is no provision for quota carryover.

Season

- 1 April to 31 March – no closed season

Fisheries Management

Performance against objectives of the new system

There were two objectives stated when it was decided to move the rock lobster fishery into the QMS. Specifically the objectives were:

- i. To limit catches to levels that will result in maximum production from the stock.
- ii. To maximise the net economic return to the nation. (Deweese, 1989).

Sustainability

The New Zealand *Fisheries Act 1996* requires fish stocks to be managed so that stocks are at or above a biomass capable of producing the *maximum sustainable yield* (B_{MSY}) for that particular resource. Therefore, the first objective for rock lobster simply represents a desire to manage the fishery such that it can produce its MSY.

There are 10 separate fisheries that collectively make up the New Zealand Rock Lobster Fishery, each fishery has a TAC (and TACC) and is assessed in its own right. Rather than detail the status of each of the 10 fisheries, two have been chosen for the purpose of this exercise – CRA 4 and CRA 5. Figure 1 illustrates the area of the different New Zealand fisheries: CRA 4 is situated off the south-east coast of the North Island (Wellington – Hawkes Bay), and CRA 5 is situated off the north-east coast of the South Island (Canterbury / Marlborough).

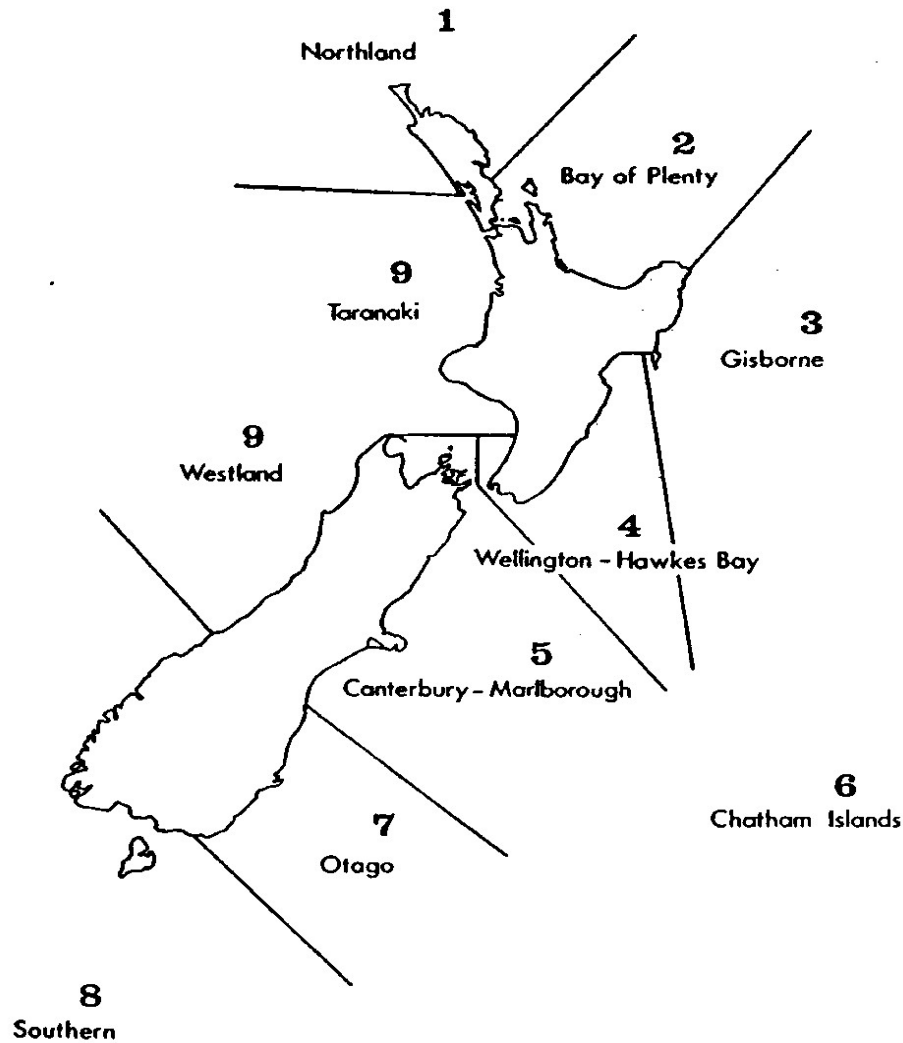


Figure 1: Management (CRA) areas for the New Zealand Rock Lobster Fishery

The New Zealand Rock Lobster Industry Council (NZRLIC) is contracted by the relevant government department (Ministry of Fisheries) to undertake stock assessments for the CRA 4 and 5 fisheries. NZRLIC is also responsible for the collection of data relevant for the stock assessments. Key performance indicators used in the New Zealand rock lobster fisheries include: (i) estimated biomass; and (ii) catch per unit effort.

In the 2004 Fisheries Assessment Report, the following statement was made about CRA 4:

These results thus suggest a stock in reasonably healthy current state, but one likely to decline in the near future. The decline in projections was modest, and 40% of runs were still at or above B_{ref} ³. A 10% catch reduction would be required to bring this probability up to 50%.

³ In considering the above statements, it is relevant to note that B_{ref} is a reference biomass taken from a time when the biomass was stable under fishing conditions – this period is 1979–88.

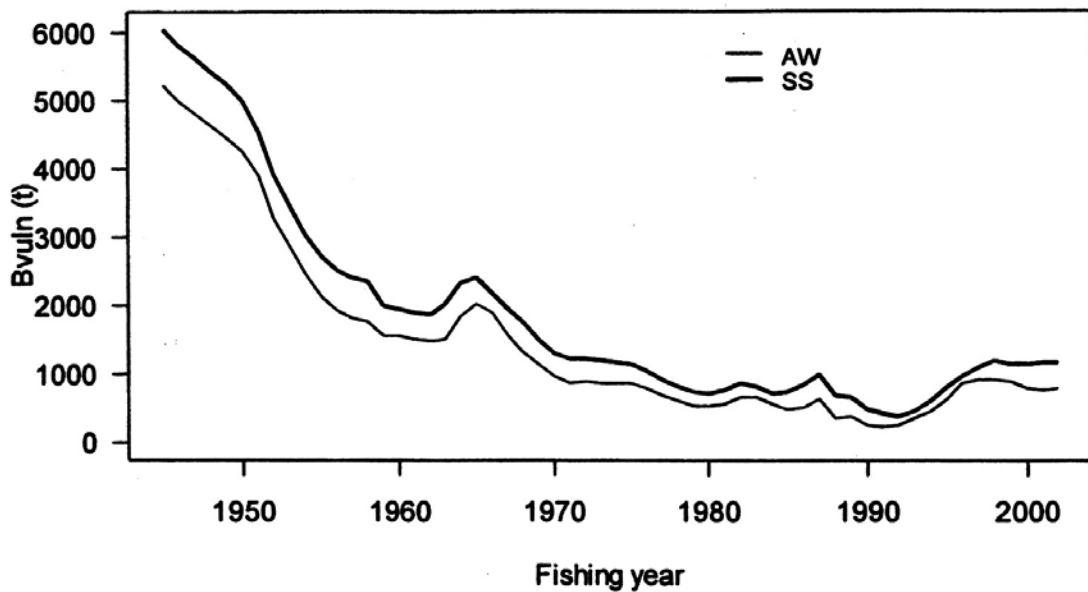


Figure 2; Estimated biomass vulnerable to fishing overtime for CRA 4. The vulnerable biomass is spilt into *autumn-winter* and *summer-spring* biomass. Source: Kim et al 2004.

The modelling work undertaken to produce this estimate indicates that the biomass of legal rock lobster has declined significantly since the estimated levels in the 1940s. However, since the fishery joined the QMS it is clear that there has been an improvement in the stock status to the point where it is assessed as being sustainable, noting that the advice also foreshadows the need for a reduction in the TACC of around 10 per cent.

For CRA 5, the assessment is:

These results suggest a fishery in a very healthy current state. Current catch levels are technically unsustainable in that they will, on average, decrease population size in projections, but the extent of the decrease should leave the stock well above Bref.

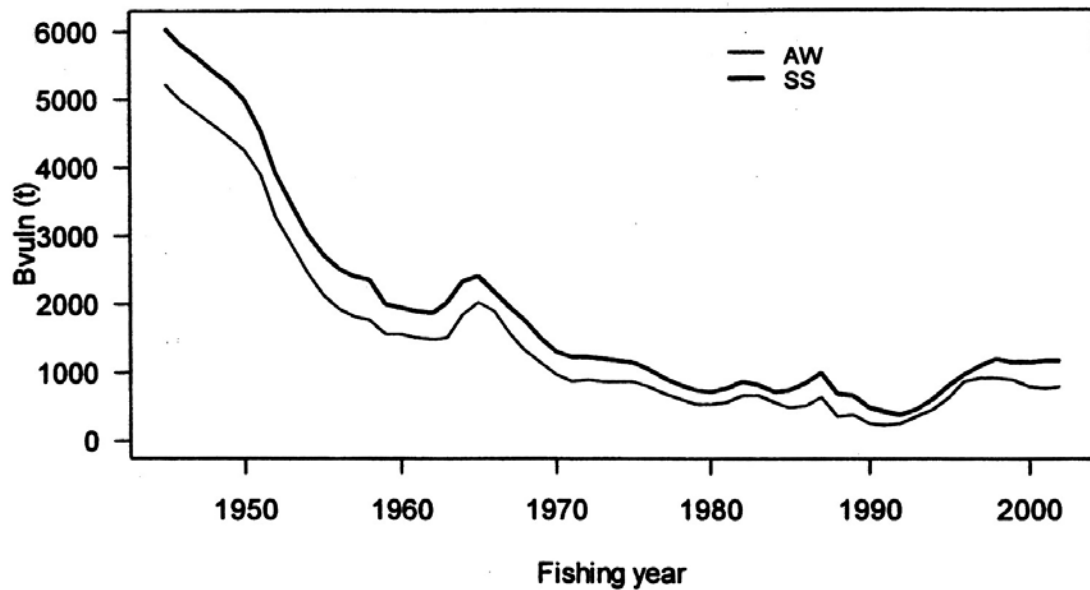


Figure 3: Estimated biomass vulnerable to fishing overtime for CRA 5. The vulnerable biomass is spilt into *autumn-winter* and *summer-spring* biomass. Source: Kim et al 2004

The modelling work undertaken to produce this estimate indicates that the biomass of legal rock lobster has declined significantly since the estimated levels in the 1940s. However, since the fishery joined the QMS it is clear that there has been an improvement in the stock status to the point where it is assessed as being sustainable. The CRA 5 assessment is more positive than that for CRA 4 and does not foreshadow the need for any adjustment to the TACC.

Given the legislated objective of B_{MSY} , it is relevant to consider the catch achieved by the two fisheries over time. Figure 4 plots the catch in tonnes for both fisheries for the period 1945–2002. It is clear that the introduction of a QMS constrained catch and, that by doing so, both fisheries have produced consistently at levels judged to be sustainable.

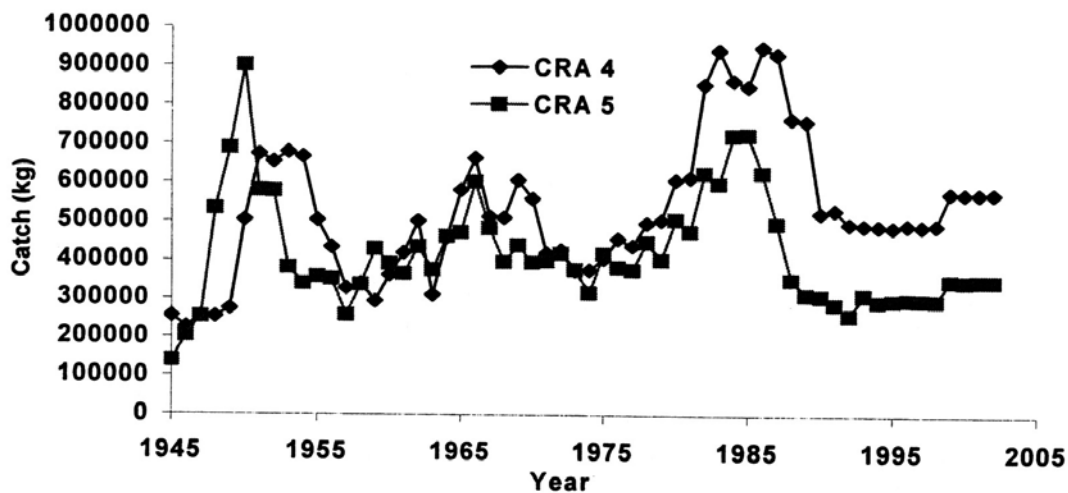


Figure 4: Reported catch in the CRA 4 and 5 fisheries for the period 1945–2002.
Source: Kim et al 2004.

While in New Zealand, the delegation heard on many occasions that the move to the QMS had placed greater importance and scrutiny on stock assessment. In the case of rock lobster, there is also recognition that the absence of fishery independent data, particularly given the reliance on CPUE data, is a weakness in the system. Furthermore, when catches for one sector (e.g. the commercial sector) are limited, there is a natural tendency to examine the catch of other sectors and how (or even if) they are being constrained.

A further issue raised by fisheries managers, scientists and industry representatives was the trend towards the employment of quota catchers by quota owners. In particular, it has been observed that quota catchers (who do not have a stake in the fishery beyond their employment) do not display the same stewardship qualities that are present in owner/operators. One of the consequences of this lack of stewardship among those who catch the fish is an unwillingness to participate in fundamental research activities such as completing research logbooks.

Economic return

It is difficult to assess the New Zealand Rock Lobster Fishery against this objective because no rock lobster specific economic studies or surveys have been undertaken. However, Newell et al (2002) has examined the quota market for all fisheries in the New Zealand QMS.

Two observations are relevant from Newell's work. The first is that he found evidence of improved profitability for fisheries managed under a QMS, and that the benefits were greatest for fisheries that were over-capitalised and over-exploited under the prior management system. Prior to the implementation of a QMS for rock lobster, the fishery was considered by Newell to be over-capitalised and over-exploited.

The second point of interest is the assessment of rate of return for the New Zealand seafood industry as a whole. Figure 5 plots expected rate of return against both nominal and real New Zealand interest rates. This figure shows that the rate of return in the New Zealand quota market (not just rock lobster) is consistently higher than official interest rates. The inference to draw from this analysis is that the presence of a functional market for quota entitlement enables the industry to reach a structure that is profitable, which in turn is a factor that can promote good return on investment.

