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Fisheries management report

Long term management strategies for the Western Rock Lobster fishery

(4 Volumes)

Law enforcement considerations

Volume 4

by
Neil McLaughlan

Fisheries management paper No. 70

Fisheries Department of Western Australia

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Introduction

This report has been prepared for the consideration of the RLIAC Sub Committee in consultation with members of the Sub Committee working group on law enforcement and with senior staff of the Operations Division of the Fisheries Department. It is focussed exclusively on law enforcement issues associated with the management options for the West Australian west coast rock lobster fishery which were under consideration by the Sub Committee at the time of report preparation and should be read in conjunction with Fisheries Management Paper No. 67 entitled "Evaluation of management options" which covers the broader industry management issues.

This report indicates that current enforcement costs at around one per cent of the landed value of the rock lobster catch are relatively low while the level of compliance with existing regulations is high. It provides an understanding of the extent of law enforcement cost increases likely to result from the introduction of alternative management strategies under consideration but as the impact of these strategies on law enforcement resource requirements will vary dependent upon the application of some, ie, the length of any fishing season increase, and upon the possible mix of various strategies, more precise cost estimates will be required when future industry management arrangements are finalised.

1. History of compliance with management rules

Current levels of acceptance of the rules regulating the western rock lobster fishery and of compliance with those rules within the commercial catching and the processing sectors of the fishery are very high, and the level of illegal activity which continues to occur is of a magnitude which has little significant impact on management objectives.

Whilst a satisfactory level of compliance has been achieved over the past decade, illegal activities within the fishery flourished during the 1960's and continued at unacceptable levels until gradually brought under control during the 1970's.

The extent of illegal activity during the peak period of occurrence was sufficient to undermine management of the industry, to jeopardise the validity of catch and effort data, and was of a magnitude to cause a loss of industry and community confidence in the then existing management arrangements. The level of concern resulted in the holding of a Royal Commission enquiry into the industry in 1964.

At a time when consideration is being given to making major changes to existing long standing management arrangements in the rock lobster fishery, it is appropriate to consider the climate in which long term illegal activities were able to flourish in this industry in the past, with the view to ensuring that similar circumstances do not arise out of any future management initiatives.
Illegal activities during earlier years involved :-

1.1 The sale of undersize rock lobsters.

Initially sales were made to satisfy local demand and represented a relatively low percentage of the overall catch. This percentage increased significantly when some processing companies then involved entered into arrangements to buy and process undersize rock lobsters for the export market, an arrangement which greatly rewarded the processors involved who were able to purchase undersize rock lobsters at half the price of legal animals, which were measured by head or carapace length, and realise full price for the tails after illegal processing and removal of the heads. Almost all rock lobsters were then processed for the American frozen tail market.

At the same time, of the 845 boats authorised to engage in the fishery when limited entry arrangements were introduced in 1963, 45 boats were authorised to process rock lobsters to frozen tail packs. During the early years these vessels had almost unfettered ability to process undersize rock lobsters at sea, a situation which continued until effective off shore inspection arrangements were put in place in the early 1970's.

1.2 Excess pots.
It was several years after pot limits were introduced into the fishery in 1963 before inspection staff had access to appropriate patrol vessels and were otherwise equipped to effectively maintain oversight of the number of pots used. Whilst many fishermen did not use excess numbers of pots others were known to have used more than double the number authorised and fishermen using 30% to 40% excess were frequently encountered when off shore inspections of pot numbers commenced.

1.3 Closed waters
An attempt to maintain a closed area within one mile of the coast in zone C to protect juvenile rock lobsters largely failed because Fisheries Officers at the time were inadequately equipped to define or patrol the closed area.

Complaints concerning incursions into closed areas surrounding the Abrolhos Islands and Rottnest Island were frequent and could not be adequately addressed until patrol vessels with appropriate sea keeping ability, speed, and position fixing aids commenced to become available in the early 1970's replacing earlier slow ill equipped vessels.

1.4 The sale of spawning rock lobsters.
While never a problem of the magnitude of those listed earlier the removal of spawn from rock lobsters was undertaken on relatively large scale by some fishermen who became quite expert in "brushing" spawning animals. Difficulties in detecting and successfully prosecuting offenders were overcome with the development of microscopic examination procedures for suspect animals coupled with micro photography enlargements suitable for prosecution evidence.

Transformation of a fishery having high levels of non compliance with the rules by some fishermen and processors to the existing situation where major transgressions are infrequently encountered was a slow process involving the need to address a number of issues including:-

1.5 Legislation.
Frequent amendments to the Fisheries Act, Regulations and Notices were necessary to support management objectives and to close off loopholes as they were exposed and exploited. Long delays in achieving Act amendments has been a continuing problem.

1.6 Penalties.
The deterrent effect of monetary penalties within the Fisheries Act were continuously eroded by an inflationary spiral during the 1970's and by the rapidly increasing value of rock lobsters. A shift of emphasis from monetary penalties to licence suspension and cancellations provisions and the inclusion of a mandatory penalty to permanently remove the number of pots, the subject of an overpotting offence, from the authorised number held by the offender now maintains a more effective deterrent.

