2nd National Rock Lobster Industry Congress

Mr R Edwards

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OBJECTIVES:

1. Plan and deliver the 2nd National Lobster Industry Conference.

NON TECHNICAL SUMMARY

OUTCOMES ACHIEVED:

The Congress contributed to the development of the national lobster industry in two key areas.

The first was the dissemination of important technical, management and industry information to a wide range of key stakeholders, including industry, scientists and managers.

The second was the impetus created to form a national umbrella body for all State based industry organisations. This organisation presents as a platform for national development initiatives, offering economies and efficiencies of scale to the national industry.

The Congress has led to new initiatives in the areas of industry policy development, research and development, strategic industry planning and more effective linkages to managers and researchers.

The 2nd National Rock Lobster Congress was hosted by Seafood Industry Victoria (SIV) with support from industry in each lobster producing state, at the Royal Geelong Yatch Club, Geelong on Thursday 20 September and Friday 21 September 2001.

The Congress received its funding from the major sponsor, the Fisheries Research and Development Corporation and registrations. The Congress program covered two full days with rock lobster post harvest and aquaculture Subprogram meetings held the day prior.

The purpose of the 2nd National Rock Lobster Industry Congress was to provide a forum of diverse interest groups to assess developments from the first Congress in 1999 and formulate directions for the national lobster industry.

The Congress theme was 'Just Holding Ground' and the program mix was specifically designed to highlight 'big ticket' issues and opportunities impacting on the lobster industry. The theme followed closely from those of the 1st Congress, allowing measurement of progress in key areas. Twenty-seven speakers presented information covering national fishery performance, marine planning, environmental accreditation, latest research and development, cost recovery and access security.

The standard of presentations was excellent and special mention is made of the performance of the scientists in delivering, simple, entertaining and high impact scientific information. A new standard was set in this regard.

Congress resolutions developed were:

1. Agreement to pursue national industry unity on key issues and establish a national lobster industry body.
2. Support for establishment of a southern rock lobster research and development sub program.
3. Agreement that a National Marine Protection area legislation based on the Western Australian model should be implemented.
4. Cost recovery should be based on transparent, competitive and accountable processes.
5. National access security legislation should be established.

The Congress resolutions reflect the commitment of the participants to working towards a secure common goal of sustainability, well managed fisheries worldwide, while building the value of the resource.

Along with the intense discussion, time was taken to enjoy Victoria's hospitality, with the 'Species Taste Off and Dinner' on Thursday evening, held at the Royal Yacht Club. The seafood was superb, the setting on the marina was apt, with a number of boats on display. The mood was positive and alive and added to building of national tradition.

KEYWORDS: Australian Rock Lobster Industry, National Congress

ACKNOWLEDGMENTS

The input and assistance provided by Seafood Industry Victoria, in particular Mr Ross Hodge and Ms Katie Saunders was invaluable, as was the leadership and direction provided by Rodney Treloggen (TRLFA), Richard Stevens (WAFIC) and Dr Patrick Hone (FRDC).

Special thanks go to the speakers and the FRDC for its financial support. Both were essential to the success of the Congress.

BACKGROUND

The rock lobster fishery is the most valuable seafood industry in Australia generating over $1/2 billion in exports and an estimated 10,000 jobs. The fishery exists in all States. In 1999 the industry, with substantial support from FRDC, hosted the 3rd International Lobster Congress and 1st National Lobster Congress in Adelaide.

The 1st Congress has been viewed by the Australian lobster industry as a benchmark in information exchange. A key outcome of the Congress was to hold a national lobster conference on a regular basis.

The concept of a biennial National Lobster Congress has been supported by the industry. It is further agreed that synergies and efficiencies on offer by holding the event in conjunction with the Seafood Directions conference should be captured if circumstances permit. The timing of the 2001 Seafood directions unfortunately did not suit coordinating the two events.

The 3rd National Lobster Industry Congress is scheduled for 2003, with the Western Australian industry accepting responsibility for hosting the event. Negotiations are under way with the organisers of the 2003 Seafood Directions to coordinate timing, complimentary programming and to avoid duplication.

NEED

The rock lobster industry of Australia has previously had no vehicle for formal information exchange and development of national approaches. The 1st and 2nd Congresses have already cemented the event as a focal point for industry development.

The Congress presents as a low cost and time efficient opportunity for scientists, managers, industry leaders and business people to interact. There is no other event that offers this on the national stage.

The initiatives and resolutions from the 2nd Congress demonstrate the power of the Congress as critical platform for development of the industry nationally.

OBJECTIVES

The objective of the project was to:

1. Plan and deliver the 2nd National Lobster Industry Conference.

METHODS

a. Steering Committee….. A steering group drawn from industry (R Edwards – project Manager, R Treloggen, R Hodge and R Stevens) was formed. The prime role of the steering committee was to develop a conference program of direct relevance to the industry.

b. Program ….. The program was developed with input from FRDC and came together with relative ease – a reflection of the level of support from the speakers and their respective organisations. The first step was to establish themes and structure followed by specific topics and speakers.

Email was the only form of communication used in securing speakers for the program – it worked incredibly well. The program was finalised 3 months prior to the event and did not change except for the withdrawal of one speaker.

The social events captured the emerging tradition; in particular the national species taste off was again popular – Victorian lobster won!

The registration brochure was designed as the program brochure – this saved design and print costs.

c. Event Management….. Carolyn Anderson & Associates was appointed as event managers. The organisation successfully ran the 1st Congress and Inaugural Seafood Directions – they brought a successful formula to the project. Although based in Adelaide the event was successfully staged drawing on administrative assistance from SIV, the local organisation. The team and approach worked well.

The style adopted was relatively low budget of about $35,000 compared to around $180,000 for the 1st Congress. Naturally this saw a lower quality event in terms of venue, content, presentation and social events compared to the 1st Congress. It did not detract from the efficacy of the event in terms of information exchange and industry development. To some extent the comfort levels of the participants were higher than at the larger more “showy” event.

The original budget was to cover a 1 day event while the eventual outcome for the same budget was a two-day Congress. It is unlikely that anything less that 1.5 -2 days would a workable event in terms of sufficient time to canvass the themes and make use of the networking opportunity.

RESULTS/DISCUSSION

The 2nd National Rock Lobster Congress was hosted by Seafood Industry Victoria (SIV) at the Royal Geelong Yatch Club, Geelong on Thursday 20 September and Friday 21 September 2001.

The Congress program (See Appendix 3 for the full Congress program) was two days with rock lobster post harvest and aquaculture Subprogram meetings held the day prior. Twenty-seven speakers presented information in the following key areas:

- national lobster fishery performance,
- marine planning and environmental accreditation,
- marine protected areas,
- research and development including sub program reports,
- cost recovery and
- access security.

About one hundred people participated including fisher representatives South Australia, Western Australia, Victoria, Tasmania, New South Wales, Queensland and New Zealand. As well scientists, environmentalists, managers, processors and politicians attended at various stages.

Congress resolutions developed were:

1. National industry unity and structure.

All States agreed:

- to form a informal National Council of State Bodies - Australian Rock Lobster Industry Council (ARLIC)
- to adopt the congress logo as the National Rock Lobster Industry logo
- the Council will take carriage of dissemination Congress outcomes to appropriate target groups, undertake future activities of national relevance but only with all State support and will be responsible for convening future Congresses.

2. Establishment of a Southern Rock Lobster research and development sub program

The four states producing southern rock lobster endorsed the establishment of a southern rock lobster concept research and development subprogram. It was agreed to move to develop a detailed memorandum of understanding with FRDC and to seek industry and FRDC funds to immediately to commission a strategic plan for southern rock lobster.

3. Marine Protected Areas

The meeting called for:

- a national approach by Federal and State Governments to a legislative framework for implementing Marine Protected Areas based on the Western Australian model
- A national framework to deal with funding for displaced fishing, sustainability impacts and regional economic impacts of marine protected areas
- A transparent stakeholder driven processes.

4. Cost recovery

The meeting identified the following as critical elements to the cost recovery to be pursued on a national basis:

- Transparency of process
- Agreed apportionment between stakeholder groups
- Accountability of service providers with independent audits
- Industry involvement
- Cost effectiveness based on competitive pricing
- No resource rent

5. Access security

The meeting called for all Governments to legislate property rights regimes that deliver:

- recognition of licenses as property
- perpetual & tradable rights
- explicit use of the rights
- secure proportionality of rights
- expropriation on commercial terms

The meeting rejected concepts of tendering, ballot and/or auction.

The Congress resolutions reflect the commitment of the participants to working towards a secure common goal of sustainability, well-managed fisheries worldwide, while building the value of the resource.