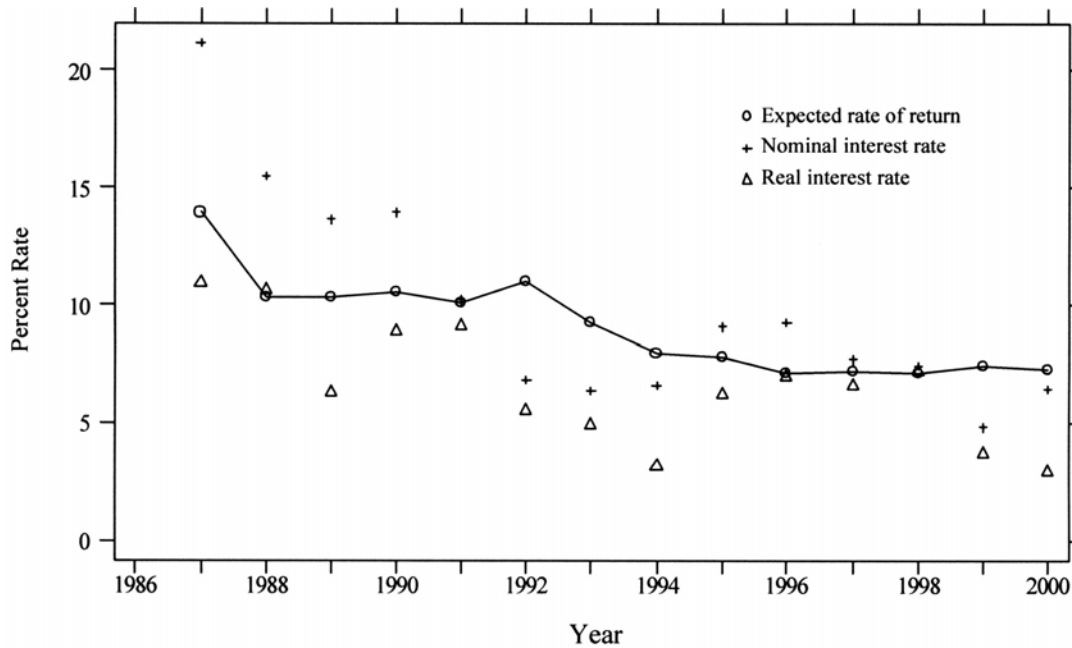


Figure 5: Rate of return for New Zealand quota units (not just lobster) and market interest rates. Note rates of return are medians across fish stocks in each year. The interest rate is based on New Zealand Treasury bills; the real rate is deflated using the New Zealand consumer price index. Source: Newel et al 2002.

Cost of Management and Compliance

The cost recovery system in New Zealand, as administered by the Ministry of Fisheries, is not a budget-based system. Rather, the amount contributed each year by industry is a fixed percentage of the deemed value of all rock lobster quotas. Therefore, the amount contributed is not related to the actual cost of management but rather the value of entitlement.

In recent years, the rock lobster industry has made annual contributions in the order of NZ\$3.3–3.5 million. This money covers the cost of management (22 per cent), research (14 per cent) and compliance (64 per cent).

Licensees in the rock lobster fisheries also pay an additional levy to fund industry support, representation and management structures such as SeaFIC (the peak seafood

body), the NZRLIC (the peak rock lobster industry sector body), and regional rock lobster organisations known as CRAMACs.

Compliance is the largest single component of the management cost, and the focus of the compliance activities undertaken by the Ministry of Fisheries is quota-reporting accountability. According to the Ministry of Fisheries, approximately one third of all compliance spending is dedicated to forensic accounting examination of the movement and reported movement of lobsters.

Invariably, the majority of offences successfully prosecuted are quota offences, as opposed to offences relating to the take of protected lobsters or the unlicensed take of lobsters.

Currently, there is no vessel monitoring system in the fishery. However, the potential benefits were mentioned in the course of conversations with both government and industry spokespersons. There is a requirement to land catch at an approved landing site.

In New Zealand, the government estimates the volume of lobster taken illegally (i.e. outside of the QMS), and this is considered within the TAC setting and allocation process. The Government's estimates of illegal take vary for the different fisheries but are particularly high – as high as 30 per cent of the TAC in some instances. This is a significant proportion and points to failings within the existing compliance program.

The NZRLIC believes that the industry's compliance with the QMS is at acceptable levels, and that the Ministry of Fisheries' compliance program on quota reporting accountability is appropriate. Accepting this assertion, it is the activities of unlicensed fishers (fish thieves) that are not being adequately policed.

Industry Dynamics and Fishing Patterns

Industry size

The need or desire for the fleet to restructure in New Zealand, while not explicitly stated in the objectives for moving into the QMS, was certainly recognised as being important. Consequently, the management arrangements put in place to complement the setting of a TACC made relatively liberal provisions for quota entitlement to be transferred.

It is also relevant to note that prior to the fishery's movement into the QMS, licences were not divisible and therefore the ability to trade in parts of licences (units of entitlement) did not formally exist. Furthermore, under the QMS, there have never been constraints on pot numbers or linkage between pots or quota.

It is therefore not surprising that – with more liberal arrangements and direct constraints on catch – in the nine-year period following the introduction of the QMS (1990–1999), the number of quota owners decreased 31 per cent. NZRLIC believes that the TACC reduction has been the primary force in driving the fleet's restructure –

a view supported by the fact that in the same nine-year period the TACC has decreased by 23 per cent.

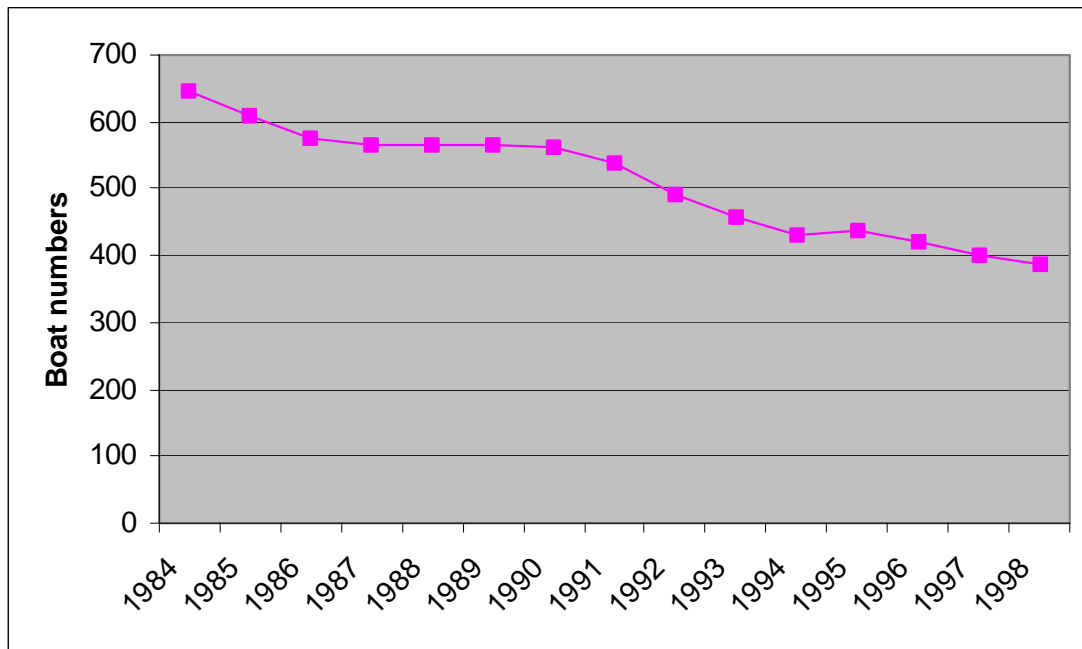


Figure 6: Total number of boats within the New Zealand Rock Lobster Fishery 1984-1999

By some standards, this level of fleet adjustment is relatively moderate and the division of the fishery into 10 separate fisheries and the presence of an aggregation limit of 10 per cent of the quota for each quota management area are factors that may have slowed the rate at which fleet restructuring has occurred.

The concentration of ownership is a further measure of how the industry has restructured in New Zealand. Connor (2001) examined the concentration of quota entitlement across all of New Zealand’s QMS fisheries and the contrast is an interesting one. Connor used the Herfindahl-Hirschman Index (HHI) to measure concentration of ownership⁴. The HHI is expressed as a percentage, and the higher the percentage the greater is the concentration of ownership and market power of those who own the quota.

For the period 1990–98, the rock lobster fishery averaged a HHI of 1.02 per cent (the lowest of all New Zealand fisheries). For the same period, the mid-depth fisheries (including hoki, barracouta, hake and ling) averaged a HHI of 15.7 per cent. This result shows that the degree to which ownership of rock lobster rights has concentrated is relatively low in comparison with other New Zealand fisheries in QMS.

The hoki fishery, for example, has an annual TACC of approximately 50,000 t, and there is a very high cost of capital for fishing and processing. Therefore, the need for

⁴ The HHI measures concentration of ownership and market power by considering the number of owners and the spread of share holdings of the owners.

participants in the fishery to achieve economies of scale is a significant economic driver. In the case of the rock lobster fishery, it is by comparison a small-volume, high-value fishery with low cost of capital and no specialist processing needs.

Noting that there are no aggregation limits in any of the mid-depth fisheries, this signals the probability that the economic forces to aggregate, and vertically integrate is strongest in large volume fisheries, such as hoki.

This New Zealand example is interesting because it indicates that the economic forces that drive rationalisation cannot be solely attributed to the management systems. Rather, it is factors such as the size of the TACC, the nature of the fishery itself and the presence of a market system that will determine the extent to which a fleet will restructure.

Recognising that there has been a level of downsizing in the New Zealand rock lobster fishery, it is relevant to consider the effect this has had on communities that host the rock lobster fishery. As previously mentioned, there are no specific sociological studies but the delegation was informed that many of New Zealand's inshore fishermen are diversified, to varying extents, in different fisheries or fishing related businesses, e.g. charter. Therefore, the towns and regions in which they live are diverse – even when fishing is the biggest employer. As a consequence, it is likely that the resilience of these towns is such that modest reductions in the number of people of fish for rock lobster is unlikely to have had a significant effect.

Value of entitlement

Prior to the rock lobster fishery moving to the QMS, the management arrangements did not make the commercial fishing right divisible – i.e. there were no units of entitlement. Consequently, there was no market and a comparison prior to QMS and post-QMS is not possible. However, since the introduction of the QMS, there has been a significant increase in the value of the quota entitlement and the price for leasing quota.

Newell 2002 cited prices of NZ\$100,000 per tonne and an average lease price of NZ\$10,000.

One of the generic criticisms that has been levelled at QMS is the barrier to entry created as a consequence of the increased value of entitlement. Newell et al 2002 found that since 1990 there has been a net reduction in the number holding a quota in all new Zealand fisheries, but each year since 1990 there have been 90 new quota holders entering the system.

This indicates that the cost of entry is not over-inflated when profitability and rate of return are considered. It is relevant to note that these new entrants are mostly not active fishers but rather investors who lease the entitlement they own.

Changes in fishing patterns

Catch rates

Under the QMS, some of the fisheries (CRA 1, 2 3, 4, and 5) have experienced significant improvements in CPUE, while the remaining fisheries have essentially maintained pre-QMS CPUE (CRA 6, 7 and 8) noting that these values were already significantly high. Figure 7 describes the CPUE in kg/pot lift for the CRA 1–8 fisheries for the period 1984–2001.

In addition to being one indicator of resource health, a sustained improvement in CPUE has a positive effect on the profitability of fishers. As lobsters become easier to catch the relative cost per kilogram goes down.

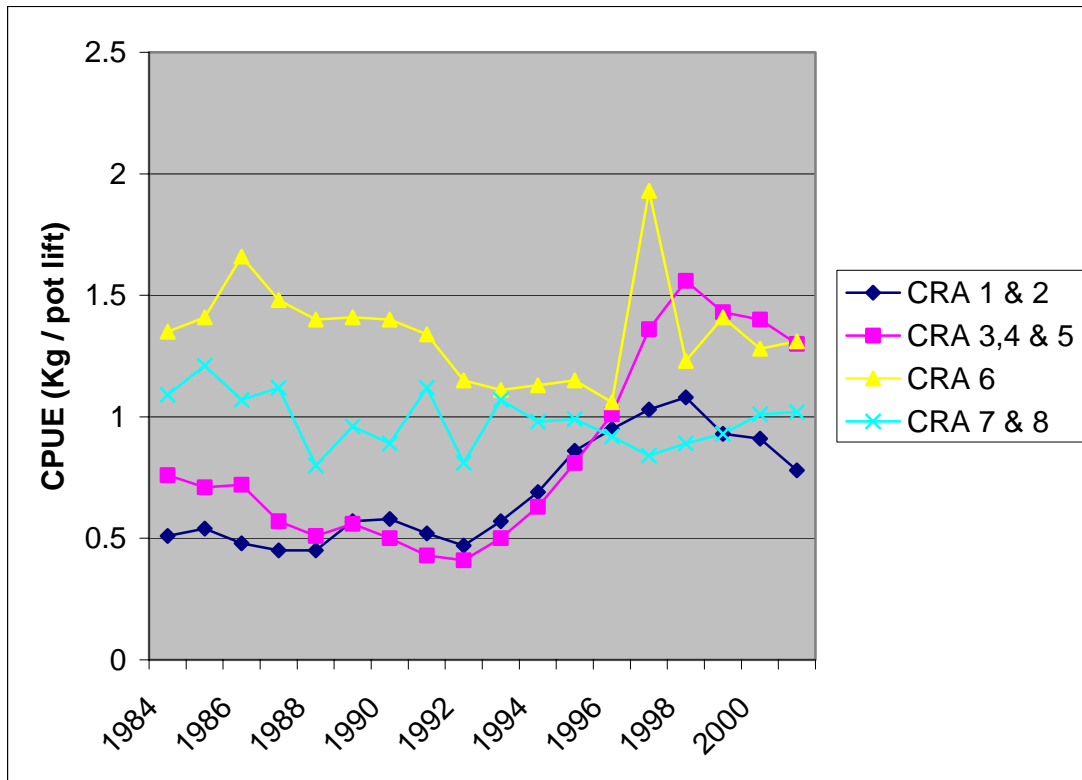


Figure 7: CPUE (kg/pot lift) for CRA 1–8, 1984–2002.

When to fish?

Immediately following the move into the QMS, there was a distinct shift of effort out of the spring-summer period into the autumn-winter period. This shift coincided with the development of the high-value Chinese live market and it is likely that a shift on a smaller scale would have occurred irrespective of the QMS. However, the fact that the New Zealand QMS was in place and that there are no closed seasons within this management system enabled the industry to take full advantage of the high prices offered during autumn–winter. The risk of not catch their individual allocation that fishers would associate with winter fishing is also lessened by the fact that the season begins in April. This ensures that licensees have the entire summer period as a “backstop” should winter fishing not produce good catches. Figures 8a and 8b illustrate the shift in seasonal fishing patterns for the CRA 4 and 5 fisheries.