1.7 Enforcement resources
Funding for staff, vessels, vehicles and other equipment necessary to deal with developing problem areas has seldom been available until each problem was well entrenched and the subsequent level of complaint within the industry or the wider community of a magnitude which demanded attention.

1.8 Industry support and cooperation.
Whilst fishermen generally have demonstrated a desire to support management initiatives designed to protect their industry, the level of support and cooperation remained low during the early years of the fishery when the management authority was clearly unable to demonstrate a capacity to deal effectively with large scale transgressions. As the issues of inadequate legislation, penalties, and enforcement capacity were addressed fishermen's support for and compliance with management arrangements improved and there is now a high degree of cooperation between fishermen and Fisheries Department staff which extends to a degree of self policing. Fishermen who are satisfied that the management rules are just, are for a good purpose, and are being effectively policed, who are themselves complying with the rules, are unhappy with fishermen who are not complying and are more likely to draw official attention to any illegal activities they observe.

2 Current enforcement arrangements

Oversight of the fishery is maintained by Fisheries Officers based at each of the major rock lobster fishing centres and by officers aboard three 20 metre patrol vessels. All officers involved with the rock lobster industry have access to 4WD vehicles and to small vessels suitable for inshore patrol duties.

A total of seventy nine officers are based along the coast between Broome and Esperance, including the divisional management team at head office. Forty eight of these officers are located along the 1000 kilometre section of the coast adjacent to the rock lobster fishery and are involved with oversight of the fishery to some extent.

No Fisheries Officers are exclusively allocated to the rock lobster fishery and the extent of involvement of each varies considerably from a low of less than ten percent by the officer at Denham to some ninety percent by patrol vessel officers, dependent upon the demands of other fisheries and overall priorities within their respective regions.

In total, approximately thirty seven percent of available inspection staff time is allocated to the oversight of the western rock lobster fishery. On this basis approximately $2.4 million of the total Operations Division budget of $6.4 million for 1994/5 is allocated to rock lobster programs. This figure equates to a little more than one percent of the estimated landed value of the 1992/93 rock lobster catch.

All of the resources allocated to the oversight of the commercial rock lobster fishery are also utilised in compliance programs for the recreational rock lobster fishery.

The percentage allocation to each group would be difficult to estimate as it varies significantly in different areas and over different periods and many patrol and inspection arrangements provide oversight of both groups simultaneously. However, there is no doubt that the level of effort seen to be directed towards recreational fishermen greatly exceeds the percentage of the recreational share of the total annual catch.

A further complication to any attempt to cost commercial and recreational oversight separately is that a large percentage of the enforcement effort seen to be allocated to the recreational fishery is aimed at ensuring that catches do not exceed bag limits and that catches are not sold. Action to prevent illegal sales is of direct benefit to the commercial rock lobster fishery and could more properly be listed against the commercial rather than the recreational sector.

3. Enforcement implications of alternative input control management strategies

3.1 Maintenance of existing management arrangements

Current law enforcement arrangements are achieving management objectives and are likely to continue achieving satisfactory results without a need for significant change with respect to procedures or funding under this strategy. It needs to be remembered, however, that the existing position was achieved following many years during which there were high levels of illegal activity and a great deal of conflict within the industry. Maintenance of the satisfactory situation now existing requires an on-going commitment to sustain existing levels of oversight.

There has been a downward trend in the level of oversight of the rock lobster fishery in recent years as additional funding for staff and equipment resources has not kept pace with increasing demands generated by the introduction of precise management arrangements for other major commercial fisheries (Some thirty three fisheries have been added to the list of managed fisheries in W.A. over the past ten years) or to cater for the demands for increased management oversight of the States principal recreational fisheries. Increases in the allocation of resources to these growing areas of demand, to a large extent, has been catered for by reductions in the allocation of resources to the rock lobster fishery. Continuation of this trend would place the existing satisfactory management arrangements in the rock lobster fishery at risk.

Commitment to maintain resource allocation is necessary in a number of key areas including :

3.1.1 Rock lobster catch inspections.
Screening the commercial catch of some ten to twelve thousand tonnes of rock lobster each season to ensure that undersize, oversize, spawning, or setose animals are not landed and maintaining similar oversight of the catch of recreational fishers involves the continuing allocation of a high percentage of available staff time.

While inspections are primarily intended to achieve rock lobster resource management objectives a secondary but most important objective is the maintenance of equity amongst the fishers landing the catch. From a resource management perspective it would perhaps be not significant if a high percentage of the catch measured a millimetre or so less than the legal minimum size but it would certainly seriously disadvantage those fishers who were accurately measuring and returning illegal animals to the water if other fishers were able to catch and sell marginally undersize animals. For this reason no measuring tolerance can be allowed.

3.1.2 Pot quota controls
The task of ensuring that fishers do not use more than their authorised number of pots has become more difficult in recent years as older fishing vessels were replaced by larger, faster and better equipped vessels. Modern vessels are able to set pots over a wider area, to shift them all at short notice, and where in earlier days vessels working deeper off shore waters needed to set pots in long lines in order to be able to re locate them, vessels equipped with GPS systems and plotters are able to set widely dispersed small groups of pots, or even single pots, and re locate them with absolute precision. It is far more difficult for patrol vessel crews to locate and count pots under these circumstances and it is imperative that the design capacity and outfitting of patrol vessels keep pace with the better fishing vessels in order that they may continue to do so.