BENEFITS

The primary beneficiaries from the Congress include the wild harvest, culture and post harvest sectors across all lobster producing states. Benefits are primarily non-market and include flow on effects in development from information exchange and effective national industry organisation, structure and policy development.

Consistent national policy was developed in the areas of industry unity and structures, marine protected areas, cost recovery and access security.

Support for the establishment of a southern rock lobster research and development sub program was endorsed which when established will deliver benefits in terms of cost effectiveness of research programs and enhanced industry development.

Finally benefits were derived in building links and relationships between industry managers and researchers. There is no doubt that performance of the speakers built credibility for the research community.

FURTHER DEVELOPMENT

There is little to indicate that program style, format and delivery need change to ensure successful future Congresses. Naturally the presentations will need to reflect current research and issues at successive events.

The presentation style by researchers was particularly successful and could be used as a guide.

The place of a trade display and sponsorship needs to further assessed, but it is recommended that the local organising committee make these decisions.

CONCLUSION

The 2nd Congress was an overwhelming success. The objective was met and the event was financially viable. Significant resolutions aimed at enhancing the national lobster industry emerged.

REFERENCES

Nil

Appendix 1: Intellectual Property – Congress Proceedings

Congress proceedings have been developed.

2nd National Rock Lobster Congress

19-20 September 2001

Hosted by the Seafood Industry Victoria

Thursday and Friday September 19 – 20 2001
Royal Geelong Yacht Club, Geelong, Victoria

CONGRESS PROCEEDINGS

Editor:
Roger Edwards

This report was produced by the South Australian Rock Lobster Advisory Council.

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Official Opening & Major Sponsor (FRDC) Address

Dr Patrick Hone

PLANNING, FUNDING AND MANAGING FISHERIES R&D – What is current best practice for fisheries R&D?

Prior to the formation of the Fisheries Research & Development Corporation (FRDC) in 1992, the agenda for fisheries R&D was set by research providers and managers. This was understandable given the need to establish sustainable harvesting strategies and paucity of knowledge on fish stocks. The development of the FRDC provided a new paradigm for fisheries R&D planning, funding and management in Australia. FRDC established a national forum for industry and other stakeholders to plan their R&D needs.

While providing industry with a greater say, this also removed the opportunity for industry to criticise what research was being done. The establishment of the national FRAB network that linked with management advisory committees and other industry bodies enabled a bottom up process for developing R&D needs and priorities. This has been further enhanced in recent years through the development of R&D plans that clearly state what the planned outcomes are for the industry sector.

During the past decade, fisheries R&D has evolved from an emphasis on fish stocks to one based on entire ecosystems and the whole production chain. R&D delivery has also evolved from an emphasis on inputs and scientific outputs to an emphasis on three key elements:

1. Planned outcomes — in effect, the factors that will make a real difference to Australia's fisheries resources and fishing industry. Concentration on planned outcomes reverses the previous model that focused on research inputs (costs, people, etc) and outputs (scientific papers, etc) by requiring stakeholders to clearly define what their planned outcomes are before determining the R&D needed to achieve them [1].
2. Whole-of-chain focus — an integrated approach that aims to satisfy stakeholder expectations across all aspects of planned activities.
3. Continual improvement — the central component of quality management systems which allows for performance measures to be used to provide feedback for the benefit of future R&D planning.

R&D is delivered through sequential processes of planning, funding and managing, as follows.

Planning

The first step requires stakeholders to define their planned outcomes as part of a whole-of-chain sequence of activities. This usually requires good communication so that planners are well

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1 Inputs are resources — in the form of people, expertise, materials, energy, facilities and funds — that an organisation uses in activities to produce outputs. Outputs are the goods and services (mainly knowledge, processes and technology) that an organisation produces for external organisations or individuals. Outcomes (in a fishing industry context) are the results, impacts or consequences of actions by organisations on the fishing industry and on Australia's economic, environmental and social resources. The Commonwealth Government's outcome-output framework in the fisheries R&D context is discussed on pages 113 to 116 of *Investing for Tomorrow's Fish: the FRDC's Research and Development Plan, 2000 to 2005.*

informed of past and present research — not only from Australia but also from overseas — to avoid duplication and to build on existing R&D.

The databases, Australian Rural Research in Progress (ARRIP) and the Australian Bibliography of Agriculture (ABOA) are important planning tools (located on FRDC's web site – http://www.frdc.com.au/). The FRDC is the largest contributor in terms of paying towards their maintenance costs and ensuring that all FRDC-funded R&D is recorded on them. The databases should contain all natural resource R&D undertaken in Australia and be consulted when planning R&D projects. Pertinent overseas research results, available at no or minimal cost, should also be considered when planning fisheries R&D. Unfortunately, only about 60–70 per cent of fisheries-related R&D is on ARRIP and ABOA.

The essential elements of good planning are as follows:

- Stakeholders who are the intended beneficiaries will participate in determining planned outcomes and priorities through the entire supply chain.
- Evaluation is based on the attractiveness-feasibility model, with attractiveness given the priority.
- R&D projects embody collaborative partnerships between providers and beneficiaries.
- Beneficiaries are encouraged to be more involved in project development and more active in R&D delivery.
- R&D benefits from multi-disciplinary approaches: in particular, using providers from biological, social and economic disciplines.
- A national or bio-regional approach, when it can be appropriately incorporated, is important for developing efficient and effective R&D.

Funding

Funding evaluation requires a clear set of criteria, such as those listed in FRDC's R&D plan. Whether or not governments invest in R&D depends on evidence of market, institutional, technical, policy or political failure, and/or likely "public good" benefits.

Entities that fund R&D have rights to determine how their funds are to be invested. Accordingly, the Commonwealth Government has issued its priorities for R&D. Further, the House of Representatives Standing Committee on Primary Industries, Resources and Rural and Regional Affairs has recommended that to maximise national fisheries investment, recognition of the FRDC's role in planning, funding and managing fisheries R&D will need to increase. The Standing Committee also considered that to reduce the risks of duplication and to assist in identifying future research priorities, the FRDC will need to work with stakeholders and research providers to improve awareness of all fisheries research effort occurring in Australia and overseas.[2] Such efforts are consistent with the obligation of all publicly funded agencies to collaborate with other agencies and to leverage funds from other appropriate sources in the interests of maximising national investment in R&D.

In relation to industry development, government R&D funding should usually benefit the whole industry or sector, not only the entities most closely involved in the R&D.

2 Published in the Committee's report 'Managing the last frontier', 1997, pages 113–114.

Management

The main elements for good national fisheries R&D management are:

- continual improvement as part of quality-based processes, preferably within certified quality management systems;
- mechanisms that deliver transparency in all processes;
- governance and accountability processes and reporting structures;
- expert-based leadership devoid of vested interest (avoiding industry and agency politics);
- real-time systems for reporting outputs;
- investment in communication and adoption processes;
- involvement of beneficiaries in undertaking the R&D, thereby increasing the range and speed of adoption;
- reporting processes that focus not on the inputs to R&D but on the benefits of R&D in delivering planned outcomes; and
- cost-effectiveness against international benchmarks for delivering service, recognising also that increased service requires increased funding.

The foregoing concepts are increasingly being accepted as prerequisites to successful R&D.

The FRDC has commissioned Dr Gary Morgan to examine the existing R&D planning mechanism for southern rock lobster. The intention was to examine what mechanisms may be available to develop a more national approach to planning the needs of southern rock lobster R&D. One of the planned outputs of this conference is to improve on the existing R&D planning mechanism.

Learning from Others – Oil & Gas Industry

Mr Peter Taylor

Conservation: Opportunity Or Conflict – A Petroleum Industry Perspective

Abstract

Like other marine industries the petroleum sector has had to deal with significant challenges arising from the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC). It is now readily apparent that all governments are recognising the need to ensure the environmental integrity of marine based industries - the EPBC providing a powerful trigger for this. From an industry perspective there have been concerns about the implementation of elements of the Act and some of the Government's related policies.

The challenge for the national upstream petroleum industry association is how to work closely with environment regulators to promote the application of pragmatic, efficient, transparent and consistent environment regulations that endenger a strong commitment to marine conservation while achieving appropriate industry development. The paper will outline some of the specific challenges and the initiatives being pursued by industry.

Introduction

Why have a Petroleum Industry presentation at the Lobster Congress? Because both the fishing and petroleum industry:

- work alongside one another sharing resource allocations and occasional overlapping interests;
- have significant engagement with Environment Australia (EA) and other regulators;
- Both the fishing and petroleum industry share a poor public image and are vulnerable to politically driven decision making.