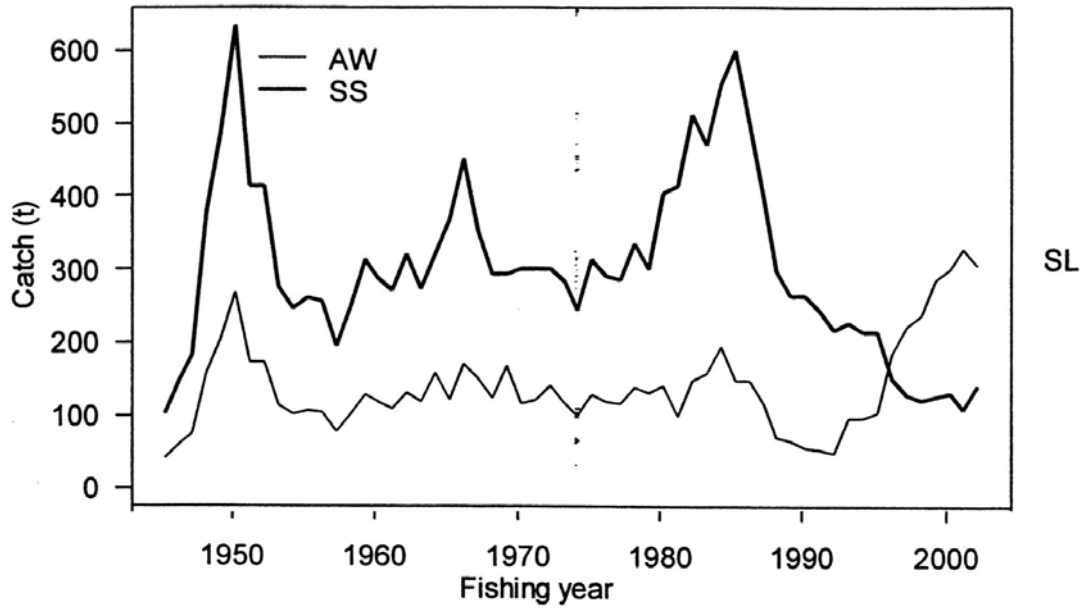


Figure 8a: CRA 4 Catch (tonnes) represented as a summer–spring and autumn–winter catch for the period 1945-2002.

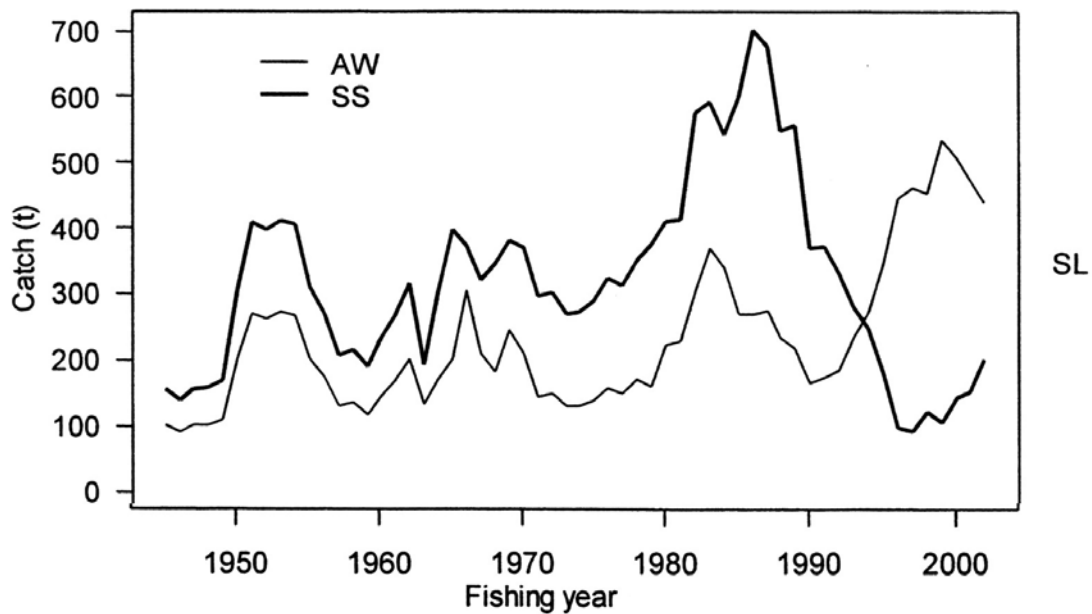


Figure 8b CRA 5 Catch (tonnes) represented as a summer–spring and autumn–winter catch for the period 1945-2002.

Where to fish?

The division of the New Zealand fishery into 10 separate management areas limits the ability for operators to be highly mobile and roam large areas. High mobility allows fishers to focus their efforts on areas that yield high catch rates at a given time or produce a class of lobster most sought after by the market.

That said, a number of industry representatives stated that the mobility of operators within the management areas has increased and that this trend is a further extension of market fishing. Specifically, it was reported to the delegation that certain parts of the fishery are known to produce a class of lobster at a time when the market is prepared to pay the highest price.

This increased mobility has created a new form of competition on the water in which fishers attempt to dominate the best grounds during peak market periods. The tactic used is to overload an area with pots that aren't necessarily baited or even actively fished, but simply occupy space that might otherwise be accessed by another licensee. Operators are able to do this because there are no restrictions on the number of pots that can be used.

Tasmania

After nearly 10 years of debate, a quota management system utilising individually transferable quotas was introduced in the Tasmanian Rock Lobster Fishery in March 1998. Prior to that, the fishery was managed as many rock lobster fisheries have been managed – a reliance on input controls including limited entry, restriction on pot numbers and an array of biological controls (i.e. size, and breeding condition).

Under this input management system, there were increasing concerns for the status of the stock from both industry and government. These concerns had emanated from a trend familiar to many fisheries – a doubling of fishing efforts in a 10-year period while the catch remained essentially the same (Ford 2000).

Given this backdrop, it is not surprising that the debate as to how best to manage the Tasmanian rock lobster fishery was principally focused on the long-term sustainability of the resource. In this debate, the Tasmanians considered a number of management options. However, the choice essentially came down to two options: ITQ, or the introduction of large (30 per cent) effort reductions (Ford 2000).

Ultimately, the decision to move to the quota system was taken because the government, and majority of industry, considered that an ITQ system would provide the greatest assurance of long-term sustainability. Furthermore, it was acknowledged that there would necessarily be a reduction in fleet size under the new management system, and that QMS provided the best system through which fleet adjustments could be made.

Fishery Facts

Target species

- Southern Rock Lobster (*Jasus edwardsii*)



Figure 9: Northern Tasmanian fish processor with a southern rock lobster

Access

- Operators require a rock lobster licence with not less than five and no more than 100 quota units.
- Quota units are allocated in perpetuity under the *Living Marine Resources Management Act 1995*, with an expectation of annual renewal.
- Each quota unit entitles the holder to take 1/10,507 of a given TACC and to use 1 pot per unit (up to a maximum of 50 pots per boat).
- Units are freely tradeable and there are no owner/operator provisions.
- There is a maximum of 10,507 pots in the fishery.
- Each licensee can access the entire fishery (i.e. there is only one zone).
- Licences and quota units are freely transferable, noting that quota units must be attached to a licence.
- There are no foreign ownership restrictions.
- There are two types of processing authorisations: handling (up to five animals at a time, cheap and unlimited), and processing (more than five animals, relatively more expensive, unlimited).

Sustainability

- There is a total allowable catch (TAC) for the entire fishery (no zones).
- The Total Allowable Commercial Catch (TACC) is 1,523 tonnes.
- The Minister for Fisheries can adjust the TACC for a given quota management area to meet sustainability objectives.
- Detailed catch disposal records are required.
- There is a minimum legal length for both male and female animals: 110mm for males and 105mm for females (both measurements are carapace length).
- Berried females cannot be taken.
- Trap design requirements are:
 - Maximum trap size (1200mm x 1200mm x 750mm);
 - Single entrance at least 200mm in diameter;
 - One escape gap (57mm x 400mm), or two escape gaps (57mm x 200mm).
- Live lobster can be held on the vessel, in corfs, or on land.
- A number of small closed areas exist (e.g. Tarooma waters).
- There are no quota carry-over provisions.

Season

- There is a two-month closure mid-September–mid-November to protect spawning females and moulting males.

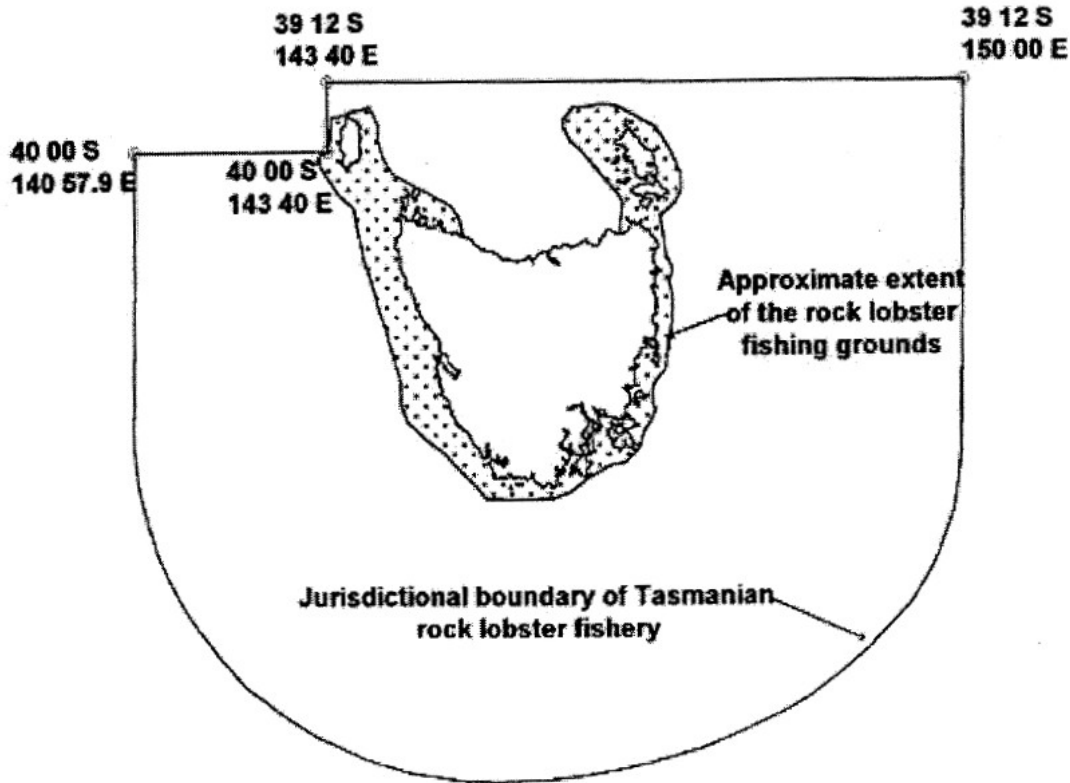


Figure 10: Jurisdiction of Tasmanian Rock Lobster Fishery and usual fishing grounds. Source: Williamson 2002.

Fisheries Management

Performance against objectives of the new system

The quota management system for the Tasmanian Fishery was introduced to:

1. Reduce the catch to a sustainable level by rebuilding the biomass of the rock lobster resource over time; and
2. Provide a mechanism to allow the industry to restructure.

These objectives arose because the government and the majority of industry had agreed that there was an over-capacity problem in the fishery that was leading to the over-exploitation of the resource and limiting the economic viability of the industry as a whole.

In Tasmania, the management system relies principally on the advice of the Tasmanian Aquaculture and Fisheries Institute (TAFI) as to the health or sustainability of the resource. In reporting on the sustainability of the rock lobsters, TAFI uses eight performance indicators. The eight performance indicators used are: (i) commercial catch rates; (ii) research catch rates; (iii) estimated legal-sized biomass; (iv) egg production; (v) abundance of undersize lobsters; (vi) total catch; (vii) size of the fleet; and (viii) recreational catch.

To illustrate the effect on the sustainability of the resource in Tasmania attributed to the QMS, Figure 11 shows the legal size biomass, pot lift numbers (effort), and catch per unit of effort (CPUE) for the fishery for the period 1947–2001.

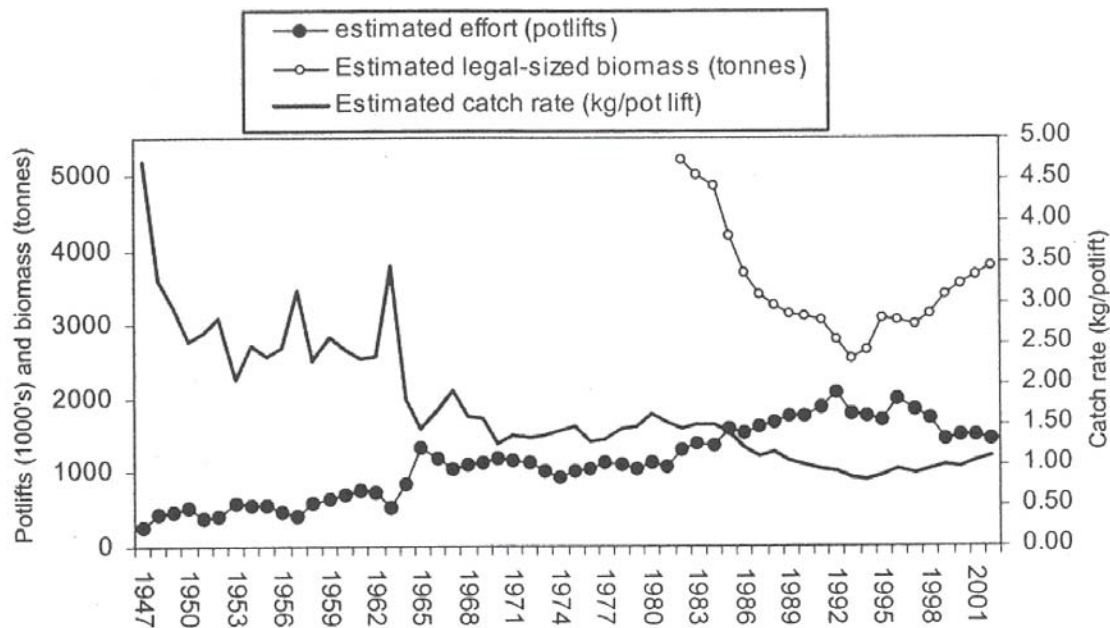


Fig. 11: Rock lobster catch/effort and biomass estimates – estimated effort (pot lifts), estimated catch rate (kg/pot lift), and estimated legal sized biomass (tonnes), 1947 –2002. Source: Witt 2004.

Figure 11 shows that, since the introduction of the QMS, there has been a significant increase in the biomass of legal sized lobsters, a reduction in the total number of pot lifts, and an overall improvement in the CPUE.

For the season ending 2003, TAFI reported that the trends were generally positive, with no trigger points activated. It was noted that there are aspects of the assessment that warrant further discussion and investigation (Gardner 2004).

The move to a QMS has, in the opinion of a senior Tasmanian research scientist, put an increased focus on the stock assessment process and highlighted the importance of having good fishery-independent methods for estimating the fishery’s health. An over-reliance on CPUE data is risky under a QMS because the factors that influence CPUE, and therefore how CPUE can be interpreted, are different under input versus output systems.

By setting a TACC that constrained catch below historic levels and having a relatively free system under which quota could be transferred among fishers, restructuring of the industry began immediately. Figure 12 shows that prior to the introduction of the QMS, reductions in the fleet size had already commenced. However, the rate at which this restructure occurred, both in terms of licence and vessel numbers, increased with the introduction of the QMS. This reduction corresponds with the effective constraint of catch under the new management system.

Further discussion on the change in fleet size is provided under the Fleet Dynamics section.