3.1.3 Patrols of fishing zone and closed water boundaries
Greatly increased fishing pressure near the Abrolhos Island zone boundaries in recent years has placed heavy additional demands on patrol vessel crews needing to ensure that fishing vessels are not fishing in closed waters or beyond the limits of their allocated zones. Again, in order to ensure that all fishers have equitable access to the resource, no degree of tolerance in determining and enforcing zone boundaries can be extended.

3.1.4 Enforcement of limited entry fishery rules
Considerable enforcement effort will continue to be required to ensure that only authorised fishers are able to take rock lobsters for commercial gain. This involves the oversight of fishing and landing operations of non licenced vessels and the enforcement of requirements that only authorised persons may take rock lobsters for sale and that businesses requiring rock lobsters such as fish shops, hotels, etc, may only buy from licenced fishermen or processors. Noting the increasing value of rock lobsters, the fact that there are some 50,000 vessels licenced under Marine and Harbours Dept legislation for recreational purposes in Western Australia, that much of the rock lobster resource is readily accessible to recreational vessels and that there is a ready market for the product, a reduction in enforcement in this area could result in the development of a significant level of black market sales.

3.2 Changes to existing input control management arrangements

The option of addressing the needs to increase the rock lobster breeding stock level and to increase the market value of the product while continuing with input control management arrangements could involve changes to a number of elements of the existing management package including the length of the fishing season, the period of the year the season was open, temporary or permanent reduction in pots, changes to the legal minimum size, and the implementation of a total allowable catch. Noting that the possible impact of these strategies on law enforcement requirements will vary dependent upon the extent of the application of some, ie, the length of any season increase, and the possible mix of various strategies, it is not feasible to attempt to provide precise law enforcement additional cost estimates for these strategies at this time, this can simply be done at the time of agreement concerning new management arrangements. It is apparent, however, that the possible cost of any additional

strategy or any mix of strategies would not require a high percentage increase in the existing law enforcement budget.

In more general terms the following impacts could be expected.

3.2.1 Increased season length
Increasing the fishing season from the existing seven and a half months to ten and a half months would require enforcement field operations to continue for an additional three months per year.

Current practice is to seek to have field staff on duty throughout the entire fishing season and to restrict leave to the closed season period. This arrangement would be impacted by the longer season and raise the need to appoint five additional relieving staff with a total relieving program cost of $210,000. No additional equipment would be needed.

Additional funding of approximately $200,000 would be required to cover increased field operational costs incurred by existing staff such as boat and vehicle fuel, staff travel costs etc,.

3.2.2 Changed open season period
Should the suggestion to change the open season period from November/June to January/August apply to both commercial and recreational fishers the change would have little impact on existing enforcement procedures or funding requirements.

Application of this option to commercial fishers only would result in greatly increased catches by recreational fishers during the November December period and raise concern about illegal sales by recreational fishers.

Additional field operational funding would be required if recreational fishing was to continue during November and December.

3.2.3 Pot reduction
Any significant reduction in the number of pots fishers can lawfully use may result in the increased use of excess pots. Increased funding would be required to raise the number of random and targeted operations undertaken each season to count the number of pots used by individual vessels.

3.2.4 Temporary changes to the legal minimum size
This option would produce no impact while it was actually in place, however, increased inspection of pots, holding crates, and swim tanks would be necessary for several days prior to implementation of a size reduction to deter long term holding of undersize animals which would become legal at the time of change. A disturbing number of fishers landed large numbers of poor condition near dead rock lobsters up to one millimetre over the legal minimum size when the size was reduced by one millimetre in February 1994..

3.2.5 TAC introduction
The option of placing a ceiling on the commercial catch while maintaining existing controls does not raise significant enforcement difficulties.
Some additional oversight of fishing zone boundaries would be necessary as zones closed at different times as quotas were filled and a more precise and timely system of auditing receivals, sales and exports by licenced rock lobster processors would need to be instituted.
To ensure all catches were accounted for it would be necessary to require that all commercial catches be delivered to a licenced processing establishment.

4. TAC/ITQ implementation

Utilisation of a ITQ strategy within the western rock lobster fishery is likely to generate high monitoring and enforcement problems which would be expected to significantly increase management costs and introduce the need for more restrictive legislation and more intrusive enforcement procedures.

Movement from existing pot quotas, to catch quotas based on the number of pots held by each fishing unit, would have a major impact on fishing units with the highest catch histories, up to fifty percent catch reduction for some, and if it is to achieve the objective of reducing the overall catch to safer levels, would result in a reduced catch for most fishing units.

4.1 Principal law enforcement issues

The principal issues involved with the need to ensure individual catches do not exceed allocated quotas can be summarised as follows.

* Even with expected restructuring, including quota trading to produce fewer fishing units and eventual movement to more cost efficient vessels, a large excess catching capacity would continue to exist.

* The product has a high value and has a high market demand throughout Western Australia, in the eastern states, and as an export commodity. Unlike other Western Australian quota species, tuna and abalone, rock lobsters are easy to sell over the back fence or down at the local pub.