This paper will focus on:

1. background information about Australia's Oil and Gas industry;
2. perceptions of the fishing and petroleum industry from within EA compared to now;
3. an outline of current interactions with the fishing industry;
4. challenges for the future;

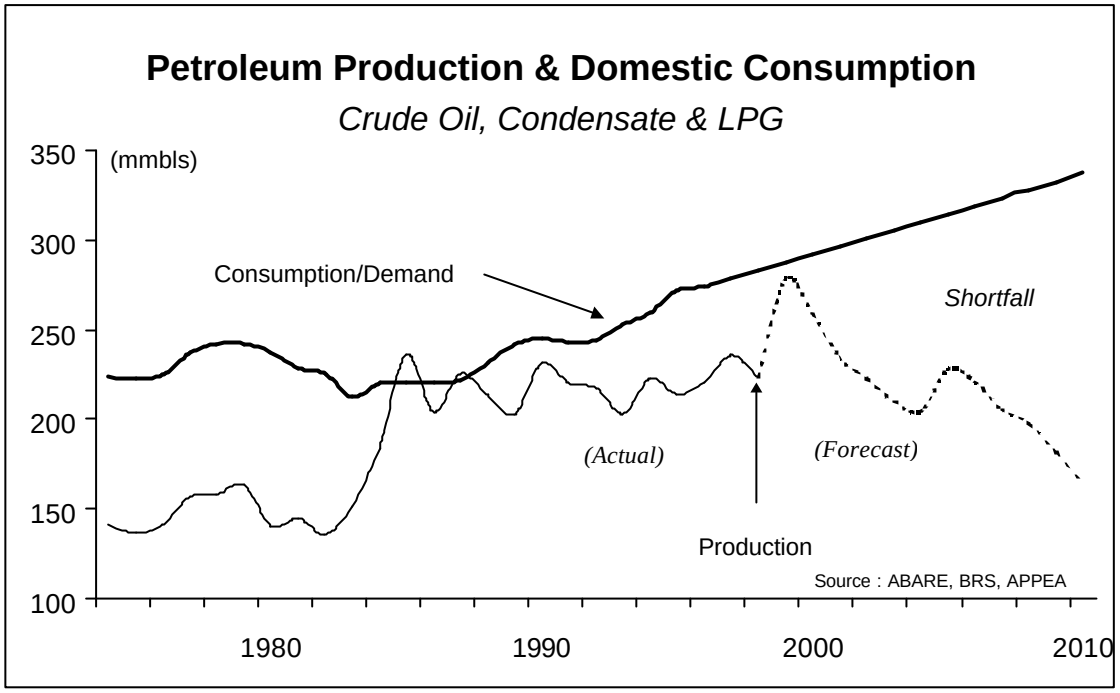
Australia's Oil and Gas Industry

The Australian Petroleum Production & Exploration Association (APPEA) is the national organisation representing the oil and gas exploration and production industry in Australia. The Association seeks to promote a competitive basis for the development of Australia's oil and gas resources while maintaining the highest standards of environmental management and safety.

The oil and gas industry makes a significant contribution to the Australian economy. The value of oil and gas production equates to approximately 1.5% of Australia's GDP (this equates to $8.9 billion), generates $5.8 billion in exports income and pays $3.1 billion in revenue to governments.

However, it is likely that Australia's economic well being will be significantly reduced unless exploration activity increases over the next few years. As the graph at **Figure 1** illustrates, the country's self sufficiency in liquid petroleum is predicted to fall dramatically.

Figure 1



The Australian economy will be negatively effected unless petroleum exploration increases. The petroleum industry should operate within the same framework as tourism, fishing and other commercial enterprises, and have proposals
assessed on a case by case basis.

Perceptions of the Petroleum and Fishing Industry

When working as the Director of Commonwealth Marine Protected Areas in Environment Australia (EA) I was in a reasonable position, from a government perspective to make some observations about both the petroleum and fishing industry with respect to their views on marine protected areas. With regard to the fishing industry, concerns and fears expressed were often tied directly to individual, local and regional impacts. The impact on the petroleum industry tended to focus on the corporate rather than individual level. As some of the companies are owned by offshore interests, MPA decisions tended to be disconnected from local and regional interests. (**Figure two** below summarises some other observations)

Observations Now: With regard to marine protected area debates (MPAs), the fishing industry has had to address sustained opposition and debate at the individual, local and regional level for many years. While there is not a united approach to responding to these issues by the industry there is, nevertheless, a range of peak fishing bodies that are becoming more sophisticated in promoting a change in culture and attitude among members and similarly assisting the community and government to understand the specific nature of industry.

On the petroleum industry side however, the real advantage is the fact that APPEA has the capacity to speak for almost the entire Australian industry via its members. This capacity provides powerful lobbying both with government and also with members. The failing in this process however is the lack of opportunity to effectively market industry's environmental record with the community.

Figure 2

A COMPARITIVE VIEW OF THE FISHING AND PETROLEUM INDUSTRY AND THEIR ENGAGEMENT IN MARINE PROTECTED AREA PROPOSALS

ISSUE	*FISHING INDUSTRY*	PETROLEUM INDUSTRY
Willingness to engage in MPA agenda	***A lot of experience***. Variable input from strategic to outright opposition. Success dependent on quality and transparency of government negotiators to a large extent	***Little experience***, capable of being very pro-active, but a live demonstration of input yet to be tested.
Capacity to negotiate and unity of industry	***Patchy***, diverse industry, and little capacity to speak with one united voice. Sectors of industry, very sophisticated and experienced in juggling compromise and protection of industry.	***Great capacity*** to speak as one industry through APPEA. Intellectually strong on negotiation and good on the rhetoric. Capacity yet to be tested in a real MPA proposal. Enormous fear of constraints - capacity to lobby politicians.
Environmental commitment	***Patchy*** but general acknowledgment and commitment to sound environmental practices. Some sectors very sophisticated and demonstrate commitment through specific initiatives and willingness to listen and modify activities.	***Very good record*** of environmental practice and contribution to important initiatives. Great capacity to resource important initiatives and modify practices. Yet to be tested in the context of an integrated multiple use MPA proposal.
Public Image of Industry	***Often poor***, some sectors worse than others. Some innovative steps taken to demonstrate green credentials through MPA proposals and engagement with EA and conservation groups	***Very poor***: Both the industry and the community sector have not established any mechanisms to establish dialogue apart from individual companies regarding specific projects. Enormous suspicion and mistrust on both sides.
Can you still have a beer test?	***Yes***: Negotiations are often focused in local communities and MPA decisions relate directly to regional economies, families and individuals trying to make a tough living.	***Yes***, but most often at corporate senior management levels. The local or regional focus is less of an issue and the negotiations and debates tend to be at the broader strategic and political level.

Current Interactions between the Petroleum and Fishing Industry

There are only a few areas where petroleum and fishing overlap in Australia. In Victoria, where this overlap has occurred, both industries have determined mechanisms for dealing with conflict and potential impacts. The fishing industry has engaged people like Andrew Levings from the Victorian Seafood Industry Council to mediate issues between the two industries. Oil and Gas companies similarly tend to have very good community based negotiators that work with community stakeholders on specific projects.

Based on work recently being pursued by Woodside Petroleum in the Otways in 1999/2000, a partnership between the industries resulted in a Memorandum of Understanding (MoU) being developed as part of the Investigator 3D seismic acquisition program. This MoU paved the way for agreement between Woodside and the fishing operators on how multiple use could be achieved.

Fishing operators agreed to a step by step vacation of subsections of the seismic area that enabled the acquisition to take place. The seismic work did not go as smoothly as Woodside had planned and some fishing operators suffered from lost catch and/or equipment due to the survey operations. This was mainly due to the extension of the survey, in part because of the weather conditions at the time. The survey was originally planned to take one month but ended up taking three months.

Fishing operator's losses were resolved through the provisions of the MoU, which provided a transparent set of guidelines for making and processing claims made by the fishermen and Woodside. Moreover there was an alternate dispute resolution clause that enabled any outstanding issues to be resolved. Fortunately this dispute clause was never enacted.

The MoU example is important because it demonstrates the value of formalising consultation with dispute and mediation arrangements. I believe that this is a model that should be considered in other areas of Australia where the two industries are likely to coexist.

Apart from these specific examples where the two industries come together, there are few opportunities for our respective industries to share our common experiences. The reality is that there is more in common than there is difference. These common interests could be used to bolster both the petroleum and fishing industry's lobbying capacity.

An obvious opportunity for our joint interests to be debated however, is through the South East Regional Marine Planning initiative under the Oceans Policy. While many claim that it is an ambitious initiative it does provide a much-needed opportunity to compare and contrast our activities and see where synergies and conflicts occur.