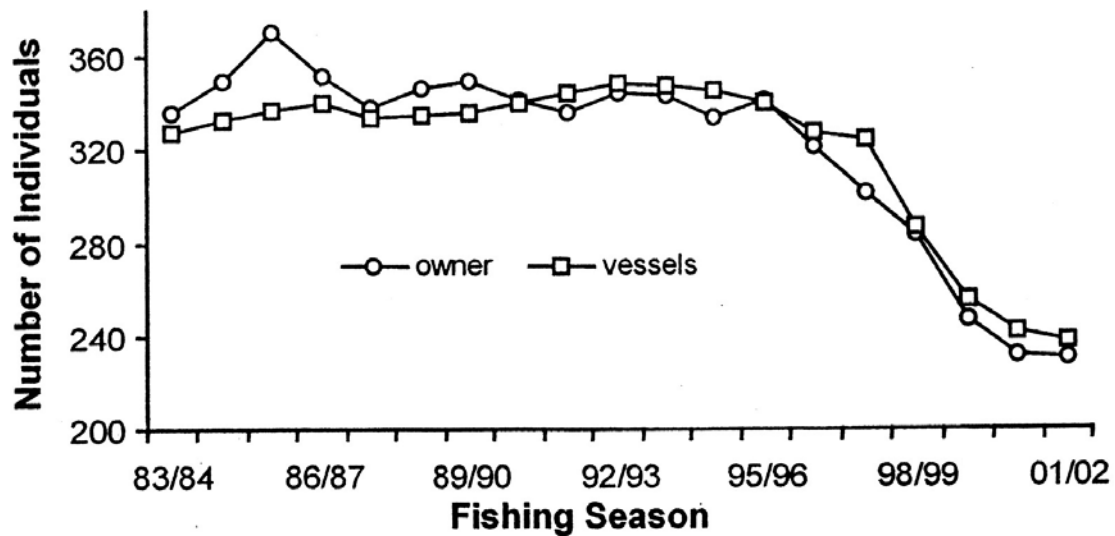


Fig. 12: Number of vessels and entitlement owners for seasons 1983/84 to 2001/02. Source: Frusher et al, 2003.

Cost of management and Compliance Issues

The Tasmanian Government does not fully recover the cost of managing the commercial rock lobster fishery. Currently, licensees pay \$211 per quota unit – a level similar to what it has been since 2001. Fisheries managers estimate that this represents approximately 80 per cent of the full cost of management and varies from 3.6–5 per cent of the fishery’s gross value of production. The licence fees collected are paid directly into the State’s consolidated revenue.

The method for allocating costs does not allow for a detailed evaluation of what additional costs (or savings) have occurred as a result of moving to a QMS. However, a government representative estimated that there was an additional compliance cost of \$300,000 associated with moving to a QMS.

In Tasmania, departmental officers and the State police manage compliance jointly. It is the departmental staff who undertake the forensic investigations associated with the QMS. This team is made up of five officers, including accountants. The police conduct enforcement/patrolling type activities and maintain a significant “at sea” presence of approximately 180 seas days per year. This balance of quota accountability and on-ground compliance activities is regarded as important in underpinning the legitimacy of the QMS.

As a consequence both industry and government consider the rate of non-compliance to be low.

Under the QMS, it was reported by both industry and fisheries managers that there is an increased absentee ownership and therefore less custodianship of the resource. This in itself has caused a compliance issue, and the response of more compliance further exacerbates the problem because it increases management costs which are inevitably passed onto the fisher, who then has reduced margins and further incentives to cheat.

Industry Dynamics and Fishing Patterns

Industry size

It is clear from Figure 12 that the Tasmanian QMS facilitated an accelerated restructure of the industry – something that was intended. The removal of 70 boats (approximately 22 per cent of the fleet) in a two-year period represents a significant adjustment, however, the majority of those who are in the fishery were invariably participants prior to the introduction of the QMS.



Figure 13: Typical Tasmanian rock lobster fishing vessels in port.

With an effective cap on catch and a relatively free transferability system, the rapid fleet adjustment occurred because owners of multiple licences who had previously leased a portion of their entitlement consolidated their holdings into viable units. Furthermore owner/operators, who were typically high catchers under the input management system and had decided to stay in the fishery, re-invested in the first two years to ensure the same level of catch they achieved under the input system.

As a result, a new class of larger licences emerged that prior to the QMS hadn't been seen in the fishery. Figure 14 shows the emergence of licences with more than 40 units post-QMS.

This form of adjustment meant that those who exited the fishery in the first years of the QMS were typically fishers who leased the majority of the entitlement that they fished, or who were older fishers simply retiring from the fishery.

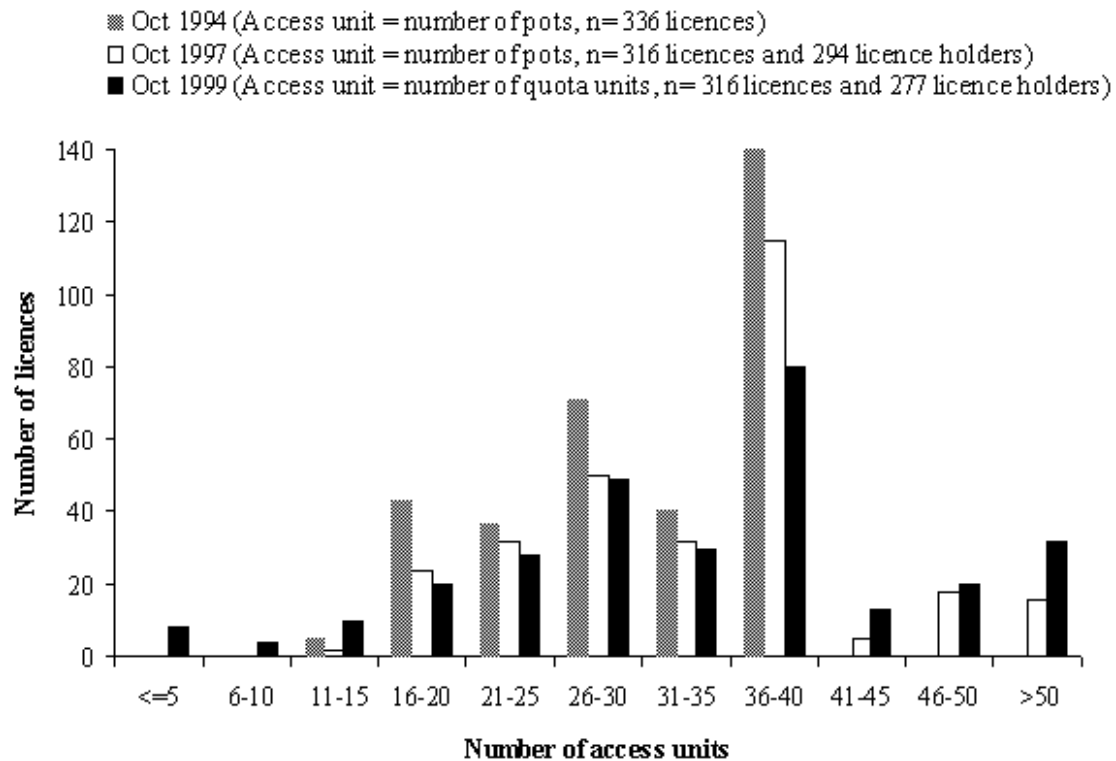


Fig. 14: Comparison of the ownership of the access rights prior to the QMS, and two years later. Source: Ford 2000a.

In addition to the on-water changes, there have also changes in the onshore processing infrastructure. Shortly after the QMS was introduced, a number of factories closed down in some of the more remote locations (e.g. Strahan). The reduction in processing facilities is most likely a direct response to initial and real reduction in the total catch. It is also possible that the contraction in boat numbers meant that rock lobster processing facilities in some ports are simply not required.

Studies into the effects of the QMS on hosting communities (Frusher et al. 2003; Williamson 2002) did not attribute either positive or negative effects on Tasmanian hosting communities to the QMS. The fact that there are no rock lobster specific towns or regional centres in Tasmania is likely to be significant.

Value of entitlement

Prior to the introduction of the QMS, there was a relatively modest growth in the value of a Tasmanian rock lobster entitlement. Once the QMS was introduced, the value of entitlement in the fishery rapidly increased as the market for access was limited by supply.

Specifically, in 1994 a pot entitlement was valued at \$4,000 and this had grown to \$10,000 in 1997 (the year before the QMS). Just 18 months after the QMS was

introduced, a unit of entitlement in the fishery was trading for \$20,000 and in 2003 units were as high as \$50,000 in the marketplace. A similar pattern was followed in the lease market, as operators who couldn't afford to buy quota sought to lease it in order to maintain catch at levels they were used to.

As a consequence of this growth in the value of entitlement and the strength of demand in the lease market, it has become increasingly difficult for new entrants to buy into the fishery and expensive for existing participants to continually re-invest. In this market, investors have begun to have a greater presence – periodically purchasing small quantities of quota units to lease back to the catching sector. The leasing of investors' quota back to industry is often facilitated by established processors who act as middlemen to secure supply without the high capital cost of buying quota themselves.

To illustrate how the cost of access in the fishery has risen, Frusher et al (2003) use the following example.

In 1990, pot entitlement was valued at \$4,000 and the beach price was \$10/kg. In 2002, a quota unit is valued at \$50,000 and the beach price \$35/kg. In 1990, a fisher could pay off an investment in a couple of years. However, in 2002, it would take more than 10 years to repay the debt.

Industry members made the observation that moving from an input system to a QMS shifted the investment away from what was the key element in successful fishing – the boat (and crew) – to the unit itself. Lease fishermen, whose stake in the industry was limited to owning a boat, found that they owned the wrong capital. This was compounded by the fact that other Tasmanian fisheries also had excess capacity issues. Consequently, the market for hulls being retired from the fishery has not been strong.

There is a social cost of the form of adjustment in Tasmania. This cost has been borne by lease fishers who have been forced to exit the fishery and have not found it easy to other ready forms of employment.

Changes in fishing patterns

Catch rates

With a reduced number of boats and gradual improvement in the status of the rock lobster resource, those who remained in the fishery quickly began to enjoy improved catch rates (see Figure 15) and a reduction in the overall cost of fishing as fishers went to sea fewer days in order to catch their allocation. A number of fishers said that moving to the QMS effectively turned off the rush to fish and, in addition to making fishing easier, it also made fishing safer.

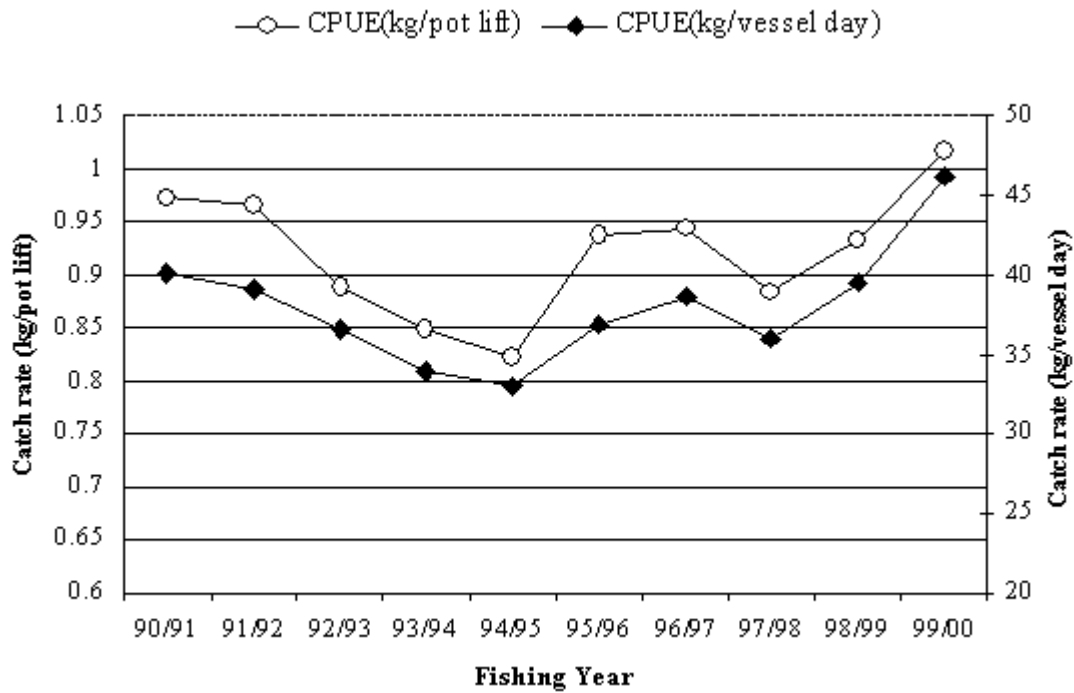


Fig. 15: Comparison of rock lobster catch rates prior to the QMS and two years after. Source: Ford 2000a.

When to Fish?

In addition to finding fishing easier, there is also evidence emerging that the pattern of fishing – in terms of when and where fishing occurs – has emerged. However, it would be false to say that it is entirely the QMS that has led to this change.

Historically, catch rates in Tasmania are highest in the summer months (November–March) and lower in the winter months (April–September). However, since 1993-94, the TAFI data sets show that the number of operators choosing to fish the winter months has been steadily increasing. The pre-quota trend towards winter fishing was primarily motivated by the development of the Chinese live market. The development of this new market saw the prices for lobster caught in the winter months greatly exceed that caught in the summer period (by as much as two times).

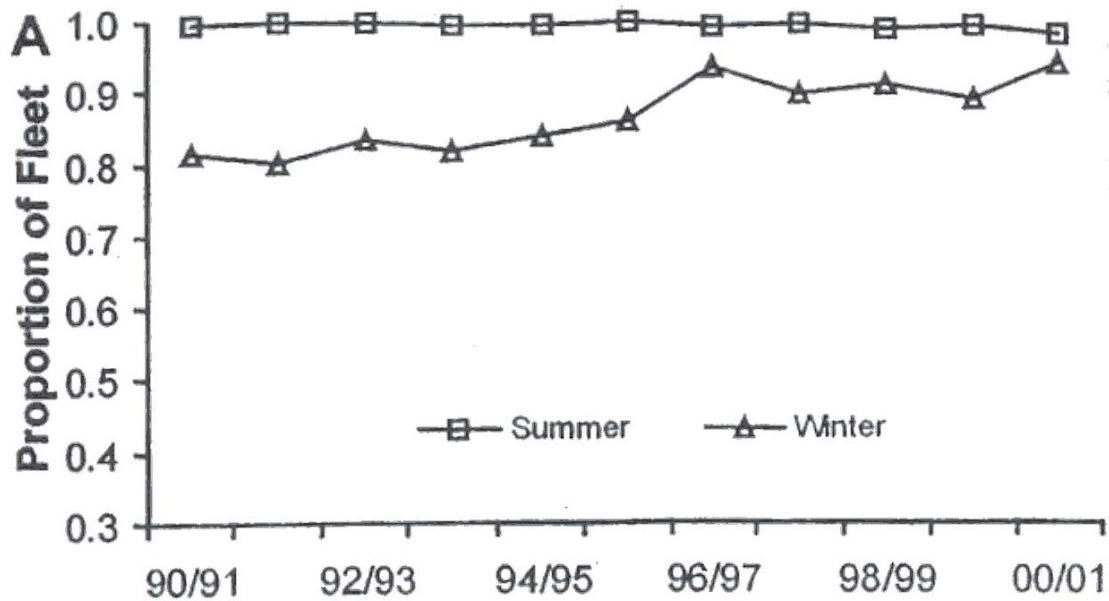


Figure 16: A comparison of the proportion of the rock lobster fleet fishing in summer and winter for the period 1990–2001. Source: Frusher et al 2003.