* Rock lobsters can be transported over long distances without any specialised equipment [in a car boot] and can be processed, even to export standards, by cooking, tailing, freezing, and packing, and can be held for long periods, using simple domestic equipment. The inclusion of illegally packed rock lobsters along with legitimate export shipments occurred in earlier years.

* Collusion between catcher and processor to under estimate sales would be to the advantage of both and would be difficult to detect without effective monitoring, surveillance, and audit investigation programs.

* The transport of illegal product to the eastern states by freezer trucks occurred during the earlier days of the fishery and would be more difficult to detect today because of the increased volume of general frozen cargo.

* An expected outcome of ITQ management is that of increased export prices. This would inevitably push up domestic prices also and may assist to create an increased demand for lower priced black market or poached product at a time when product in excess of quota could be readily available.

* Rock lobsters can be landed over all but two hundred kilometres of the thousand kilometre coastline adjacent to the fishery and attempts to prevent illegal landings could be further complicated by at sea transfers to recreational vessels. (There are some 50,000 recreational vessels licensed in Western Australia) At sea transfers to recreational vessels would also serve to distance commercial catchers from the possibility of licence or quota loss penalties.

* Profits from illegal activities would be sufficient to attract a criminal element. This has occurred in the eastern states abalone fisheries and in the New Zealand abalone and rock lobster fisheries where threats of violence against fishermen who complain and Fisheries Officers and their families occur. Once established illegal activities of this nature are extremely difficult to eradicate.

A study of the use of a ITQ strategy in the management of New Zealand's fisheries indicates that most rock lobster fishers have difficulty in catching their quota, consequently, there has been no pressure to under report rock lobster catches or to sell outside of the quota system on the black market. However, quota avoidance practices involving collusion between fishers and licenced fish receivers and black market sales are seen to be significant problems in some fin fish fisheries where fishers are constrained by quotas.

It is believed that in New Zealand, the growth of a very significant level of poaching and sale of rock lobsters by persons not authorised to engage in the commercial rock lobster fishery is due at least in part to the shift in emphasis away from the enforcement of input controls to quota management. The

illegal catch is estimated to be in the order of 800 tonnes per year, equivalent to one third of the 2400 tonne TACC allocation.

Abalone, another of New Zealand's high value low volume quota managed species, also has a major problem with poachers who are estimated to take the equivalent of fifty percent of the TACC.

The number of Fisheries Officers in New Zealand was reduced at the time of implementation of quota management as specialist staff with accounting, computing and fraud investigation skills were appointed to deal with quota management, and the remaining Fisheries Officers now spend a high percentage of available time overseeing quota arrangements and very little time involved with the control of actual fishing operations. The New Zealand experience indicates that any costs associated with quota monitoring and enforcement in Western Australia need to be separately funded and not financed by reductions in existing enforcement arrangements.

A further matter which appears to be central to the high level of illegal rock lobster fishing in New Zealand which will need to be considered in any output control arrangement for the Western Australian rock lobster fishery is that there are no pot limits for either recreational or commercial fishers in New Zealand. Poachers are able to set any number of pots themselves under the guise of being recreational fishers but for the most part are believed to obtain their catches from the large number of commercial pots available.

While it may not appear logical to introduce an ITQ strategy in W.A. and still retain commercial pot quotas, uncontrolled use of pots by commercial fishers could well result in large numbers of old pots being left in the water as new pots were set, with perhaps the intent to work them every second or third day. Access to uncontrolled numbers of commercial pots that are not cleared every day by the owner may result in an increased "recreational"catch and an increased level of illegal sales.

The percentage of the total catch taken by genuine recreational fishers would also be expected to increase if the proposal to increase the length of the fishing season as part of an alternative ITQ management package was introduced.

Experience with quota management systems in New Zealand, and with the small number of quota managed fisheries in Western Australia, has demonstrated that following the implementation of quota management, enforcement emphasis shifts from relatively simple observations or investigations at sea, on the beach front, or at processing factories, etc, which may involve the collection of evidence of a single event on a single day, such as the observed use of excess pots, to very complex investigations of quota avoidance practices.

Investigations of quota management breaches may involve long term covert observations of product flow from vessels to processors, the need to seize and study relevant documents held by processors, transporters, quota holders, and boat skippers, and a need to study financial transactions between them, for comparison against observed landings and quota records. Investigations of suspected quota breaches can involve unannounced searches of business premises, and as fishing records are frequently held at home by vessel owners and skippers, the search of private residences, and can also involve the need to search bank and other financial institution records.

The volume of documentary and other evidence needing to be submitted in the more complex quota management breach cases, and the increased number of issues involved, can greatly increase the length of time involved in Court hearings and, as a consequence, can increase prosecution and defence legal costs very significantly. The New Zealand authority has a budget of approximately $2 million annually to cover costs associated with prosecution actions alone.

In summary, the western rock lobster fishery would be amongst the most difficult of fisheries to manage by way of an ITQ management system. It has a high value low volume product that is easy to transport and easy to process for which there are high market demands. There is a large number of individually owned vessels which range over a thousand kilometres of coastline adjacent to the fishery and illegal landings are possible over almost all of that length of coast.