Challenges for the future

The challenges for the future are numerous. Just so we don't forget the really big picture, it is important to recognise the substantial challenges facing the petroleum industry – and the community, over the next decade or more. These include:

- Global warming and the role of greenhouse gases generated by the burning of fossil fuels;
- Sources of renewable energy. Our fossil fuels are running out and companies are acutely aware of this and are committed to funding alternative energy sources. It is likely however that the demand for energy won't keep pace with the transition to new energy sources. Both governments and industry will need to be a lot more aggressive about this over the next decade to avoid the sorts of demand crisis we are now witnessing in California and even in our own backyards such as Adelaide.
- The broad issue of effective safety regulation. The oil and gas industry, like fishing, is a high-risk business. APPEA is increasingly concerned that the governments are losing capacity through cut backs and diminishing incentives, to effectively regulate offshore safety. The safety issues associated with Ansett 767's, the collapse of HIH Insurance etc are recent examples of dwindling government capacity to effectively regulate some industries. Without effective regulation standards slip and are compromised over costs and accidents happen.

As we know, the (EPBC) has changed the face of environmental regulation for both the fishing industry and the petroleum industry in Australia. While acknowledging the complexity for the lobster industry with the EPBC requirement for sustainable fisheries, the petroleum industry also has its problems with the Act.

APPEA through its Environmental Affairs Committee decided in February this year to facilitate a workshop with industry, EA, Industry Science and Resources (ISR – the Commonwealth agency

that regulates the petroleum industry through the *Petroleum and Submerged Lands Act, 1967)*. The one-day workshop aimed to examine jointly with EA and ISR some of the key themes and trends with the implementation of the EPBC Act with respect to approvals and assessments. In doing this it would also identify the key concerns that, in the eyes of industry, required addressing. The outcomes of the workshop have led to the establishment of a Standing Committee between EA, ISR and APPEA to address the following issues:

- The acceleration of EPBC Guidelines for interactions with cetaceans during seismic activities
- a joint EA/ISR Guide on working with the EPBC - especially designed for the smaller companies who have less resources and capacity to work with the Act.
- The development of a joint issues paper on key problems with the EPBC Act regarding its implementation
- The development of an issues paper that determines the linkages between the EPBC requirements and the PSLA requirements.
- Industry engagement in the development of a Strategic Environmental Impact Assessment initiative as part of the EPBC.

One of the primary influences on government decision making, as the fishing industry well understands, is that of the community. It is my observation that the petroleum industry in Australia has underestimated the power of this sector and its capacity to influence industry operations. Through APPEA's environment portfolio, we have now generated an environment strategy to address the following challenges:

- working with government to improve the implementation of legislation in a transparent, consistent and objective manner. This also includes active engagement with such initiatives as the Regional Marine Planning, MPA's and other cross-sectorally integration based initiatives.
- building alliances with NGO groups to better understand their concerns about industry including the pursuit of strategies to help the industry make changes to improve the poor public image;
- participate with government, researchers and NGO groups in contributing to specific marine research initiatives to enhance our understanding of the marine ecosystems and cetaceans in particular.

The impact of oil and gas exploration and production activities on marine ecosystems and wildlife is not fully understood. It will be through improved dialogue with key decision-makers, community groups and researchers that balanced targeting of research and debate will occur.

Many petroleum companies pursuing specific projects have a good reputation working with local and regional communities. This good work isn't recognised in the broader media and with the community at large. Like the fishing industry, we need to take a breath and confront our 'opponents' to understand their fears and perceptions of us. Only through humility and understanding we can then be in a position to make improvements to our operations where this is needed, and to work with the community in a targeted way to improve the image of industry. APPEA has commenced communication with key NGO groups to open up full and frank exchanges aimed at improving public perceptions of the industry.

We also need to be patient and vigilant with the government agencies we work with. There isn't a lot of incentive for good people to stay in government jobs. Contrary to popular belief good public servants are very hard working in a very thankless environment where the rewards are few. If you are doing your job well you are kicked by the minister and kicked by the community! As one well-known fisherman described my team when working on the Great Australian Bight Marine Park, "*those work shy eco warriors from Canberra*". It's just as well some of us have a sense of humour!

Conclusion

It doesn't take much to realise the enormous potential industry has in banding its talents and experiences together and providing leadership and stewardship to government and the community, in the generation of new benchmarks and standards in environmental management. The suggestion that we wait for the cavalry to come and rescue us and provide the direction or regulation is a dangerous and foolish position. Equally, to band together to slag off at government and their environmental regulations is similarly dangerous. To finish this discussion, I would like to leave you with a few challenges that I believe are relevant for both the petroleum and fishing industry:

- The key marine industries need to establish some common strategies for demonstrating their collective environmental credentials as well as making assertive input to the generation of viable and meaningful conservation initiatives such as MPAs;
- In order to do this we need to use our peak bodies more effectively to develop policy positions. To this end we might need to bring some of our members kicking and screaming into the 21st century.
- We need to acknowledge the fears and concerns the community has about our industries. We need to embrace these issues honestly and work thoughtfully through them with community groups. As we know, many may not want to consider dialogue with us because of ideological positioning. We need to work with those that are prepared to honestly engage in improving relationships and good environmental management. All sectors have their rednecks and they are shouldn't be the people we work with initially.
- While promoting to the world what we do well in the environment, we need also to work with governments to ensure that legislation and policies are realistic and achievable. The bureaucrats aren't always the problem. Industry has tremendous capacity to shoot itself in the foot through not fully appreciating the political and legislative realities they are working with.
- Finally, I believe we should be taking any opportunity to engage in integrated planning initiatives (such as Regional Marine Planning) to demonstrate our capacity to provide leadership in building mechanisms for assisting government to minimise unnecessary regulations, duplication and overlap of sectorally based policies. Importantly, we should demonstrate our capacity to work collaboratively, maximising our common industry interests.

National Lobster Scene
Western Australia
Mr John Ritchie

Status of the Fishery

In the season which finished on the 30th of June, 11400 tonnes of rock lobster were taken, down 21% on the previous season's highest ever catch of 14,500 tonnes. It is predicted that the coming season, beginning on 15th November will produce around 10,000 tonnes before rising over the following two seasons back to near record levels. The ten-year average catch has risen to 11,300 tonnes, up to 500 tonnes from several years ago.

Catch & Fishing Effort

The catch and fishing effort graph will be familiar to most of you and shows catch data, along with nominal effort, measured in pot lifts from the beginning of the fishery up to the present. Of interest is that the drop in effort that came with the 1992/93 management package, appears to have been sustained. Most previous attempts at effort reduction were short lived due to the large amount of latent effort in the fishery.

Catch Rate

The catch rate graph shows a gradual reduction from levels of around two kilograms per pot lift in the late forties/early fifties to around 0.7Kg/potlift in the mid seventies. It then rose and fluctuated around the one kilogram per pot lift for the next twenty years before trending up slightly in recent seasons.

Puerulus Settlement

Fishermen in Western Australia are always interested in the Puerulus settlement. Data from three sites is shown here, the Abrolhos Islands in blue, Seven Mile Beach near Dongara in pink and Alkimos north of Perth in red.

This information has been the principal tool used by our fisheries scientists to forecast catches three and four season ahead..

The large fluctuations in settlement are thought to be mostly due to environmental conditions, rather than related to the number of eggs hatched. The most prominent influence appears to be the strength of the warm leewin current, which is turn, is influenced by enso events in the pacific.

In the early years of using settlement collectors, the counts recorded at the Abrolhos Islands, so closely paralleled those from Seven Mile Beach that they were deemed unnecessary, and removed. They were reinstated in the mid eighties, and apart from failing to peak with Seven Mile in 89/90, which concerned me as an Abrolhos fishermen, they have since followed the same trends albeit at lower levels.

Catch Predictions

The forecasts derived from this and other information have been amazingly accurate. They have developed from a prediction of the total fishery catch, to forecasts for each of the three zones. Shown here are predictions for zones A & B, with the broken lines being the predictions and the solid lines the actual catch.

Zone C Predictions

Similarly, this slide shows the zone C forecast. You may be able to see there are two predictions for zone C, one using puerulus settlement information from just the Alkimos site, and the other a combination of the settlement at several locations. On occasions the forecast has been more accurate using the combined information rather than just the Alkimos data.

Spawning Stock Indices

In the early nineties WA's scientists were concerned at the decline in the size of the breeding stock. As I mentioned earlier it is believed that the fluctuating settlement levels are more to do with environmental factors than the numbers of larvae hatched, however it was thought possible that a low breeding stock, combined with poor environmental conditions could lead to a recruitment failure in the fishery.