It is also likely that increased winter fishing occurred in response to a number of effort control measures introduced from 1992 to 1994, i.e. the re-mobilisation of effort into time periods where it was not constrained⁵.

Since the introduction of the QMS, these trends have continued, albeit not at the spectacular rate of change observed for fleet restructuring. Both catch and processing sectors of the Tasmanian industry state that under the QMS, decisions about when to fish are increasingly based on price. In fact, under the QMS, processors are sending direct signals to fishers (through the beach price) when the optimum fishing times are from a market perspective.

The apparent success of the QMS from a sustainability perspective is further underpinning the economics of winter fishing as the winter catch rates in many areas of the Tasmanian fishery have increased significantly (Gardner 2004).

It is also relevant to note that when the QMS was established, the start date for the season was changed from November to March. This season strategy has given the industry the confidence to fish during the typically lower catch rate winter months because they know they can catch whatever quota allocation they have left over during the high-catch rate summer months.

Where to fish?

Processors are not only sending signals to industry about when to fish but also with respect to what type of lobster they want, and this is influencing where the fleet is fishing. The high-paying Chinese live market prefers a large red lobster and these are found in greatest abundance in shallow water off the coast. Accordingly, there is a

⁵ Effort control measures including seasonal closure and a ban on night fishing were introduced in 1992, 1993 and 1994.

trend towards increased shallow water fishing (Figure 17). Comments from industry suggest that the trend towards fishing more in shallower waters is also being promoted by fishers making decisions to reduce, or at least seek to control, the cost of fishing.

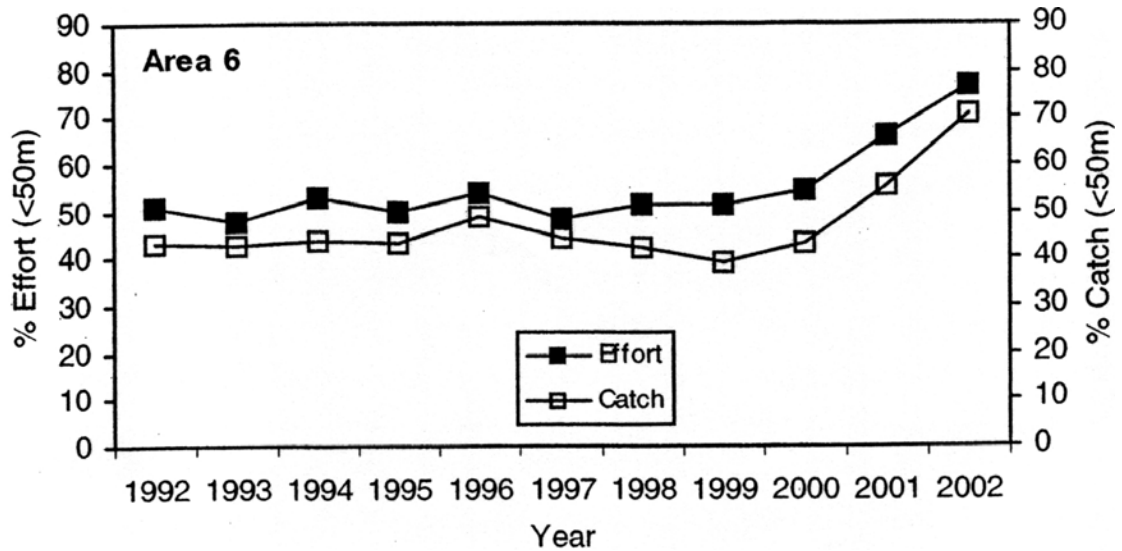


Figure 17: Example of the shift to an increased percentage of catch and effort taken from shallow water grounds (less than 50m). Area 6 is located off the north-west coast. Source: Frusher et al 2003.

South Australia

The South Australian Rock Lobster Fishery is in fact two fisheries – the northern zone fishery and the southern zone fishery. These fisheries target the same species of lobster (*Jasus edwardsii*) and, until very recently, were managed under separate and contrasting systems.

The southern zone fishery extends from the mouth of the Murray River, south and east to the Victorian border. It is typified by an abundance of high-density fishable bottom that stretches from the high-water mark to the continental shelf, which is relatively close to shore. These two factors mean that extended travel in the southern zone is not necessary.

This fishery has been managed under a QMS with input controls since 1993. This system of management was implemented primarily to ensure resource sustainability – fleet adjustment was not an explicit concern or objective of the new arrangements.

In contrast, the northern zone is a much larger area, covering some 3,700 km of coastline. It extends west to the Western Australian border from the Murray River mouth. This zone is characterised by patchy habitat interspersed between large tracts of flat sandy bottom, and operators are forced to cover large areas to find adequate fishable bottom.

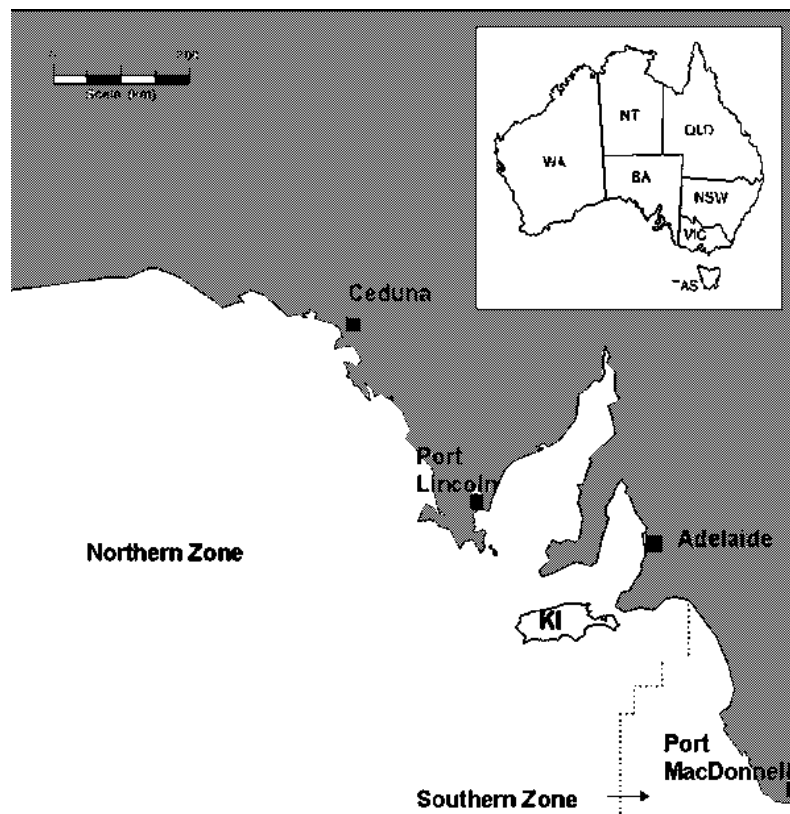


Figure 18: Extent of South Australia’s southern and northern rock lobster fisheries

The northern zone resisted the change to a QMS until 2003, staying with an input-based system of management. The reasons for staying with input controls included: the high northern zone inter-annual variations in recruitment and the perception that this would make TAC setting difficult; the likely high cost of compliance; uncertainty about allocation; and general support for the pre-existing input system (Edwards and Presser 1993).

The “change of heart” in the northern zone came about because the fishery had effectively exhausted the various input control measures available to promote sustainability and these efforts had all largely failed. In particular, nine different effort control packages that included both time closures and pot reductions between 1992 and 2002 had failed to correct the signs of stock decline.

In 2001, a review process to tackle sustainability concerns in the northern zone commenced. At the same time, the southern zone was reaping the benefits from its successful management shift some 10 years earlier. The gulf between the two fisheries is illustrated by the fact that in 2002:

- The southern zone caught its TACC with the lowest number of pot lifts ever recorded, while catch rates and biomass were at the highest levels for 30 years.
- The northern zone catch (uncapped under input controls) was the lowest since 1979, while catch rates and biomass were at the lowest levels since 1970. (Ward 2004)

Against this backdrop, the northern zone review process resulted in the SA Government and the majority of industry taking the decision to implement a QMS with the maintenance of some input controls – albeit different from those in place in the southern zone.

Fishery Facts - Southern Zone

Species

- Southern rock lobster (*Jasus edwardsii*)

Access

- A rock lobster licence is required, with a licence containing both pot units and quota units with the following limitations:
 - 40 < pot units < 100 (but may only use a maximum of 80);
 - 40 < quota units < 100.
- The TAC system is based on the total number of pots in the fishery (11,923) and each pot unit entitles the holder to take 1/11,923 of a given TACC and to use 1 pot per unit (up to a maximum of 100 pots per boat).
- Licences and units are allocated under the *Fisheries Act 1982* with an expectation of renewal annually.
- There is a maximum of 11,923 pots in the fishery.
- There is a maximum number of licences (187).

- Each licensee can access the entire southern zone fishery (i.e. there is only one zone).
- Licences and pot units are transferable (but pot units must be attached to a licence).
- There is a 15 per cent foreign ownership limit.
- Only individuals can own licences.

Sustainability

- There is a total allowable catch (TAC) for the entire southern zone fishery (no zones).
- The Total Allowable Commercial Catch (TACC) in 2004 was 1,900 tonnes.
- The Minister for Fisheries can adjust the TACC for a given quota management area to meet sustainability objectives.
- Detailed catch disposal records are required.
- There is a minimum legal length for both male and female animals: 98.5mm (measurement is carapace length).
- Berried females cannot be taken.
- Trap design requirements are:
 - dimensions (diameter 1m, height 1m, weight 40kg, 50mm mesh);
 - escape gaps (50 mm mesh or 55 x 150 escape gap);
 - single top entrance.
- Live lobster can be held on the vessel, in corfs or on land.
- A number of small closed areas exist (e.g. Margaret Brock Reef).

Season

- 1 October-30 April

Fishery Facts – Northern Zone

Species

- Southern rock lobster (*Jasus edwardsii*)

Access

- A rock lobster licence is required, and the licence contains both pot units and quota units with the following limitations:
 - 25 < pot units < 70
 - 400 > quota units
- Unlike the Southern Zone, there is not an explicit link between pots and quota. In fact, the two are quite separate and there is no upper limit on the quantity of quota held by a single operator.
- There is a maximum of 3,950 pots in the fishery.
- Each licensee can access the entire northern zone fishery (i.e. there is only one zone).
- Licences, pot units and quota units are freely transferable (each in their own right) noting that pot and quota units must be attached to a licence.

- There is a 15per cent foreign ownership limit.

Sustainability

- There is a total allowable catch (TAC) for the entire northern zone fishery (no zones).
- The Total Allowable Commercial Catch (TACC) in 2004 was 625 tonnes.
- The Minister for Fisheries can adjust the TACC for a given quota management area to meet sustainability objectives.
- Detailed catch disposal records are required.
- There is a minimum legal length for both male and female animals: 105mm (measurement is carapace length).
- Berried females cannot be taken.
- Trap design requirements are:
 - dimensions (diameter 1m, height 1m, weight 40kg, 50mm mesh);
 - escape gaps (50 mm mesh or 55 x 150 escape gap);
 - single top entrance.
- Live lobster can be held on the vessel, in corfs or on land.
- Pots can only be pulled once per day.
- One closed area exists (Gleason landing).

Season

- The closed season is 1 June-31 October.

Fisheries Management

Performance against objectives of the new system

For both the southern and northern zone fisheries, the paramount objective in moving to a QMS was resource sustainability. Interestingly, with the southern zone, industry restructure was not an explicit objective. In fact, it is truer to say that there was an objective not to restructure the industry. With the northern zone, restructure was not an explicit objective, however, improving the economic performance of the fishery was.

Sustainability

In South Australia, the South Australian Research and Development Institute (SARDI) provides advice on the health of fisheries resources to stakeholders and the responsible management agency – Primary Industries and Resources South Australia (PIRSA). For both the northern and southern zones, important sustainability performance indicators include: (i) catch rate; (ii) mean weight; (iii) abundance of pre-recruits; (iv) exploitation rate; and (v) egg production.

In its May 2004 stock assessment report on the southern zone, SARDI advised that:

“Assessment of all of the information available for the fishery suggests that the biomass rebuilding strategy for the SZRLF has succeeded and that

the resource which the fishery is based is currently in a very strong position.”

Figures 19a and 19b illustrate, for some of the performance indicators, the improvement in the health of the southern zone fishery since the introduction of the QMS in 1993.

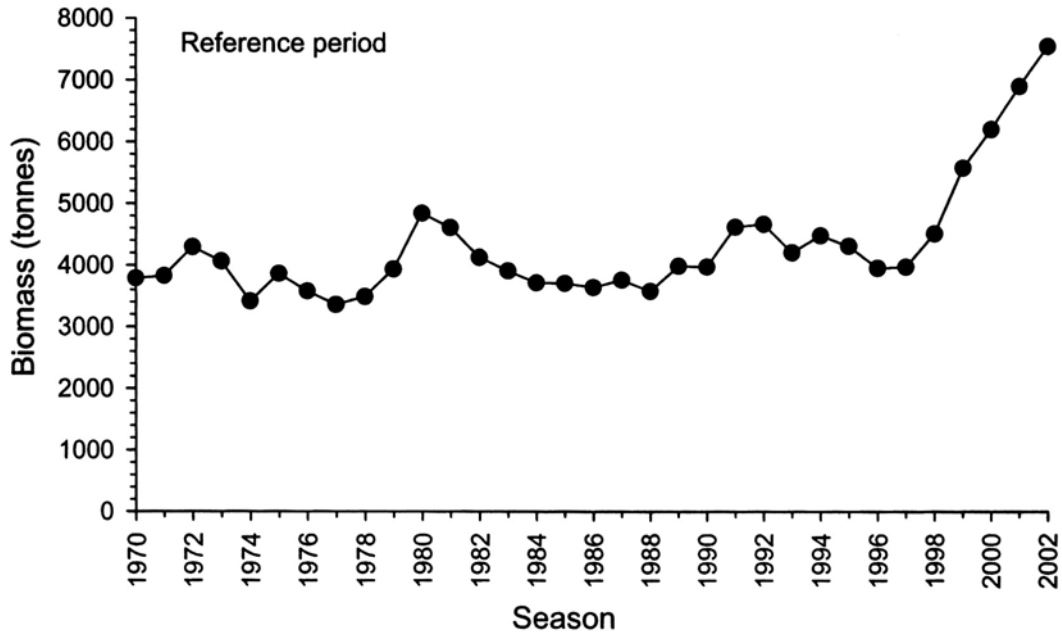


Figure 19a: Estimated biomass 1970–2002. Source: Ward et al 2004.