There are persuasive economic considerations supporting the introduction of ITQ management and it would certainly be possible to manage the fishery using an ITQ strategy. However, this could not be achieved without the introduction of demanding catch landing and processing receival recording systems, of increased levels of inspection, of intrusive inspection systems, of more restrictive legislation, and the introduction of very high penalties for quota breaches.

Successful utilisation of an ITQ strategy for the management of the West Australian rock lobster fishery would also be heavily dependent on the continuing support of both the catching and processing sectors of the industry. Without this support enforcement cost increases are likely to be prohibitive.

4.2 TAC/ITQ monitoring and enforcement requirements

The essential elements of a ITQ management system for the western rock lobster fishery are described below.

4.2.1 Quota registration

Change from the existing arrangement of registering pot numbers against a Limited Entry Fishing Licence to the registration of catch quota on the same licence could be accommodated with very little extra computing or staff costs. Such an arrangement, which would facilitate quota trading equivalent to the current level of pot trading, would have a programming cost of $6000 for the first year.

Should expansion of the system be required to accommodate quota registration by companies and individuals other than Limited Entry Fishery Licence holders and to facilitate expanded quota trading and leasing arrangements increased computing capacity would be required. Cost estimates will not be possible until any alternative system reguirements have been identified.
Consideration should be given to restricting quota holding to Limited Entry Fishery Licence holders only, as pot quotas currently are, as this would minimise management costs and minimise enforcement difficulties. Extremely flexible quota ownership and quota trading arrangements in New Zealand have created major enforcement difficulties in that country.

4.2.2 Rock lobster catch and receival documentation

A sophisticated quota recording system involving the following elements would be necessary.

* The maintenance of a quota recording book on every rock lobster vessel in which catch details would be entered daily and balanced against each vessel's total quota allocation. Each book would be registered against the vessel to which it was issued, would have multiple self duplicating copies and serial numbered pages.

  Details of each consignment would be completed prior to it being unloaded from a vessel and a copy would accompany each consignment.

* The delivery of a copy of the catch quota unload document with every consignment to the processor.

* Completion of receival details, including the actual weight received, on the unload document by the processor.

* Daily delivery of the unload document to a Fisheries Department office after completion by a processor.

* Entry of the actual weight unloaded in the copy of the unload document held on the vessel on receipt of that information from the processor.

* Completion of a daily receival book by every processor detailing receivals against identified quota holders. A copy of this record to be provided to a Fisheries Department office weekly.

Quota recording books supplied to catching vessels and processors should be self duplicating and should include bar coded information where possible to reduce computer record input costs.

Original documents will need to be held for five years by fishers and processors against the possibility of quota disputes and possible prosecution evidence requirements.

The estimated annual cost to supply quota recording books to catching vessels and processors is $30,000.

4.2.3 Computer based quota records

Details of catch landing forms maintained by fishers and consignment receival data maintained by processors would be computer entered and compared against quota holdings by Fisheries Dept staff at regional offices.

The estimated cost of an integrated computer system accessible from every district office involved with rock lobster management is $300.000 with an on going cost of approximately $40.000 per year for hardware and program maintenance.

4.2.4 Licensing of rock lobster receivers.

To contain quota monitoring costs, and the costs of maintaining processing factory inspections for undersize, oversize, spawning and setose rock lobsters, only existing processing establishments should be licenced to receive rock lobsters and it should be a requirement that all commercial catches be delivered to a licenced processor in the first instance.

Businesses such as fish shops, restaurants etc, requiring rock lobsters should be required to buy only from licenced processors and maintain records of each purchase. They are currently required to maintain records.

4.2.5 Approved landing points

It should be a requirement that rock lobsters be landed only at authorised landing points and transfers to other vessels at sea should be prohibited. All existing unloading points could be approved so this requirement would produce no change to current practice.

4.2.6 Approved landing times

Landings could be permitted between sunrise and sunset and outside of those hours under defined circumstances.

4.2.7 Container specifications

To assist crews and Fisheries Officers with consignment weight estimates it should be a requirement that rock lobsters be transported from vessel to processor only in authorised containers. Boxes now used could be authorised so no change from current practice would result from this requirement.

4.2.8 Container tags

Each vessel holding quota should be issued with serial numbered lockable single use tags for attachment to every container landed. Tags would be cut when opened by a processor and would not be reusable.

4.2.9 Publicity

Changes necessary to implement a ITQ management strategy would impact on commercial fishers, recreational fishers, proprietors of fish shops, hotels, restaurants, etc, and the public generally thus an extensive public education program would be necessary. It is estimated that a program involving the posting of pamphlets to all commercial and recreational rock lobster fishers along with appropriate media releases will cost $60.000 in the first year with an on going cost of $20.000 per year.

4.2.10 Legal costs

An estimate of $200.000 per year is included to cover increased Court costs likely to be generated by ITQ management arrangements.

4.2.11 Staffing implications

The following functions will need to be catered for.