The 92/93-management package included temporary pot reductions, combined with an increase in the minimum size from 76 to 77mm, from November until February. Also, a maximum size for female lobsters, and perhaps most significantly a ban on the taking of setose lobsters, was designed to revive the breeding stock. It was thought that the biological future of the lobster would be assured if breeding stock levels could be restored to the sorts of levels experienced in the late seventies believed to be 20-25% of the virgin breeding stock.

This slide of the spawning stock indices in the North and South of the fishery shows that clearly, that aim has been achieved. There were some sceptics who believed that the improvement in the breeding stock was not as dramatic as the index showed. It was thought that fishermen with improved colour sounders and DGPS were better targeting the breeding grounds and taking more of the available spawners, rather than there being greater numbers of them.

Spawning Stock Indices (IBSS)

A fishery independent breeding stock survey was therefore undertaken using charter vessels, outside of the fishing season to validate the results of the spawning stock index. This slide shows egg production from coastal sampling sites and clearly shows a healthy increase in recent seasons.

Due to the apparent success of the 92/93-management package, it remains essentially unchanged. However, because the coming season will have the lowest catch in the current cycle, and many fishermen have the view that the over size females are monopolizing the best deep water habitat, it has been decided that for next season only the maximum size will be dropped. This is expected to yield three to four hundred tonnes of large females.

Production by Grade

Another result of the current management package, primarily the raising of the minimum size, is a reduction in the production of A & B size lobsters and an increase in the larger grades. This can have some ramifications in the market place, with Japan traditionally preferring the smaller lobsters and Hong Kong and China the larger sizes.

Three Day Averages

One aspect of the fishery that hasn't been affected by the management package is the catch pattern. This slide shows the three day average catch figures for the 2000/2001 season in red and the ten year average catch in blue. They are Geraldton Fishermen's Co-operative figures, but are representative of the northern half of the fishery. The consistency

of the catch pattern is very clear, with two spikes of production in December and March/April. In terms of the marketing of our catch, this can cause a few headaches. In the days when most lobster were tailed or boiled and frozen, provided there was capacity to deal with the intake, the product could be sold in an orderly manner. Today, with much of the catch sold live, the marketing constraints of our intake pattern are clear. Currently the best solution we have is to build large live holding facilities to carry product through to the lower catch periods. GFC, for example, can hold close to 100 tonnes of live lobster.

Industry Production

The Western Australian catch up to the end of June was produced into tails, lives, whole boiled and whole raw in the percentages shown here. With a further reduction in the catch next season we expect the percentage going as lives to increase with a corresponding drop in tails and whole boiled.

Industry Innovation

In 1999/2000 the Western Australian Legislative Council's standing committee on Ecological Sustainable Development assessed out fishery as being managed along Ecological Sustainable principals. Following that, the Western Australian Rock Lobster fishery was the world's first fishery accredited certification by the Marine Stewardship Council.

Logo

The council, founded in 1996 as a joint venture between the World Wildlife Fund and Unilever, believes products carrying its "fish forever" logo will be particularly attractive in several overseas markets that pay close attention to eco labels.

The logo guaranties consumers that the product was caught in a manner that does not lead to over fishing, protects the diversity of the marine ecosystem where they are taken, and is subject to an effective management system.

The accreditation was made with several conditions for continued certification. These were;

- That within 14 months an Ecological Risk Assessment be completed. This has been done and the report is nearly complete.
- That within 24 months an Environmental Management Strategy be prepared and distributed for public comment. This has been done as part of the Risk Assessment report.
- That within 36 months the E.M.S be effectively incorporated within operational arrangements of the fishery. This will commence next year.
- That within 24 months there be increased participation of the environmental community in the decision making processes of the fishery. Currently a member of the Conservation Council attends the Rock Lobster Industry Advisory Committee as an observer.
- And that within 12 months there be formal monitoring systems in place for recording interaction with mammals, sea birds, manta rays, dolphins and whales. A pilot system was put in place last year and will be reviewed.

We are very proud of this international recognition of our fishery.

Other issues

Issues of note in WA at the moment include dealing with native title and resource sharing with recreational fishers, who now number around forty thousand and take an estimated 800 tonnes of lobster. Also cost recovery. The commercial rock lobster fishery is now fully

cost recovered with our license fee for the coming season expected to be around $138 per pot. We believe however that the government is considering an 8% “Capital User Charge” on departmental assets, many of which have been paid for several times over. Fishermen will have some difficulty in accepting this.

The Rock Lobster Industry Advisory Committee will shortly be conducting its annual coastal tour to discuss these and other issues. The National Competition Policy is still rearing it's ugly head over fisheries management. I would have thought that after the deregulation of the dairy industry, and more topically, the airline industry, that NCP would have gone away. However, regulators are looking hard at our fisheries management plan for any rules that may not comply.

Clearly, the type of fisheries management most likely to comply with NCP guidelines is the use of output controls. Hopefully, our enviable track record under input controls and the fact that the vast majority of participants wish it to stay that way, will mean that a move to quotas is not imposed upon us.

With the industry on a sound biological basis, RLIAC is looking to management options to improve the net social and economic benefits to the community. One hopes that any changes will not be made without the support of commercial fishers. Our fisheries minister, Kim Chance, has made a commitment to explore devolution of some decision making power to stakeholders. There is sure to be discussion on some form of co management at this years tour.

There are proposed policies for live holding, fattening, processing, aquaculture and enhancement of Western Rock Lobster, which I believe, are to the detriment of fishers. The deregulation of processing licenses, certain pueruli enhancement proposals and associated compliance cost increases in my view hold far more negatives than positives for fishermen.

The increasing effort brought about by new technology continues to be an issue. Fishing effort is currently measured in pot lifts.

Old Vessel

In quantifying the effort, no distinction is made between a pot lift made on this vessel in the forties and this vessel in the noughties.

New Vessel

Clearly modern vessels and new technology have dramatically improved our catching ability but this is not yet factored in to our equations. In the unlikely event of there being no technological advances in the next few years, the accumulation of data in on board computers will continue to increase fishing pressure. Even the humble mobile phone with its increased coverage has become a significant factor in the exploitation of our fishery.

Islands

A study is underway at the Abrolhos Islands to determine the extent of damage to coral reefs by lobster pots. It is my belief that one severe winter storm does more damage to both hard and soft corals, than a whole season of lobster pot activity, still there is some anxiety amongst fishermen about the out come of the study.

Sadly in the past two season there have been two fatalities in the WA Rock Lobster Fishery. This is despite the efforts of WAFIC (the Western Australian Fishing Industry

Council) and the fishermen along with WorkSafe to develop codes of practice to make working in the lobster industry less hazardous.

Whilst acknowledging the terrific work done by the WAFIC over many years, we recognize that WAFIC deals with every commercial fishery in the state and has neither the time nor resources to deal with all the issues pertaining to rock lobster.

Accordingly, we have formed a new peak body known as the Western Rock Lobster Council (inc). It currently consists of the presidents of the Professional Fishermen Associations, who will work on a constitution and explore various funding avenues. WAFIC has been supportive of the move and will continue to work for the rock lobster industry on global, national and state issues, leaving the industry specific matters to the new council.

Sashimi Lobster

May I conclude by saying that we in the West Australian Rock Lobster Fishery are proud of our fishery, the quality of our product and our environmental record. But in the modern world, to stay still is to go backward, so we must strive together to keep our industry at the forefront of world fisheries, and our lobster amongst the most sought after in the world's restaurants.

National Lobster Scene
New South Wales
Mr Ron Firkin

1. Our fishery underwent dramatic change with the introduction of restricted fishery management in 1990.
2. After some 8 years of consultation and discussion, we finally had a share management plan passed by parliament.
3. Several areas of the plan do not meet with our approval, but because the share plan structure would lapse after February 2000, if not approved by parliament, the plan was supported by industry, we now seek to amend the plan where necessary.
4. The most disturbing feature of the plan is the Community Contribution Levy. NSW Treasury through our minister have determined that this levy shall be 6% of the gross landed figure by the year 2004. We are presently exploring every avenue to have this situation reviewed, including placing our concerns before the Government Appeals Tribunal or the Ombudsman.
5. Our fishery is very different from all other states with less than 10% of shareholders exclusively fishing for lobsters; all others have multiple fishing endorsements. There are approximately 170 shareholders in the 10,000 share fishery with individual shareholdings ranging from 12 to 218.
6. It was hoped that with share trading now possible, shareholders would seek to increase their holdings from those who chose to retire or diversify their fishing activities, thus restructuring the industry voluntarily, unfortunately because of management charges now at $58.00 per share and the start of the community contribution levy this year, little trading has occurred. Even though share values have dropped alarmingly i.e. $2000 in 1999 to $650 / $800 in 2001.
7. Stock of our lobsters as shown by our extensive research program is increasing very satisfactorily, remembering that our research started in a very small way some 10 years ago.
8. Compliance Program – co-founded by industry, abalone shareholders and the department has been making substantial progress in the illegal catch area, notably, recently with the successful prosecution of two commercial fishers, brought about by the use of microchip technology in identifying the stolen lobsters.
9. The use of times release floats in waters up to 70 fathoms, has proved to be very effective in preventing both, trap losses through shipping, and thieving of trap contents. This method is currently popular with a large number of NSW fishers.