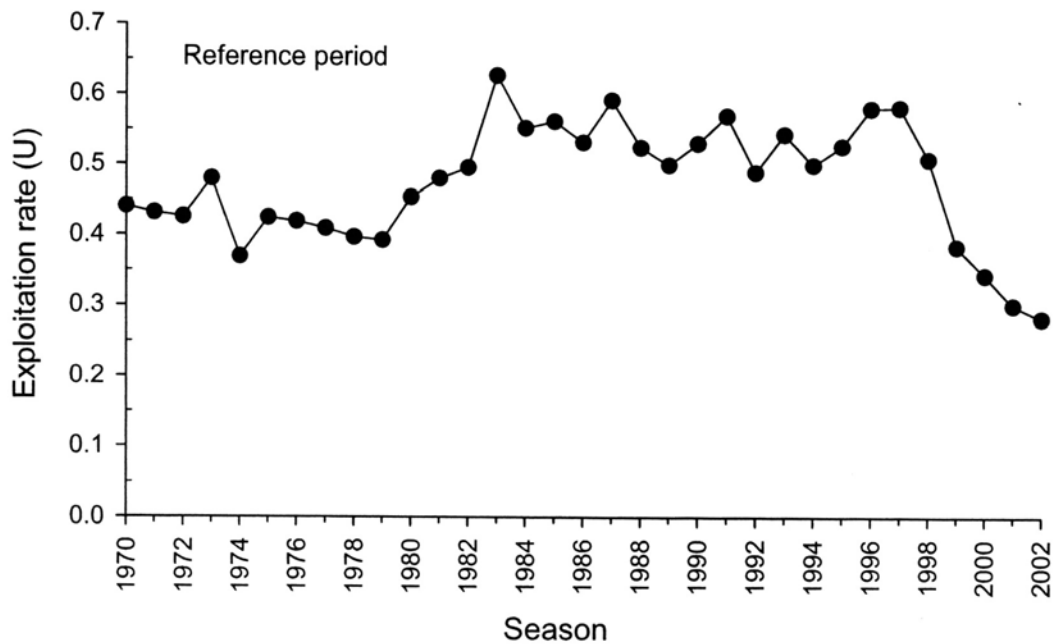


Figure 19b: Exploitation rate of legal rock lobsters 1970–2002. Source: Ward et al 2004.

On the face of it, the success of the southern zone QMS is a little puzzling given that the TACC is not significantly different to the reported catch under the pre-existing input management system. However, this misrepresents the true situation.

Both government and the industry acknowledge that prior to the QMS, a significant proportion of the catch was not reported. Ward et al (2001) estimated that the mean annual reported catch of 1,518 tonnes for the period prior to the introduction of the QMS should in fact be adjusted to 2,000 tonnes. Therefore, the initial TACC of 1,720 tonnes actually constrained the catch. The rapid recovery was also aided by the environmental characteristics of the southern zone that provide for regular recruitment on high-density lobster habitat.

A number of industry members also commented that the mix of input and output controls has wider ecological benefits. In particular, it was said that limiting the maximum number of pots per licence and for the fishery as a whole capped the incidence of marine mammal capture (whales, seals and sea lions), as was the risk of physical damage to the benthos.

At present, the assessment of resource health in the northern zone is not so positive. In its May 2004 stock assessment report on the southern zone (just one year after the introduction of the QMS system), SARDI advised that:

“Collectively, the results of this study show that the biomass in NZRLF is at its lowest level in the history of the fishery and that the TACC for 2003/04 should be set at a level that will facilitate biomass rebuilding and ensure that performance indicators return quickly to the reference levels outlined in the Management Plan.

“Forecasts of future biomass under a range of quota level, based on the outputs of the qR and integrated stock assessment models, suggest that the exploitable lobster biomass in the NZRLF will increase in 2005 and/or 2006 under all quota levels examined, but that biomass rebuilding may not be sustained beyond 2006 for quotas above 500 t and that a quota below 500 tonnes may be required to ensure this outcome.”

Figures 20 a and 20b illustrate, for some of the performance indicators, the decline in the health of the northern zone fishery under the input management system.

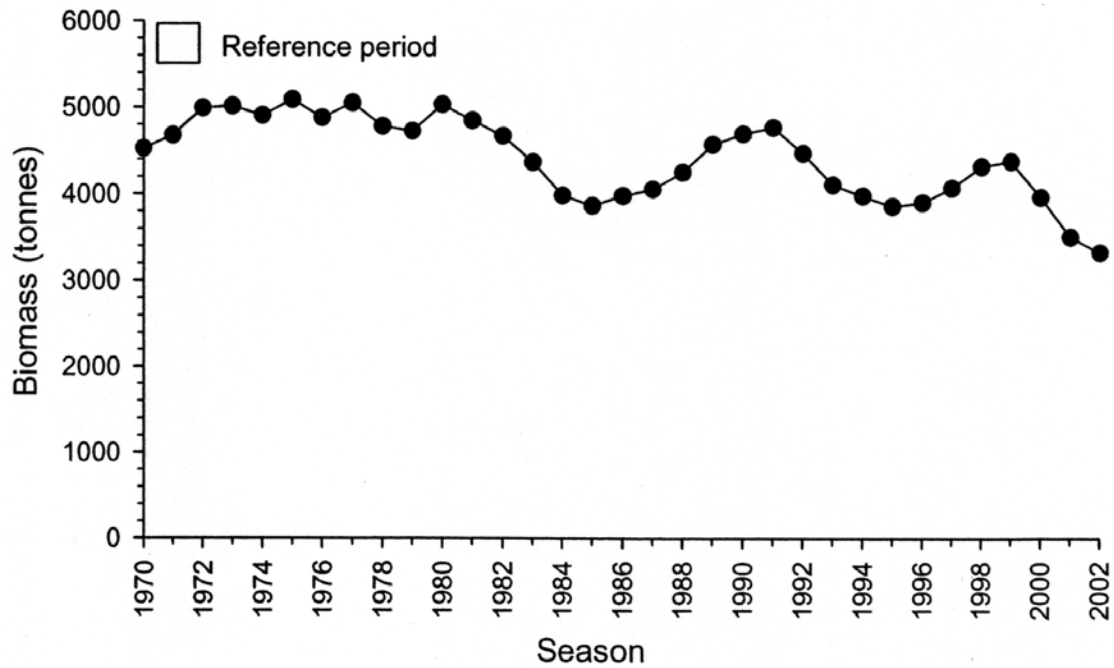


Figure 20a: Estimated biomass 1970–2002. Source: Ward et al 2004.

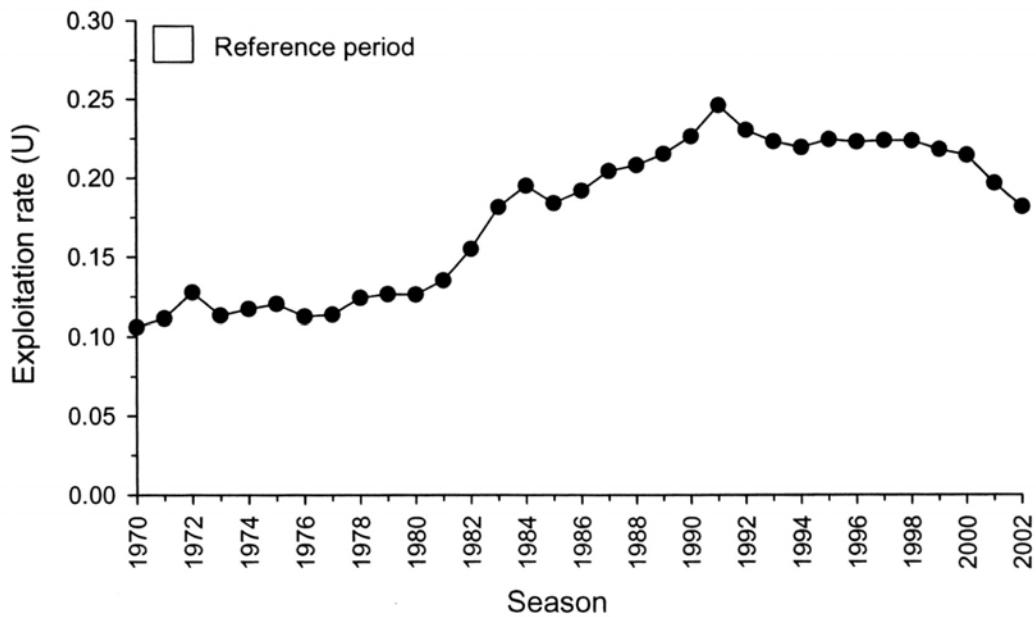


Figure 20b: Exploitation rate of legal rock lobsters 1970–2002. Source: Ward et al 2004.

The poor state of the northern stock has not resulted from a lack of action under the pre-existing input management system. Table 1 summarises input management action taken to address sustainability from 1966 to 2003. Ward et al (2001) attributed the failure of management action taken under the input management system to an over reliance on fishery dependent data – in particular, the use of catch per unit effort was the primary indicator of resource health.

Northern zone fishers and fisheries managers further explained that while changes in nominal effort (number of pot lifts) did not change significantly, effective effort had increased substantially. The industry was able to maintain catch rates (kg pot lift) by adopting and utilising new technologies such as global positioning systems and faster vessels despite the declining biomass. So effective were the fishers at maintaining catch rates, that an independent scientific review in 2002 did not find that the fishery was unsustainable.

Table 1. History of management initiatives for the Northern Zone Fishery

Year	Management Measure
1966	Winter closure
1968	Limited entry declared, northern zone declared
1985	10per cent pot reduction, upper pot limit increased from 60 to 65
1992	10per cent pot reduction, upper pot limit reduced from 65 to 60 pots, industry management review undertaken
1993	One week additional fixed time closure
1994	Legal minimum length increased from 98.5 to 102mm, additional one week fixed time closure
1995	Additional one week fixed time closure
1997	Flexible closure options introduced
1999	Additional three days of fixed time closure
2000	Legal minimum length increased from 102 to 105mm
2001	Two week fixed time closure
2002	Two week additional time closure, greater flexibility in time closure system introduced, major management review undertaken, upper pot limit increased from 60 to 70 pots
2003	Implementation of QMS (TACC 625 tonne), VMS requirement, escape gap requirement.

Economic Performance

The different economic objectives for the two zones are reflected in the different use of input controls to complement the QMS for the two fisheries. For example, in the southern zone, maximum holding restrictions and limits on the transferability of entitlement are designed to limit aggregation and investment from outside of the fishery. While in the northern zone, there is no maximum holding limit nor are there such stringent restrictions on transferability. Consequently, the behaviour of fishers in the market has differed markedly.

Recognising that at the time the delegation visited South Australia the QMS was only in its second full season in the northern zone, it is difficult to do more than make a few simple observations that relate to economic performance. An article in the Port Lincoln Times (September 2005) reports that in the past four years, 27 boats (35 per cent of the fleet) have left the fishery and that there are many licences advertised for sale. Furthermore, approximately 20 of the remaining 50 fishers have made the decision to trade in large fast vessels for more fuel efficient and slower vessels.

Economic performance was not an explicit objective for the introduction of a QMS in the southern zone, however, some relevant observations on the southern zone are made under the *Industry Dynamics and Fishing Patterns* section.

Cost of management and compliance issues

All South Australian commercial fisheries operate under full cost recovery and the cost of management is recovered through annual licence fees. Table 2 provides a summary of the cost of managing the northern and southern fishery for the period 1996-97 to 2002-03.

Table 2: Comparison of fisheries management costs

Southern Zone (QMS with input controls)	Northern Zone (Input controls only)
Fees as a percentage of GVP decreased from 4.7per cent to 3.4per cent	Fees as a percentage of GVP increased from 3.6per cent to 4.3per cent
Fees per kg of landed lobster decreased from \$1.35 to \$1.22.	Fees per kg of landed lobster decreased from \$0.97 to \$1.35.
Cost per licensee increased from \$11,890 to \$11,975.	Cost per licensee increased from \$11,278 to \$11,666.

Table 2 shows the southern zone in a period of relative management stabilisation and the northern zone in a period of relative less management stability and ultimately transition. The cost of management closely reflects comments made by PIRSA fisheries managers. In particular, fisheries managers commented that the biggest cost associated with a QMS is making the transition, and that compliance then potentially becomes the biggest issue and the biggest ongoing cost.

When the northern zone fishery moved to QMS in 2003, there was a subsequent 28 per cent increase in the cost per licensee (\$14,916). This increase reflects the cost of implementing the new management system.

Table 3: Breakdown of fisheries management costs for the southern zone fishery 2003-04 financial year.

Cost Area	\$	Percentage
Policy and Management	\$243,569	9.8 per cent
Administration	\$56,990	2.3 per cent
Research (not including external sources)	\$751,298	30.4 per cent
Compliance	\$1,414,619	57.4 per cent
Total	\$2,466,476	100 per cent

The under-reporting of catch prior to the implementation of QMS in South Australia has been broadly recognised. When the fishery moved into the QMS it was supported with a vastly improved compliance program and this is thought to have substantially reduced the rate of non-compliance.

In the South Australian context, one of the issues confronting compliance officers is the “turn on/turn off” nature of the fishery. The reasons why the fishery operates in this way are explained under *Changes in Fishing Patterns*, but the unpredictability of when fishing will occur makes it difficult to plan when compliance resources should be deployed. Both industry and government identified the benefit and potential compliance efficiencies that could be gained with the adoption of a vessel monitoring system.



Figure 20: A weigh station in the Southern Zone fishery.

Industry Dynamics and Fishing Patterns

Industry size

It has already been stated that there has been very little change in boat numbers in the southern zone either prior to or following the introduction of the QMS, compared to the significant fall in vessel numbers in the northern zone since the introduction of a QMS. Figure 22 plots the number of licences in the northern and southern fishery from 1989 to 2005.

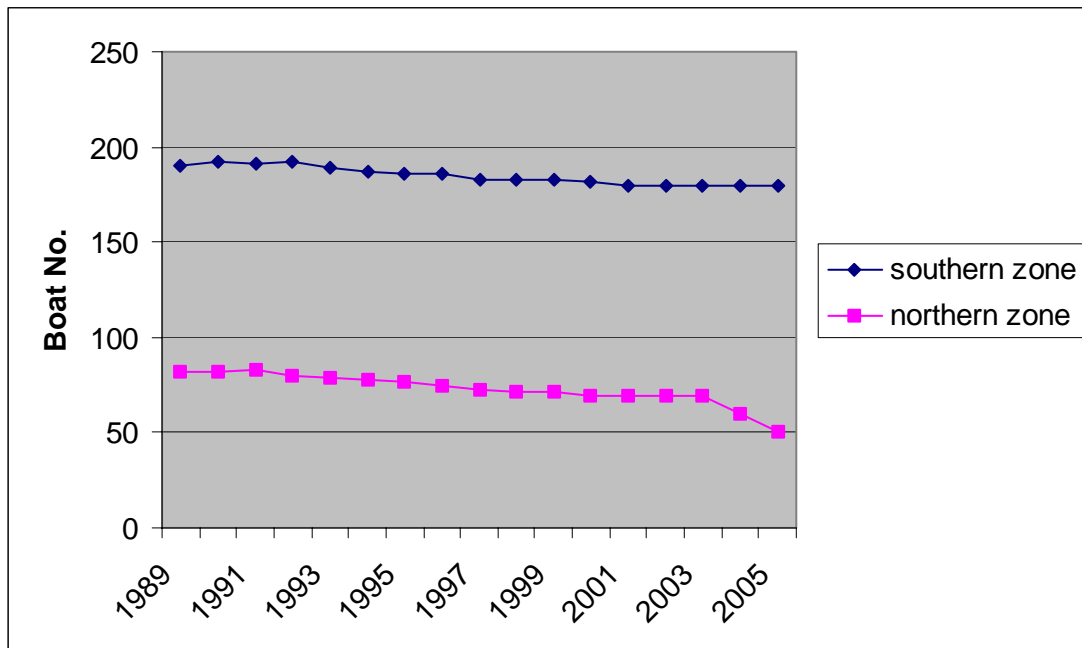


Figure 22: Change in boat numbers for the northern and southern zone fisheries 1989-2005

The reduction in vessels in the northern zone simply represents the expected industry response to a management system that significantly constrained catch and provided transferability rules that facilitated the aggregation of entitlement and therefore the restructuring of the fleet.