(a) Receival and computer entry of each vessels daily catch data, entry of processor receival information for comparison against catch data, catch against quota assessment, control of documents involving checks and follow up action for late submission, non submission, entry error, etc, and long term storage of documents.
Assuming a ten and a half month fishing year up to 400,000 catch and receival entries could be required each year.

(b) Regular checks at unloading points, receival depots, processing establishments , on transport trucks and carrier boats, of unload documents and processor receival documents against actual consignments.

(c) Frequent inspection of businesses dealing with rock lobsters such as fish shops, hotels, restaurants, etc, to deter black market purchases and ensure proper maintenance of record systems.

(d) Increased surveillance and inspection of commercial and recreational vessels to deter illegal landings.

(e) Regular audit of processors purchase, sale, and product holding records and comparison with export records from other sources such as Customs, shipping and airline company records. Processing company total production figures including details of all purchases, quantities processed in various product categories, (ie, tails, whole cooked, live, etc,) and recovery rates, together with details of all sales and stock holdings would need to be available for inspection on a daily basis.

(f) Investigation of quota avoidance offences including complex and lengthy investigations involving collusion between quota holders and processors.

(g) Prosecution action concerning quota avoidance practices can be very complex and costly and can absorb extraordinary amounts of staff time.

It is proposed that the additional staff required to undertake computer data entry be Fisheries Officers rather than clerical staff as these officers can also undertake inspection functions as needed. Information entry should occur at district offices close to processing establishments to facilitate checking of documents against actual receivals as necessary.

4.2.12 Staff required

It is anticipated that existing staff will continue with current levels of involvement with functions now undertaken, those listed at (c) and (d) above, and will provide assistance and support for additional staff involved with the new functions listed. Additional staff will be required to assist with the increased workload with existing functions and to take primary responsibility for the new functions listed at (a), (b), (e), and (f).

The following additional staff positions would be required at the time of ITQ management implementation.

(a) Twelve level 2 Fisheries Officers to be based at Kalbarri (1), Geraldton (2), Port Dennison (1), Jurien (1), Cervantes (1), Lancelin (1), Two Rocks (1), Fremantle (2), Mandurah (1), and Perth (1).

(b) Two level 3 Fisheries Officers. Officers in charge of mobile patrols to be based in Geraldton and Perth.

(c) One level 4 computer specialist to be based in Perth. This position is required to assist investigating teams access data held on industry owned computers and on fishing vessel global positioning systems.

(d) Two level 5 senior investigators to be based in Perth. These positions requiring accounting, audit, and fraud investigation skills, are needed to undertake and co-ordinate investigations into major quota avoidance offences, particularly where collusion between fishers and processors occurs, and are needed to assist with the re-training of all Fisheries Officers to be involved with quota management procedures.

(e) Two level 2 investigators, to be based in Perth, to assist the senior investigators.

(f) One level 6 Operations Manager. Required to oversee the entire quota enforcement program.

(g) Two level 2 officers would be required to relieve the additional staff during leave periods.

Salary costs together with staff allowances, contingencies and travel costs are calculated to be $975.000 per year.

4.2.13 Vehicles
Access to twelve light 2WD vehicles and two 4WD vehicles will be necessary to cater for the increased functions. Government hire costs together with fuel and service costs are calculated to be $94,000 per year

4.2.14 Legislation
The need to provide specific provisions for the management of fisheries by total allowable catch quotas and individual transferable quotas, which are less than ideally provided for in the current WA Fisheries Act, is being addressed in a draft Fisheries Management Bill which is to replace the existing Fisheries Act in mid 1994.

There is no likelihood that an ITQ management system could be successfully implemented and maintained without the provision of high penalties for quota breaches. Potential financial benefits from quota avoidance or black market sale arrangements are very high while the chance of detection and successful prosecution would not be high. Under these circumstances low penalties may be seen as a cost of doing business and provide no meaningful deterrent.

Experience with previous law enforcement arrangements in the rock lobster fishery has clearly demonstrated that monetary penalties alone do not provide an effective deterrent, therefore the additional penalties now incorporated in the current Fisheries Act which impact on rock lobster pot quotas, on fishermens licenses, and on fishing boat licenses need to be extended to include catch quota breaches and incorporated in the new Fisheries Act. This would facilitate the reduction of quota upon conviction by an amount equal to the amount involved in an offence, as pot quotas are now reduced following a conviction for using an excess number of pots, and would facilitate the total suspension or cancellation of a quota holding, a boat license, or a fishermans license for very serious or repeat offenders. High monetary penalties would also be essential to deal with offenders who do not hold a quota or a license.

A further essential element of effective enforcement of an ITQ management system of the W.A. rock lobster fishery would be that all breaches of product flow requirements, such as illegal at sea transfers, landings at unauthorised places, deliveries to unauthorised persons, or breaches of catch or receival recording requirements, would need to be treated as quota breaches and attract the same penalty as if they were catches in excess of quota. Actual catches and sales after individual quotas had been recorded as being filled would be most unlikely to occur. Quotas would more likely be breached by unrecorded or under recorded sales throughout the entire fishing season, thus such transgressions would need to be treated seriously.