National Lobster Scene
Queensland
Mr Jim Fogarty

The animal that occupies our mind in Queensland is the Tropical Rock Lobster i.e. Panulirus ornatus. This animal makes up around 90% of the stock.

There are two separately managed lobster fisheries in QLD. The first is the Torres Strait Fishery. The Australian territory of the Fishery is jointly managed by the Commonwealth and Queensland governments, and there is cooperation with Papua New Guinea. This is primarily a frozen tail fishery supplying the USA.

The second is the QLD East Coast Fishery (from Latitude 11degrees south to 14 degrees). In simple terms this runs from the tip of Cape York to just north of Princess Charlotte Bay. This Fishery is managed by the QLD Fisheries Service and is primarily a "live" Fishery supplying mainly southern China.

In both Fisheries the animal is caught using either spear or loop by divers using Hookah gear.

There is also a small development fishery in South East Queensland where they are potting Slipper lobster and Panulirus versicolor.

In mid to late August each year the sexually mature population begin their annual migration into the Gulf of Papua. This generally takes the form of several waves of migratory lobsters moving around the Gulf from West to East. By the time the animals arrive at Yule Island on the coast of Papua New Guinea they have basically all mated and begin to hatch their first brood. Whilst at Yule Island they may have as many as three releases. Animals that have migrated to Yule Island do not return to the fishery and die following mating. Therefore the fishery is based only on juvenile lobster.

The phyllosomas are transported from the Gulf of Papua breeding grounds by the Hiri boundary current into the Coral Sea Gyre and subsequently carried by surface onshore currents onto the Queensland coast and into the Torres Strait.

It is generally believed that the East Coast lobster does not join the Yule Island migration, rather migrating only to the outer Barrier Reef, where they mate. The East Coast brood may serve as an important source of recruits for the region, however this relationship is poorly understood.

THE TORRES STRAIT FISHERY

Stock Status

In 1989, CSIRO estimated there were between 11-17 million lobsters in the Torres Strait of which about 8 million were legal size (minimum size is approximately 600 grams). This would produce a total biomass of between 6,000-9,000 tonnes, which was about 10 times the annual catch rate of approx 550 tonnes whole weight. This equated to a total value of around A$15 million per annum.

The Fishery over the next 10 years consistently produced catch figures of around the 500 tonnes per annum mark with not a lot of variation until 1999 when a decline in the Fishery became apparent and continues to this day.

Recruitment surveys in 1999 indicated that 2000 would be a good year but for some unexplained reason, perhaps environmental change, there was high natural mortality of juvenile crays, which impacted on the 2000 catch.

During the late 1990's there were a number of reports of illegal trawling for crays in Papua New Guinea and increased effort in the East Coast Fishery. Possibly these occurrences may have impacted on the Fishery.

Management Issues

Prior to 1985 the Torres Strait formed part of the Queensland fishery and any person who held a Queensland licence could fish the Torres Strait area. Torres Strait Islanders held similar licenses enabling them to fish along side the Queensland license holders.

At this time a considerable number of Islanders had commercial fishing vessels, many of them converted pearling luggers.

With the ratification of the Torres Strait treaty in 1985 a separate Torres Strait Fisheries Act was introduced with two types of commercial fishing: -

- Community fishing (commercial fishing by Torres Strait Islanders).
- Commercial fishing by Non-Islanders.

For Non-Islanders to obtain a Torres Strait license they had to prove involvement in the fishery prior to 1985. Those fishermen that were licensed to fish in the Torres Strait prior to 1985 but had no history of fishing in the Torres Strait were not granted a license. This removed a large amount of latent effort.

For example, prior to 1985 about 1,000 trawlers were licensed to fish in Torres Strait, after 1985 this reduced to about 150. All non-Islanders granted a license to fish under the new act had a history of fishing in Torres Strait prior to 1985.

In 1986 it was agreed that all future expansion in Torres Strait fisheries would be reserved for Torres Strait Islanders. For the past 14 years there have been no new Torres Strait licenses issued to Non-Islanders.

The original vessel licenses could be transferred but no new licenses could be created. Any Islander could still obtain a new Torres Strait license but these could not be transferred to non-Islanders. Those Islanders that held their original license could sell their licenses to non-Islanders and then apply for a new Torres Strait license. This was allowed to happen and all but two Islanders sold their licenses to non-Islanders.

This had two adverse effects. Firstly it allowed more non-Islanders to fish in Torres Strait and the East coast (e.g. in the rock lobster fishery 23 non-Islanders held vessel licenses for the Torres Strait, 20 for the East coast). With the sale of the Islander licenses this increased to 31 in Torres Strait and 28 on the East coast. Secondly it locked the Islanders into the Torres Strait. They sold their involvement in the Queensland East Coast Fishery to non-Islanders.

Community fishing still allowed Islanders to obtain a license to fish under the community register. Deciding who was an Islander became a problem, particularly the Papua New Guinean families living on the outer islands. It was agreed that Papua New Guinean families that were given amnesty during the 1978/79 immigration amnesty should be allowed to fish as Islanders under

community fishing.

A large number of fishermen working under community fishing are not Torres Strait Islanders. Many of them did not migrate to Australia until after 1985. Many of the outer islands have large populations of non-Islanders (Yam Island for example has 50% of the total population being Papua New Guinean) and these non-Islanders are very active in the fishing industry.

By the late 1990's Queensland fishing and boating patrol estimated that in excess of 1,000 "Islanders " were fishing under community fishing. The vast majority of these were dinghy operators who fished part time.

What proportion of the catch in 2001 can be attributed to community fishing is unknown as log books are not required, however, based on buying patterns in the Torres Strait it is probably in excess of 50%.

No fishery can be managed without a cap on effort. Over the last 14 years it is the "Islander" effort that has increased dramatically. The intention was always to encourage more Islander fishermen to become more involved in the fisheries, but community fishing must also be regulated if stocks are to be sustainable.

In 1986 the consultative process set up under the new fisheries act consisted of: -

- The Torres Strait Fishing Industry and Islander Consultative Committee (7 Islander, 7 Non-Islander, Queensland and Commonwealth Governments) reporting to
- The Torres Strait Fisheries Management Committee (3 Islander, 3 non-Islander, Queensland and Commonwealth Governments) reporting to
- The Protected Zone Joint Authority (Queensland and Commonwealth Government Ministers responsible for fisheries).

Later, working groups for specific fisheries were introduced (reporting to the consultative committee) and the number of Islander Representatives was increased.

During the years that this consultative process has operated, management has always had the objective of reducing non-Islander effort and promoting Islander involvement in Torres Strait fisheries. The following regulations were introduced to assist this objective:

- No new Non-Islander licenses-all future expansion reserved for Islanders.
- Loss of fishery endorsements on transfer of non- Islander licenses
- Restriction on boat size when replacing a non-Islander vessel.
- No new master fisherman licenses for non-Islanders. (For non-Islanders it is compulsory to have a Torres Strait Master in every dinghy but no new masters licenses will be issued; Islanders do not require a master in their dinghy but any Islander can obtain a masters license)
- 2 month ban on the use of hookah gear -introduced at the request of Islanders
- Non-transferability of dinghies owned by non-Islanders

- Reduction of effort in the trawl fishery-from about 150 vessels in 1985 to 78 at present.

This consultative system was flawed as the process never really got down to the actual fishermen.

The consultative system is being reviewed and hopefully the new system will involve proper consultation and involvement of genuine Islander fishermen.

It is important to recognize that the Torres Strait Fishery is jointly managed by the Federal Government and Papua New Guinea governed by a Treaty arrangement. This is because the resource occupies the waters of both countries. In August, September and October, sexually mature females and males begin a migration out of the Torres Strait in a North Easterly path towards Papua New Guinea. If all goes well they will arrive at Yule Island on the Eastern Gulf of Papua coast where perhaps three spawning cycles will occur. The majority of these animals will then die.