The southern zone situation is interesting because it dispels the perception that under a QMS the industry will contract in number as larger, more economically powerful participants aggregate quota entitlements. The reasons why fleet size has remained relatively constant is most likely a combination of regulatory restrictions and the health of the fishery.

Because industry restructure was not an objective, when the QMS was implemented a number of input measures was also introduced. The most relevant are:

- the link between pot entitlement and quota entitlement;
- limiting the maximum number of pot and quota entitlement units that can be held on a licence;
- limiting transactions in entitlement to those who already hold licences; and

- the enforcement of an owner/operator policy.

These rules are certainly constraining economic forces that would otherwise be promoting the restructuring of the fishery. However, both fisheries managers and the industry have stated that they are not a perfect solution. In fact, the ownership rules may be causing a disparity between what structure appears on the water and what the true ownership is, hidden in company documents away from the eyes of fisheries managers.

In addition to the regulatory controls, it has also been suggested that the community structure of the small coastal towns that host the southern zone fishery exert considerable social forces that resist, or at least discourage, investment in the fishery from “outsiders” (Morgan 1999).

The strong performance of the southern zone since the introduction of QMS is clear to see in Figure 23. The dramatically increased catch rate has enabled fishers to catch their allocated catch in a fraction of the days previously required, effectively lowering the overall cost of fishing for a similar or even improved revenue. This strong performance made it possible for all operators to increase or at least maintain their profitability.

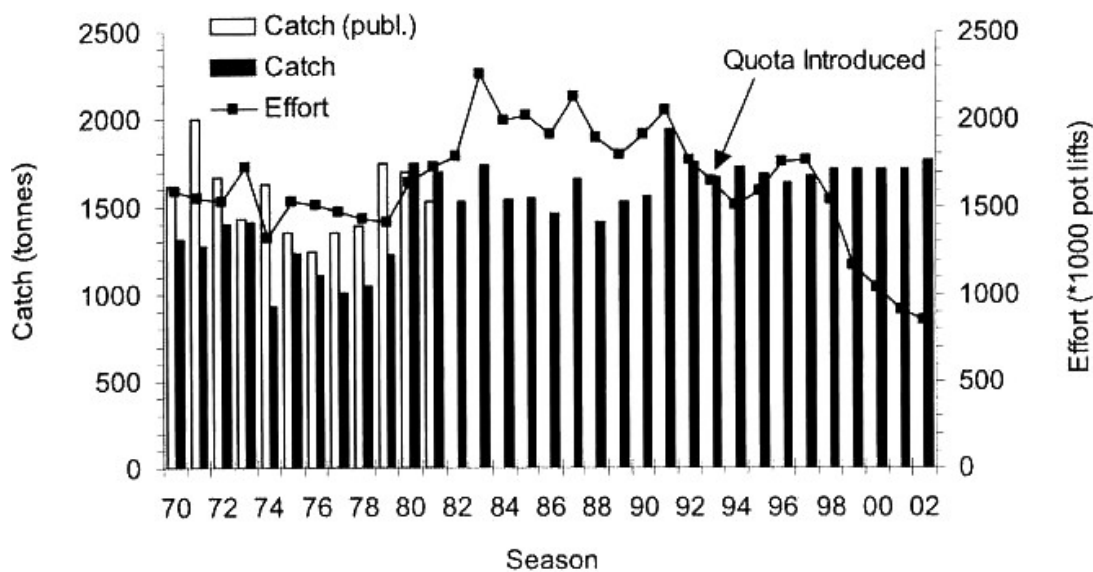


Figure 23: Trends in catch and effort in South Australia’s southern zone fishery 1970–2002. Source: Ward 2004.

Further evidence of the industry’s profitability following the introduction of the QMS is a significant investment in new vessels. From an economic perspective, investment in capital as opposed to quota does not seem rational. When asked why there had been an investment in boats, the industry offered the following explanations:

- industry has been profitable and people want to be comfortable; and

- there is a practical need to pick up all deployed gear when the market conditions determine that fishing is not worthwhile.

It is possible that the investment in boats was has been a “second choice investment”, i.e. because the market for quota (the first choice market) is heavily regulated and therefore very small, it is difficult to invest in. As a consequence, industry invested its profits in a more traditional way that is typical of behaviour under an input management system.

Value of entitlement

Throughout much of the 1990s, the respective values of entitlement in the northern and southern zones were essentially the same despite the fact that the southern zone moved to a QMS in 1993, while the northern zone stayed with input controls. In fact, the market placed a higher or equal value on the northern zone entitlement until 2001 when a significant gulf between the southern and northern zones emerged. Figure 24 represents the change in entitlement value from 1992 to 2002.

This timing coincides closely with the knowledge that the status of the southern fishery was very good and that the status of the northern zone was comparatively poor. Therefore, in South Australia, it is likely that the health of the resource is the greatest determinant of entitlement value.

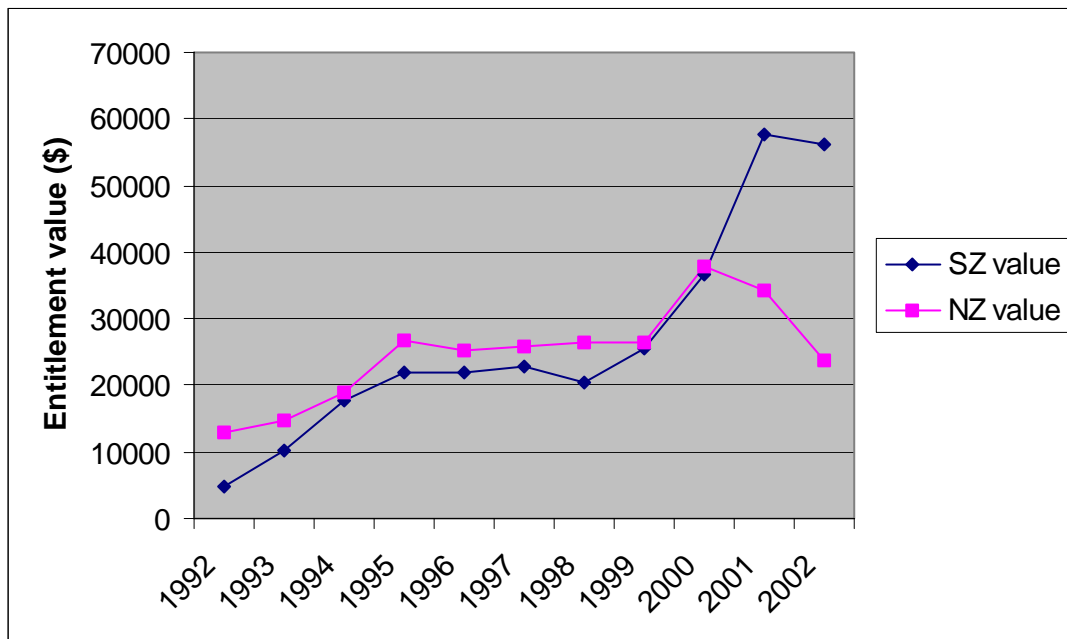


Figure 24: Value of entitlement in the southern and northern zone fisheries 1992- 2002.

This contrasts with other fisheries, such as the Tasmanian fishery, where stock status is undoubtedly a factor in determining the value of entitlement. But other factors that define the nature of the right are equally important. For example, the extent to which the licence is divisible (into tradeable units) and the presence or absence of restrictions of transferability are significant considerations in the market place.

The limitations within the southern zone management system appear to have dampened the market's enthusiasm for rights issued in this quota managed fishery and in doing so may have impeded the economic development of the fishery.

One of the more obvious economic costs of the southern zone QMS is the under-utilisation of capital. As catch rates have increased, the number of fishing days has decreased but aggregation limits have prevented the fleet from adjusting. As a consequence, rock lobster vessels are idle in shipyards for the majority of the year⁶.



Figure 24: Shipyard in southern zone fishery of South Australia.

The lack of a functioning market may be a further cost. Trading in units is rare and usually only occurs when a licensee wants to retire from the fishery. Even in such an event, the licence is typically sold in small parcels (approximately five units) because whole licence purchases are prevented either by the high cost or aggregation limits. The absence of a functioning marketplace, through which new entrants to the fishery can gain access, may result in a generational gap in expertise and labour in the fishery.

Despite these apparent limitations, the current participants in the southern zone fishery are staunch defenders of the existing management system, and it is the sociological benefits currently being realised that are key to this defence. In particular, industry members are content with the lifestyle choices provided by a fishery and management system that only requires them to fish for 80 days a year. Owner/operators have made choices to invest in other non-fishing related businesses, become more involved in community life and spend more time and money on recreation.

⁶ On typical southern zone vessel can take its annual allocation in 80 days.

These lifestyle benefits are contingent upon the fishery remaining profitable for the existing number of operators.

If the northern zone, QMS is successful and as the stock recovers it will be interesting to contrast how the market differentiates the value of northern and southern entitlement in the future.

Changes in fishing patterns

When to fish?

The southern zone season runs from 1 October to 30 April of the following year, while the northern zone season commences on 1 November and finishes on 31 May of the following year.

Traditionally, catch rates have been highest in the summer months and accordingly the greater percentage of fishing has occurred at this time. Unlike Tasmania, the implementation of QMS has not seen a trend to increased winter fishing in order to take advantage of seasonally higher prices. The simple reason for this is that in South Australia both fisheries are closed during the winter months⁷.

With limited pots at their disposal, fishers in the southern zone have actually further concentrated effort into the months of October, November, December and January. It is also apparent from discussions with industry that the timing of the season, i.e. finishing on 30 April, does not encourage fishers to shift catch into autumn because if fishing is poor or there is poor weather there is a risk that they may not be able to take their full allocation.

A small number of operators have begun to leave quota for March and April and have reportedly enjoyed good prices for their product, but they still regard such a strategy as risky.

The market is influencing when fish are taken but rather than it being a seasonal influence, it is a daily one. One industry member described the fishery as a “phone call fishery”, i.e. the operator calls the processor (or a number of processors) to enquire what price they are prepared to pay and decides whether or not to fish based on this information.

Given that the northern zone system has only very recently been introduced, there is currently no understanding of any change in fishers’ behaviour.

Where to fish?

The availability of lobster habitat throughout the southern zone and close proximity of the continental shelf has meant southern zone fishers have, traditionally, not travelled long distances. In contrast, northern zone fishers need to travel further to make the most of isolated patches of habitat separated by large, barren areas.

There is no evidence to suggest that introduction of QMS for the two zones has significantly changed these patterns. That said, in the southern zone where the QMS

⁷ Winter fishing is prohibited to protect egg carrying females from disturbance (Lewis pers comm.)

has increased the abundance of lobster, and therefore catch rates, a pattern is emerging that suggests operators are catching an increased percentage of their allocation in shallow water. There are two plausible explanations for the shift to shallower fishing in the southern zone:

- a) the market is paying a premium for larger, redder lobster, which are relatively more abundant in shallow water; and
- b) with increased abundance of lobster, there is no need to travel further offshore in order to catch your allocation.

Both of these explanations are supported by industry.

Findings

Quota management systems are now in place for the New Zealand, Tasmanian and South Australian rock lobster fisheries. New Zealand was the first to move to QMS (1989), followed by the Southern Zone of South Australia (1993), Tasmania (1998) and Northern Zone of South Australia (2001).

Throughout the world of fisheries management, there are a number of assumptions made about quota management systems. Most common is that under a QMS:

- it is possible to constrain catch to sustainable levels;
- the fleet size falls, the ownership of commercial fishing access rights will concentrate;
- there will be vertical integration through the catching and processing sectors; and
- the new rights holders will display greater stewardship towards the resource..

These assumptions are made because the economic theory is that there are strong incentives for fishing fleets to restructure in order to become more efficient and focus on maximising the value of their catch, as opposed to investing in inputs to maximise their catch.

As part of a review of the system of management used for the West Coast Rock Lobster Fishery, a Western Australian delegation visited New Zealand, Tasmania and South Australia in 2004 to learn more about the management systems used for their respective rock lobster fisheries.

The delegation wanted to test the quota management theories by observing and learning from the experience of similar fisheries that are quota managed. In particular, the delegation wanted to look at the regulatory approach taken, and understand what effect that approach has had on the fishery and the industry with regards to resource sustainability, and the economic and sociological effects.

The focus of this exercise was on the commercial aspect of the respective fisheries – not the recreational or customary components.

Each of the fisheries visited targets the southern rock lobster (*Jasus edwardsii*) and the delegation found that common to all the management systems is the use of a total allowable commercial catch (TACC) to constrain the industry's annual catch. The TACC is then divided into transferable quota units held on licences that are renewed annually. All fisheries complement the TACC with the use of biological controls, i.e. size limits and protection of animals in a breeding condition.

Key differences between the fisheries include the presence or absence of: zones within the fishery, closed seasons, limitations on pot use, pot design and restrictions on the transferability and ownership of units of entitlement (both pots and quota).

The delegation observed that the absence or presence of these measures influences the behaviour of the industry both with respect to investment and fishing strategy decisions. Relevant literature supplied to the delegation supports many of these observations.

This report groups its analysis of the respective management systems into two categories – *fisheries management* and *industry dynamics and fishing patterns*.

Fisheries management

For each of the fisheries observed, the decision to move to a QMS was primarily based on the need to address sustainability concerns. In all cases, the inability to successfully manage under the pre-existing input-based systems meant the decision to adopt a QMS was ultimately supported by the government and the majority of industry.

Subsequent to implementing a QMS, each of the fisheries experienced significant improvements in key sustainability indicators. The notable exception is the Northern Zone South Australian Fishery where the QMS was just in its second season of operation.

The improved situation is in New Zealand, Tasmania and the Southern Zone of South Australia is due largely to the setting of a TACC that actually constrained or reduced catch. This allowed the stock to rebuild, and in some cases, rebuild quite rapidly.

One consequence of moving to QMS and therefore the need to set a TACC is the increased scrutiny that the stock assessment process now comes under. This is true even though the TACC in each of the fisheries has changed very little in percentage terms since first introduced.

Noting that QMS has been largely successful for management of these rock lobster fisheries, it is important to note that the failure of the previous management systems cannot be solely attributed to the fact that they were input managed. For example, senior South Australian research scientists believe that the over-reliance on catch per unit effort data obtained from the industry in the stock assessment for the northern zone fishery process was a major contributing factor.