5 ITQ strategy. identified cost totals

	1st year	on going
Quota register computer program	$ 6,000	$ nil
Quota books	$ 30,000	$ 30,000
Quota recording computers	$300,000	$ 40,000
Staff	$975,000	$975,000
Vehicle hire	$ 94,000	$ 94,000
Public education programs	$ 60,000	$ 20,000
Legal costs	$200,000	$200,000
Totals	$1,665,000	$1,359,000

In addition, funding may be required to address the following issues.

(a) As indicated at point 3.2.1 a longer fishing season under an input control management strategy would raise a need for the appointment of additional relieving staff, probably five for a ten and a half month season, and also a need to fund field operational costs for an additional three months each year. Assuming that there would be no reduction in existing enforcement arrangements following the introduction of an ITQ strategy these increases would also occur if an ITQ strategy was to be introduced.

While these cost increases can not be precisely calculated until future management directions are known it is likely that they will be in the order of $410,000 per year which would raise the ITQ strategy cost total to $2,075,000 for the first year and $1,769,000 for subsequent years.

(b) It is anticipated that most additional staff can be accommodated within office space now available to the Fisheries Department. Where this is not possible additional office accommodation costs will be incurred.

(c) Estimates provided relate to costs incurred, or likely to be incurred, within the Fisheries Department Operations Division for law enforcement purposes. Costs incurred within other Fisheries Department divisions which may be attributed to rock lobster industry management have not been taken into account in this assessment.

Expectation that a proportion of the cost of quota management may be defrayed against reduced input control management costs is not likely to be realised. While it is possible that existing rock lobster pot controls could be relaxed under a quota management system no other significant areas of reduction of existing rules, along with the need to enforce them, have been identified. Even if pot controls were to be relaxed for the commercial fishery there is not likely to be any resultant reduction in enforcement staff and equipment needs, as staff and patrol vessels engaged in pot quota controls also perform other enforcement functions which are likely to continue.

The estimate provided for an ITQ management strategy is believed to be the minimum required to achieve effective levels of monitoring and enforcement at the time of implementation based on an expectation that there would be industry acceptance of and support for a change to quota management. Assuming appropriate industry support, it is anticipated that a satisfactory level of compliance with the rules could be maintained for a period under the output control management system outlined. However, some possible outcomes of a quota management system could increase the risk of escalating the levels of illegal activity. Unrestricted quota trading arrangements are likely to result in the concentration of quota into the control of a reducing number of participants who would be seen to have exclusive access to a very valuable resource, and could also result in movement away from a predominantly owner operated fishery now evident to a system where increasing numbers of fishers were fishing on behalf of absent quota holders having no financial interests in the fishery themselves. Such outcomes are likely to be counter productive from a law enforcement perspective.

When estimating the extent of the increased financial returns to the industry, which could be expected to result from a shift to a quota management system, it would be appropriate to ensure that allowances were made to fund further enforcement resource requirements should increased levels of illegal activity occur in the future.

Fisheries management papers

No.1 The Report of the Southern Western Australian Shark Working Group. Chairman P. Millington (1986).

No.2 The report of the Fish Farming Legislative Review Committee. Chairman P.Rogers (1986).

No.3 Management Measures for the Shark Bay Snapper 1987 Season. P. Millington (1986)

No.4 The Esperance Rock Lobster Working Group. Chairman A. Pallot (1986).

No.5 The Windy Harbour - Augusta Rock Lobster Working Group. Interim Report by the Chairman A. Pallot (1986).

No.6 The King George Sound Purse Seine Fishery Working Group. Chairman R. Brown (1986).

No.7 Management Measures for the Cockburn Sound Mussel Fishery. H. Brayford (1986).

No.8 Report of the Rock Lobster Industry Advisory meeting of 27 January 1987 . Chairman B. Bowen (1987).

No.9 Western Rock Lobster Industry Compensation Study. Arthur Young Services (1987).

No.10 Further Options for Management of the Shark Bay Snapper Fishery. P. Millington (1987).

No.11 The Shark Bay Scallop Fishery. L. Joll (1987).

No.12 Report of the Rock Lobster Industry Advisory Committee to the Hon Minister for Fisheries 24 September 1987. (1987)

No.13 A Development Plan for the South Coast Inshore Trawl Fishery. (1987)

No.14 Draft Management Plan for the Perth Metropolitan Purse Seine Fishery. P. Millington (1987).

No.15 Draft management plan, Control of barramundi gillnet fishing in the Kimberley. R. S. Brown (1988).

No.16 The South West Trawl Fishery Draft Management Plan. P. Millington (1988).

No.17 The final report of the pearling industry review committee . F.J. Malone, D.A. Hancock, B. Jeffriess (1988).

No.18 Policy for Freshwater Aquaculture in Western Australia. (1988)

No.19 Sport Fishing for Marron in Western Australia - Management for the Future. (1988)

No.20 The Offshore Constitutional Settlement, Western Australia 1988.

No.21 Commercial fishing licensing in Western Australia. (1989)

No.22 Economics and marketing of Western Australian pilchards. SCP Fisheries Consultants Pty Ltd (1988).

No.23 Management of the south-west inshore trawl fishery. N.Moore (1989)

No.24 Management of the Perth metropolitan purse-seine fishery. Noel Moore (1989).