These larvae over a period of time will become caught up in the "Coral Sea Gyre", a circular current flow that will over a period of time deposit these animals into the Southern Torres Strait where the process begins anew.

To manage the fisheries it is important to have accurate catch statistics. Non-Islander catch and effort is monitored through logbooks, but there are no records for community fishing. We know that there has been a dramatic increase in community effort since 1985 but fisheries managers do not have any data on effort or catch levels.

The recent actions by some sections of the Indigenous community to remove Non-Islander fishermen will not solve the problem as the way forward is through consultation and management. The primary consideration is to protect the resource no matter who is allowed to fish for them. Regulations must be in place to ensure that all resources are fished in an ecologically sustainable manner.

The East Coast Fishery

Stock Status

This Fishery is relatively young in terms of substantial exploitation and there has been basically no work done to measure the biomass of this Fishery.

Stakeholders at this stage do not have enough information to understand precisely how the stock in this Fishery is generated. There is no doubt that some proportion of the larvae coming out of the Coral Sea Gyre ends up in this Fishery. A major difference in this Fishery is that unlike the Torres Strait there are a substantial number of animals in excess of 2kg. This would indicate that at the sexually mature size (around 1kg) they are not joining the annual migration to Yule Island and perhaps move out to the Outer Barrier Reef to spawn and then move back in to shallower water. This spawning would obviously add to the stock available in this fishery.

Most Primary License holders on the Queensland East Coast also hold licenses to fish the Torres Strait so for the last 10 years the number of boats working this Fishery has been quite small. The total catch has been around 60 tonnes per annum – basically all "live". As with the Torres Strait the product is taken by divers using Hookah gear.

Vessels preferred to work the Torres Strait for convenience and ease of catching and handling. With the decline in the Torres Strait catch, vessels have tended to migrate to this Fishery to

maintain their total catch. This is a continuing trend.

Vessels hold the product in onboard tanks until they have enough for a plane load (450 kgs). Planes land on the beach and fly the product direct to Cairns where it is held in recirculating tank systems prior to dispatch.

Catches prior to 1999 tended to be around 40-60 tonnes per annum and were mainly live. Since the expansion of effort it has increased to around 120 tonnes in 2000.

At your previous Congress in Adelaide in 1999 the figures quoted by ABARE were substantially higher i.e. in the order around 500 tonnes. It is important to realize that these figures include Moreton Bay bugs, which are part of the Trawl Fishery.

Markets

The main market is China via Hong Kong into Yan Tian where it is sold as a Sashimi fish. The total value of the fishery is around $6 million.

The main producer of this Specie is Vietnam with over 1,000 MT being produced each year from around 18,000 cages. As opposed to our fishery, small Lobsters are caught and farmed in cages until they reach a marketable size.

Quality is average, however they enjoy the benefit of being close to the market and have the ability to select specific sizes.

The Australian animal commands a premium in the Chinese market due to perceived quality benefits. They are fairly easily distinguished because of color differences and the Vietnamese specie having a slightly larger head shape.

Management Issues

There are 30 primary boat licenses with 94 tender vessels in the East Coast Fishery. Historically only a small proportion of these vessels have worked the East Coast but with the decline of the Torres Strait this is increasing.

The Industry and Fisheries Managers currently have real concerns about the amount of effort being diverted to this Fishery and are looking at methods of reducing effort across the Fishery.

The potential exists for effort to more than double if license holders who have no history in this Fishery decide to become active and active license holders increase their fishing days.

The CSIRO advise that they do not expect the Torres Strait Fishery to rebound to the previous catch levels within the next 5 years. Therefore the continued drift of effort from the Torres Strait will continue unless management efforts are introduced to cap this migration.

The Queensland Fishery mainly falls into the GBRMP, which is managed in a way that does not necessarily meet with the agreement of Lobster fishermen. As this fishery is a harvest fishery its impact on the reef is fairly minor. It obviously does not have the same impact on the environment as a pot Fishery.

The Great Barrier Reef is a Marine Protected Area and there are already a number of National Park Zones – " Green Zones" where any activity is basically banned. These are a " look but don't take area". Needless to say these tend to be in areas having a high incidence of stock.

The GBRMPA continues to move along the path of removing "fishing" from the park in whatever form it may encompass. There is currently a new program being instigated called the "Representative Areas Act " which is to identify areas of important bio diversity. Fishermen suspect that these new areas will encompass their most prolific reefs.

Summary

- Both Fisheries are under pressure for different reasons – too much effort – latent effort.
- It is thought that the stocks in the Torres Strait, East Coast and Papua New Guinea are the same stocks, therefore lobster are straddling three jurisdictions which make complimentary arrangements difficult to achieve.
- Available research, on the East Coast in particular, does not at this stage allow for judgments to be made based on scientific fact. The CSIRO have ongoing programs in the Torres Strait.
- The Queensland Rock Lobster Association, QFS, the CSIRO and the Australian Institute of Marine Science in Townsville have proposals before FRDC to start the process of addressing the East Coast problem.
- The market for Tropical Lobster as a Live product or a frozen Tail product appears to have a healthy future in a number of countries.
- There are concerns but the stakeholders are working them through.

National Lobster Scene
South Australia
Mr Terry Moran

Fisheries

SZ quota – best year for 30 years, 1720 tonnes, 1.6 kg/pot in 94 days

1. NZ time management – down 15% to 860 tonnes, 1.2kg/pot
2. Management plans are being rewritten – expect ecosystems to be included
3. Rebuild strategies on the agenda – targets & reference points

Environmental Accreditation

1. Clean Green for 2 years
2. Invested $150,000 in pot to plate standard covering:
   - Fishing operations
   - Sustainability
   - Bycatch
   - Occupational health and safety
   - Food Safety

Marine Planning & Parks

1. SE Regional Plan
2. MPA's – State successfully halted announcements but expect 10-15 new parks in State waters – key platform – displaced fishing:
   - we applaud the work of Tasmania on displaced fishing
   - we applaud the work of WAFIC on MPA legislation
   - we applaud the Victorian industry for its courage
3. Have invested in displacement modelling for SA with FRDC support and industry cash
4. We are under resourced
5. The EA process is coming next
6. A national approach is desperately needed – lobster has the most to lose.

Research & Development

1. Who has time for that?
2. Danny Brocks occy work is showing promise
3. Looking forward to the Sth Rock lobster R&D sub program
4. See lobster culture and market development as the key opportunities to grow industry value.
5. Competition policy – will see corporatisation and foreign ownership issues emerge

Cost Recovery

1. Full cost recovery since 1995
2. System works fairly well
3. Moves to remove industry from the process are ever present – especially compliance

Access Security

1. Single most important impediment to industry development
2. There is no more stock and everyone else wants it
3. Marine parks, aquaculture development, charter access & recreationals
4. Took a tentative step forward with recreational sharing this year

Summary

1. Issues list is longer than ever
2. Our importance is declining politically on a State basis
3. Nationally we are worth over $1/2 billion in exports and generate about 10000 jobs. We want to increase this by 400% over the next 10 years.
4. Is it time a national lobster industry capacity & strategy was put in place:
   - How do we do it?
   - What is the plan?
   - Who is going to do it
   - How do we pay for it?
5. Don't forget to have fun

National Lobster Scene
Tasmania

Mr Neil Stump

Abstract:

The paper provides a review of the Tasmanian rock lobster fishery as at September 2001 from an Industry perspective. The paper is in four sections and addresses (1) Current resource status (2) Management changes (3) Industry driven innovation and (4) Other issues currently facing the industry.

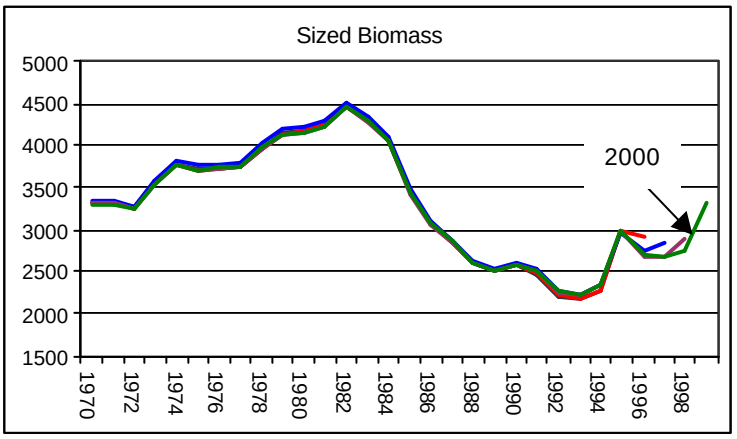
Resource status:

The stock assessment for the fishery is conducted on an annual basis by TAFI[3] and is reviewed by the Rock Lobster Fishery Assessment Working Group. Membership (RLFAWG) of the group consists of three scientists from TAFI who are responsible for the stock assessment and preparation of the report, the fishery manager (DPIWE)[4] and four industry representatives. The working group meets in December each year to the assessment and to provide advice to the FAC which in turn advises the Minister on an appropriate TAC for the coming season quota year which commences in March the following year.