Without exception, compliance was identified as an issue and there are two key elements: (i) accountability of the catch recording system for the licensed commercial fishers; and (ii) illegal take by unlicensed operators for black markets. A successful compliance program needs to have strategies to address both of these risks. The temptation to focus on tracing the catch of licensed commercial operators could result in the expansion of black market activity – undermining the entire management process.

On the face of it, it is possible to design a compliance program to meet both challenges by balancing the mix of compliance activities and supporting these strategies with sensible regulation. For example rules that require processors to be licensed and limit points of landing are useful. Interestingly, VMS was recognised universally as a most valuable tool yet it is not being utilised.

The level of information available to the delegation on the cost of managing the fisheries under QMS varied and was not complete. However, the clear indication from fisheries managers and industry alike was that the greatest cost burden is experienced in the first few years as the fishery goes through a transition to a QMS. The experience has been that the most significant cost impact has come from compliance and, to a lesser extent, research.

Industry dynamics and fishing patterns

The response of industry to the introduction of a QMS with respect to its behaviour was an area of particular interest to the.

The first point of interest is that for three of the four fisheries there was recognition, either explicitly or implicitly, that prior to entering the QMS there was over-capacity and that the new system should facilitate fleet restructure. Accordingly, in New Zealand, Tasmania and the Northern Zone South Australian Fishery, there has been a reduction in both boat numbers and the number of entities owning quota units.

The key elements present for each of the fisheries where there has been a significant level of restructuring are: (i) a TACC that constrains catch and in doing so created or exacerbated fleet over-capacity – the greater the imbalance, the greater the force for restructuring; and (ii) a system that allows a market for units of entitlement to function relatively freely.

The rate at which the fleet adjusts following the introduction of a QMS is a separate issue, and most likely depends on the extent to which the management system limits aggregation of quota units and the degree to which the initial allocation of quota redistributed catch.

When considering the Southern Zone South Australian Fishery, where there has not been any significant change in fleet size, it is apparent that the economic forces that would drive the fleet to restructure can be considerably dampened by regulation designed to prevent aggregation. In this case, it is also relevant to note that at the time the fishery moved into QMS, the market for southern rock lobster was particularly buoyant and the industry was highly profitable.

This combination of events has created an environment in which participants in the fishery have a particularly good lifestyle. The price for this lifestyle is a relatively constrained quota market, and the risk is that the fundamentals that underpin the economics of the fishery change while regulation inhibits the industry's ability to adjust in order to maintain profitability.

As trading and leasing in quota (and pots within the Australian fisheries) has occurred, the value of entitlement increased, and increased quite rapidly. The rapid increase in the value of entitlement is a function of demand. The demand to buy and lease quota immediately following the introduction of a QMS is spurred by the need for participants to adjust the volume of catch to the size of their operation. It is also apparent that the improving health of the fisheries under QMS and the resultant increase in catch rates improved profitability and added confidence to the market.

The trade in quota is mostly fuelled by people leaving the fishery and, to date, the majority of investment in quota entitlements has come from within the existing rights holders. These investors are typically “topping up” their own operations or putting quota into the lease market. Retiring fishers who choose not to sell their stake in the fishery further supply the lease market. Across all of the fisheries, it is apparent that the profitability of fishing is less for a fisherman who leases entitlement as opposed to an owner/operator.

The growing presence of lease fishermen (quota catchers) in these fisheries has both fisheries managers and industry leaders concerned that those who are employed to catch the lobster do not have a stake in the fishery and therefore do not act as stewards of the resource.

The development of the Chinese live market for southern rock lobster in the 1990s resulted in very high prices being realised during the southern hemisphere winter. This coincided with a move to QMS for all but the Northern Zone South Australian Fishery. In the QMS fisheries, there is a change in fishing patterns. Industry has moved (to varying extents) away from targeting high catch rate periods and landing a variety of lobster with respect to size and colour, to an industry that increasingly supplies a size and colour of lobster to the market when the market is prepared to pay the highest price.

This change in fishing strategy has occurred because the rush to fish no longer exists and it is therefore possible for processors to provide direct market signals to fishermen through regular changes in beach price. The change has been greatest in Tasmania and New Zealand where the fishing season is structured to allow for winter fishing and so that the quota year ends at a traditionally high catch rate period, giving fishers confidence that they will be able to take their full allocation.

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Appendix 1

Determining the Best Management System for the West Coast Rock Lobster Fishery

This paper sets out the process under which an assessment of the current management system for the West Coast Rock Lobster Managed Fishery against two alternate approaches is to occur.

The first thing *you* will notice is that this is not going to be a rushed process. In fact the process will occur in three distinct phases set to conclude by the end of 2006. That's three years for *you* to fully understand the issues and the implications of the three management scenarios and reach a position on what *you* think is the best way to manage the fishery.

What *you* will also notice is that the Government does not have a preconceived idea as to what is the best management scenario. The Government is investing in a three-year consultation process so that at the end of it *you* will have been provided with all the information *you* need to make *your* own mind up about what is the best management system for *your* fishery.

To enable *you* to express *your* opinion on the future management of the Fishery there will be a formal poll towards the end of the three-year process. The Western Rock Lobster Council will have a key coordinating role in getting industry stakeholders to express an educated opinion.

It is important to note that the results of this poll will not necessarily determine Government's final position. The poll will make it clear to Government what the majority view of stakeholders is, but as per normal government process the ultimate decision will need to be made based on the substantial merits of the case for or against significant change. A case for change would need to produce convincing arguments that there are material benefits in an Ecologically Sustainable Development (ESD) context to be realised under a new system of management.

Why are we considering changes? Doesn't the system we have work OK?

The management arrangements in place for the West Coast Rock Lobster Fishery have been lauded around the world as best practice fisheries management – for example it is the world's first fishery to be certified by the Marine Stewardship Council. Because of the fishery's solid foundations (i.e. long-term resource sustainability) it continues to attract investment in infrastructure, technology and personnel while also providing the impetus for the development of some significant Western Australian industries such as boat and shipbuilding.

In fact it may well be demonstrated as a result of this process that the current system is the best way to manage the fishery! However, at this stage it is not possible to assume that the current management package is the best way to manage the fishery and therefore it is important that the fishery undergo a process to evaluate the current system against other management strategies.

The National Competition Policy (NCP) is providing the immediate need for this review, and the NCP test of legislation is founded on economic principles. However, we know that the pursuit of economic ideals alone is not an appropriate basis for managing a fishery, clearly there is a need to consider and accommodate ecological and social objectives.

For this reason it is important that if this assessment process is going to produce results that are truly in the better interests of the Western Australian community that it have an objective that is consistent with the principles of ESD, which are entrenched in fisheries resource management policy in Australia.

In Australia, ESD is widely recognised as a natural resource management philosophy that seeks to provide balance to the competing ecological, social and economic objectives associated with the utilisation of renewable resources.

By meeting the ecological management standards set by the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC) and the Marine Stewardship Council (MSC) it is reasonable to state that the “ecological leg” of ESD is being satisfied and will continue to be satisfied regardless of the management system employed.

This being the case, the assessment process about to occur should treat the need for good ecological management practices as an essential requirement for any scenario under consideration. With appropriate wording in the objective, this assumption allows the focus of the assessment to be on the economic and social legs of ESD, which is potentially where the greatest room for improvement exists.

In this context the objective for the assessment process should be:

To investigate alternative management strategies using the current management package as the benchmark with a view to providing the best long-term socio-economic return to the State from the ecologically sustainable use of the western rock lobster resource by:

- a. *providing the greatest incentives and opportunity for growth in economic return from all sectors of the rock lobster industry to Western Australia; and*
- b. *in the context of providing a net socio-economic benefit to the Western Australian community, encourage the maintenance and development of regional communities.*

What are the management scenarios to be considered?

There are three management scenarios that need to be equally assessed side by side noting that there is potential for the scenarios to be varied with the inclusion of greater detail as required. A brief description of the scenarios follows.

1. *status quo*

The system we have today. Based on limiting the number of pots that can be fished in each zone, a range of biological controls and a limited season, today commercial utilisation of the rock lobster resource is sustainable. It should be noted this system could be adapted over time as necessary.

2. An individually transferable effort system

A system that would still be based on limiting the number of pots that could be fished in each zone and biological controls but could have more flexibility for individual operators to choose when they fish and how much gear they use at different times of the year. In other words a management system based on their being a quota on time and effort with the ability to set the Total Allowable Effort based on sustainability needs.

3. An individually transferable quota system

A system whereby units have a value in kilograms of lobster that can be taken and the unit value equates to a Total Allowable Commercial Catch and biological controls remain to ensure the breeding stock is not at risk. A system that has the potential to provide the greatest freedom to operators in terms of when they choose to harvest their share of the catch.

Process for Assessing the Scenarios

	Jan 04 –June 05	July 05 – Dec 05	Jan 05 – Oct 06
Phase 1 Objective analysis of management scenarios			
Phase 2 Communicate analysis of management scenarios with stakeholders			
Phase 3 Poll of stakeholder views & RLIAC prepare advice for Government			

Phase 1 – Objective analysis of management scenarios

Commencing in January 2004 a joint Department and industry Steering Committee chaired by Mr Ron Edwards is to oversee the development of a series of papers that are to in an integrated manner objectively assess the relative advantages and disadvantages of the three management scenarios with respect to the established objective. The areas of study that need to be covered are:

1. Cost efficiency comparisons of the three management scenarios

A cost benefit analysis of the three management scenarios focusing on cost of fisheries management (including assessment of risk of biological or management failure), cost of production and the identification of economic opportunities that could only be realised under alternate management systems.

2. Assessment of market development / advantage opportunities under each of the management scenarios

Building on an initiative to establish a global lobster market database, analysis of what market development or market advantage opportunities could be realised under alternate management systems beyond what could occur under the existing system.

3. *Assessment of the likely impacts on social infrastructure of the management options*

Through the establishment of appropriate indicators develop a conceptual model to predict the behaviour of industry under the various management options and therefore the impact of the expected behaviour on existing host communities.

4. *Assessment of other management systems from other jurisdictions*

Building on work already completed, review and update the current experience in places such as New Zealand, South Australia, Tasmania and Victoria.

The Steering Committee is responsible for guiding the respective authors of these studies to ensure the work produced does in fact address the established objective. This study period would occur over a 12-month period with the aim of releasing papers around May 2005.

Phase 2 – Communicate analysis of management scenarios with stakeholders

With the various studies complete and published the second phase would commence in July 2005.

The sole purpose of phase 2 is to communicate with stakeholders (primarily industry) as to what the objective analysis of the three management scenarios is saying in the context of the benchmark objective so that stakeholders are empowered to arrive at their own conclusions as to which option is best.

The communication process would be based around a series of workshop sessions with professional fishermen's associations and other interested parties. It is desirable that someone who understands fisheries management issues and is independent of both the Department and the industry facilitate these workshops.

The importance of the role to be played by professional fishermen's associations, the Western Rock Lobster Council and the Western Rock Lobster Development Association in this phase cannot be overstated. There is an opportunity for industry leaders to facilitate and guide industry's discovery of the issues and development of a position in such a way as to enhance the prospect of a very positive outcome.

Phase 3 – RLIAC prepare advice for Government

At the commencement of the third phase stakeholders will have been exposed to numerous education and awareness processes based around the four key studies. At this point stakeholders should be in a position to express their views on where the true strengths and weaknesses of the three management scenarios lie and on balance which is the best option.

In this period RLIAC will receive submissions from stakeholders and engage with stakeholders to clarify positions and bring together the combination of stakeholder submissions and results of the four key studies to develop advice to Government. RLIAC will continue to communicate with stakeholders throughout this period to ensure its understanding of the respective stakeholder positions are well understood.

At this point the Western Rock Lobster Council will also coordinate a poll of industry to ascertain what the weight of opinion with respect to the management scenarios is.

It is important to note that the results of this poll will not necessarily determine Government's final position. The poll will make it clear to Government what the majority view of stakeholders is, but as per normal government process the ultimate decision will need to be made based on the substantial merits of the case for or against significant change. A case for change would need to produce convincing arguments that there are material benefits in an ESD context to be realised under a new system of management.

By October 2006 RLIAC will be in a position to formally communicate the substance of the committee's intended advice to Government on the coastal tour before formally presenting this advice. This final step provides further transparency for the process and the opportunity for RLIAC to ensure its assessment of the respective scenarios has properly accounted for the various views and is on balance the best advice.

What happens from there?

Once the Minister has received RLIAC's advice he will take the merits of the position reached to Cabinet. Cabinet's view on the long-term management of the rock lobster fishery in the context of ESD and NCP is likely to be known early in 2007 and it is at that point that details of what (if any) changes will occur and how exactly they will be implemented.

December 2003

Appendix 2

Focus Questions relating to Western Rock Lobster Delegation to New Zealand Tasmania, and South Australia

Context

The broad objective of the project, of which our visit is a part, is to determine the best system of management for the commercial harvest of western rock lobsters. Although we recognise the importance of management dealing with all sources of exploitation, our primary interest in this instance is to better understand the benefits and shortcomings of the system in place for managing the commercial component of other rock lobster fisherys

The impetus for this review comes from a Federal Australian Policy known as National Competition Policy. This policy assumes that competition is good, and that anti-competitive regulation should be removed unless it can be demonstrated that it is in the public benefit to retain certain regulation. Furthermore, the current system of management has been in place for quite some time and has largely remained unchanged for a decade. The West Australian Government is keen to know if this system is still the best system for achieving the optimum commercial use of the western rock lobster resource.

Fisheries Management

1. What has been the cost of running the fishery with respect to management, compliance and research?
2. Can the cost of management be expressed as a percentage of gross value of production or \$/kg (something else)?
3. Has the cost been increasing, decreasing or consistent with CPI? Can cost changes be attributed to specific initiatives, policies or management demands?
4. What are the critical elements of the management program that are necessary to mitigate against management failure?

Socio -Economic Performance

1. Are there studies or information available on the changes overtime in the economic performance of the fishery?
2. Has there been any data collected or analysis of the broader social benefits that are provide by the fishery? Is there any comparative information available prior to the implementation of the QMS?
3. Are there identifiable “fishing communities” or is the economic and social fabric of communities typically mixed?

4. Is there information available on cost of production? Alternately is there information available on key inputs to the fishing operation such as:
 - bait and fuel use per kg of lobster,
 - number of people employed by the catching sector and by the processing sector,
 - cost of gear and life expectancy,
 - investment in capital required
5. Of particular interest is any analysis of whether the management system provides incentives with respect to cost of production and investment in infrastructure.
6. What kind of work force does the fishery (catching and processing) employ – fulltime, part-time or casual? Do they seek other forms of employment to supplement their rock lobster income?
7. Has the harvest strategy evolved over time and to what extent has any change been influenced by cost of production incentives in the management system versus seasonal influences?
8. Are rock lobster fishermen and their fishing capital involved in other businesses, eg charter, other fisheries or non-fishing related? Has it always been this way?
9. What comments can you make about the fleet dynamics overtime?
10. From an investment perspective do you think that the fishery has evolved differently or more rapidly under the QMS then it would have otherwise?
11. What is the mix between owner-operator versus investment based operations? Is it moving one way or the other? If there is a trend, does it impact on the risk of management failure positively or negatively? Furthermore does the trend have a positive or negative impact on fishing communities?

Tim Bray
Rock Lobster Program Manager
Department of Fisheries

19 May 2004

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