No.25 Rock Lobster Industry Advisory Committee report to the Minister for Fisheries November 1988. (1989)

No.26 A report on marron fishing in Western Australia. Chairman Doug Wenn MLC (1989).

No.27 A review of the Shark Bay pearling industry. Dr. D.A.Hancock, Ph.D, D.Sc (1989).

No.28 Southern demersal gillnet and longline fishery. (1989)

No.29 Distribution and marketing of Western Australian rock lobster. P. Monaghan (1989).

No.30 Foreign investment in the rock lobster industry. (1989)

No.31 Rock Lobster Industry Advisory Committee report to the Hon Minister for Fisheries September 1989. (1989)

No.32 Fishing Licences as security for loans. P. Rogers (1989)

No.33 Guidelines for by-laws for those Abrolhos Islands set aside for fisheries purposes. N. Moore (1989).

No.34 The future for recreational fishing - issues for community discussion. Recreational Fishing Advisory Committee (1990).

No.35 Future policy for charter fishing operations in Western Australia. P. Millington (1990).

No.36 Long term management measures for the Cockburn Sound restricted entry fishery. P. Millington (1990).

No.37 Western rock lobster industry marketing report 1989/90 season. MAREC Pty Ltd (1990).

No.38 The economic impact of recreational fishing in Western Australia. R.K. Lindner, P.B. McLeod (1991).

No.39 Establishment of a registry to record charges against fishing licences when used as security for loans.P. Rogers. (1991)

No.40 The future for Recreational Fishing - Forum Proceedings. Recreational Fishing Advisory Committee (1991)

No.41 The future for Recreational Fishing - The Final Report of the Recreational Fishing Advisory Committee. Recreational Fishing Advisory Committee (1991).

No.42 Appendix to the final report of the Recreational Fishing Advisory Committee. (1991)

No.43 A discussion of options for effort reduction. Southern Gillnet and Demersal Longline Fishery Management Advisory Committee (1991).

No.44 A study into the feasability of establishing a system for the buy-back of salmon fishing authorisations and related endorsements. (1991)

No.45 Draft Management Plan, Kimberley Prawn Fishery. (1991)

No.46 Rock Lobster Industry Advisory Committee, Chairman's report to the Minister (1992)

No.47 Long term management measures for the Cockburn Sound restricted entry fishery. Summary of submissions and final recommendations for management. P. Millington (1992).

No.48 Pearl oyster fishery policy guidelines (Western Australian Pearling Act 1990). Western Australian Fisheries Joint Authority (1992).

No.49 Management plan, Kimberley prawn fishery. (1992)

No.50 Draft management plan, South West beach seine fishery. D.A. Hall (1993).

No.51 The west coast shark fishery, draft management plan. D.A. Hall (1993).

No.52 Review of bag and size limit proposals for Western Australian recreational fishers. F.B. Prokop (May 1993).

No.53 Rock Lobster Industry Advisory Committee, Chairman's report to the Minister for Fisheries. (May 1993)

No.54 Rock Lobster Industry Advisory Committee, Management proposals for 1993/94 and 1994/95 western rock lobster season (July 1993).

No.55 Rock Lobster Industry Advisory Committee, Chairman's report to the Minister for Fisheries on management proposals for 1993/94 and 1994/95 western rock lobster seasons (September 1993).

No.56 Review of recreational gill, haul and cast netting in Western Australia. F. B. Prokop (October 1993).

No.57 Management arrangements for the southern demersal gillnet and demersal longline fishery 1994/95 season. (October 1993).

No.58 The introduction and translocation of fish, crustaceans and molluscs in Western Australia. C. Lawrence (October 1993).

No.59 Proceedings of the charter boat management workshop (held as part of the 1st National Fisheries Manager Conference). A. E. Magee & F. B. Prokop (November 1993).

No.60 Bag and size limit information from around Australia (Regulations as at September 1993) F. B. Prokop (January 1993).

No.62 Management arrangements for specimen shell collection in Western Australia. (J. Barrington, G. Stewart) (June 1994)

No.63 Management of the marine aquarium fish fishery. J. Barrington (June 1994)

No.64 The Warnbro Sound crab fishery draft management plan. (Fiona Crowe) (June 1994)

No.65 Commercial fishing licensing in Western Australia. Kerrie Naughton. (August 1994) (in press)

No.66 Future management of recreational gill, haul and cast netting in Western Australia and summary of submissions to the netting review. F.B. Prokop, L.M. Adams (September 1994)

No.67 Long term management strategies for the Western Rock Lobster Fishery. (4 volumes) Evaluation of management options Volume 1. Bernard K. Bowen (September 1994)

No.68 Long term management strategies for the Western Rock Lobster Fishery. (4 volumes) Economic efficiency of alternative input and output based management systems in the western rock lobster fishery, Volume 2. R.K. Lindner (September 1994)

No.69 Long term management strategies for the Western Rock Lobster Fishery. (4 volumes) A market-based economic assessment for the western rock lobster industry, Volume 3. Marec Pty Ltd (September 1994)

No.70 Long term management strategies for the Western Rock Lobster Fishery. (4 volumes) Law enforcement considerations, Volume 4. Neil McLaughlan (September 1994)