Since the introduction of the QMS in March 1998 the TAC has remained at 1502 tonnes, which equates to 143 kg per pot. The 1999 / 2000 stock assessment (Gardner, Frusher & Eaton 2001) estimates the legal size biomass is increasing by approximately 5 – 6% per annum. It should be noted that one the principle strategies outlined in the Policy Document (DPIF 1997) was to set the TAC at such a level to enable the rebuilding process to occur. Most of the key biological performance indictors for stock assessment purposes have positive trends. Figures 1 and 2 legal sized biomass over time and total egg production over time highlight the positive trends that have be observed for the fishery Figure 3 which is a plot of both CPUE and effort measured in total pot lifts per annum supports other assessment performance indicators. Total pot-lifts are declining and CPUE is rising.

Industry members on the FAC and RLFAWG have indicted that if the trend in the next stock assessment remains positive they will be requesting a modest increase in the TAC. It is expected that the increase, if agreed to will be between 2 and 7 kg per pot.

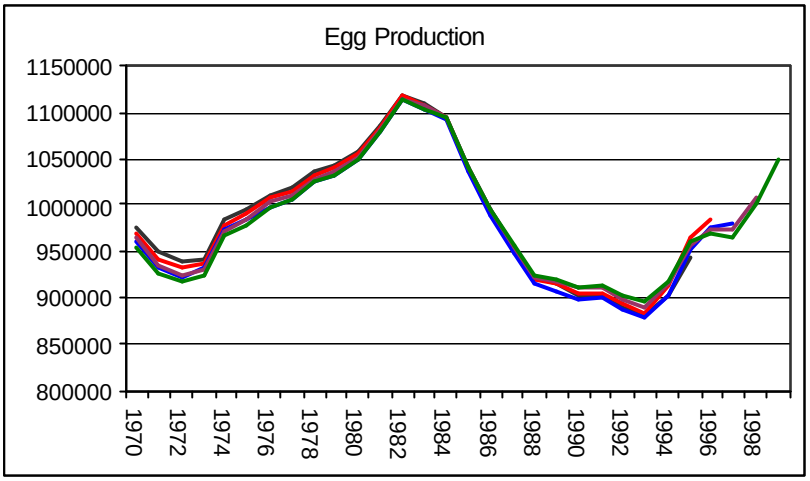
Figure 1: Model projections of legal size biomass from 1970 to 2000 measured in tonnes



3 TAFI: Tasmanian Aquaculture & Fisheries Institute

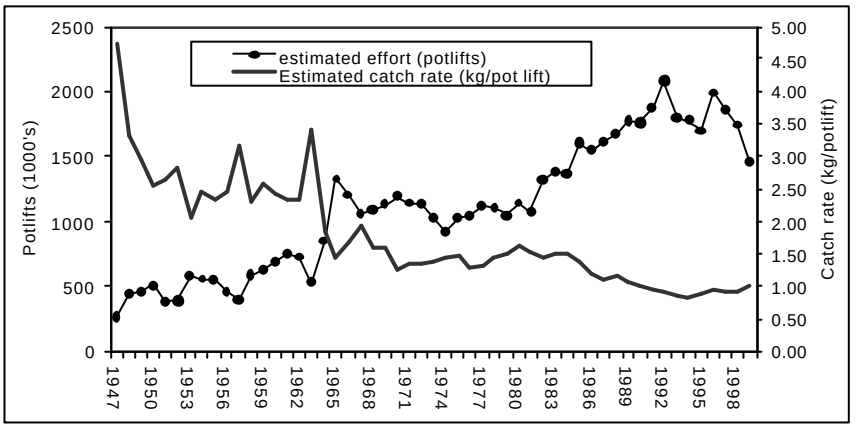
4 DPIWE: Department of Primary Industry Water & Environment

Figure 2: Model projections of total egg production 1970 – 2000 measured in millions of eggs



CPUE data for each of the 8 assessment areas used for stock assessment purposes when compared to the reference year the minimum increase in CPUE was 13% and the maximum 56% again reinforcing the positive trends evident in the biological parameters included in the stock assessment.

Figure 3: CPUE and total pot lifts 1947 to 2000



Management Changes:

The second management plan for the fishery since the introduction of QMS commenced on the 1st March 2001. The term of the management plan is five years. The only significant changes in the regulations from the previous management plan to the current plan being an increase in the number of pots / quota units that can be held on one license form 100 to 120. In addition a carry over prevision has been included in the rules that allows for up to 1 uncaught unit (143 kg) to be carried over to the next season.

In addition the rules and regulations pertaining to the giant crab fishery have been included in the management arrangements for the lobster fishery for the next five years. The crab fishery is also a

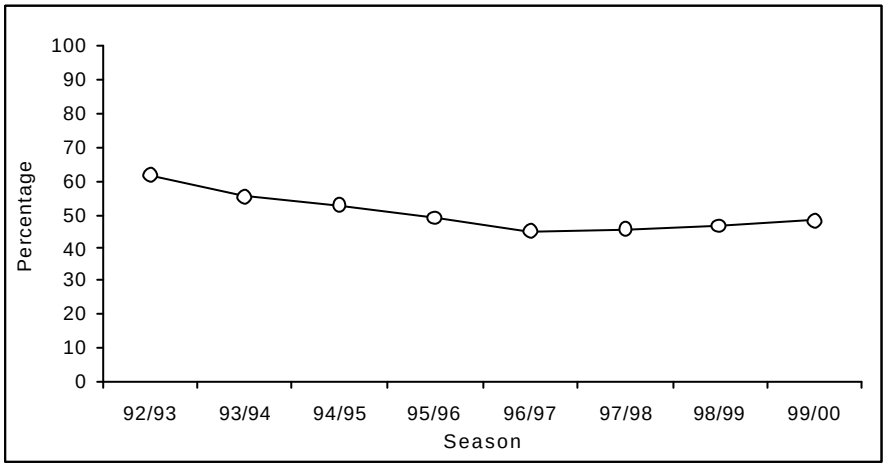
quota-managed fishery. The TAC is currently set at 100 tonnes. The majority of the TAC is caught by less than 10 operators.

Although not a change in management, since the inception of the QMS there has been a significant decline in the number of vessels operating in the fishery (Table 1). The initial management plan contained a trigger point of 200 vessels. This was considered to be the accepted minimum number of operators participating in the fishery. It is also noted that the percentage of owner operators in the fishery had declined since the early 1990's. The apparent slight increase (Figure 4) in the percentage of owner operators active in the fishery may be due to fishers consolidating their position in the fishery.

Table 1: The number of licenses and number of active vessels in the Tasmanian rock lobster fishery since the introduction of quota management.

Year	Number of operators	% change	Number of active licenses	% change
1993	337	-	330	-
1994	334	-0.9	329	-0.3
1995	331	-0.9	326	-0.9
1996	321	-3.0	315	-3.4
1997	316	-1.5	309	-1.9
1998	314	-0.6	304	-1.6
1999	314	0	259	-14.8
2000	314	0	254	-1.9
2001	314	0	230	-9

Figure 4: Percentage of owner operators in the Tasmanian rock lobster fishery



Industry Innovation:

Tasmania is investigating the 'pot to plate' concept in order to gain accreditation for the fishery. Unfortunately we are not as well advanced as our colleagues in Western Australia and South Australia. We do believe that the environmental accreditation should be conducted in line with the process that is being developed by Environment Australia in order to met the requirements of the EPCB act. The process of environmental accreditation is costly and time consuming therefore we

feel it is senseless for industry to 'reinvent the wheel' and undertake a separate accreditation process.

The TRLFA is currently preparing a vision statement for our fishery with the assistance of FRDC and UTAS. The thrust of the project is to create an industry vision that will provide a blue print for the fishery for the next 10 to 20 years.

Issues confronting the fishery:

As with nearly every other fishery the list appears endless. Some of the issues that are prominent at the present time include,

- The creation of MPA's. Currently there are two additional MPA's proposed for Tasmania. One to be situated at Deal Island in eastern Bass Strait and the other in Bathurst Channel at Port Davey in the south-west. It is anticipated that neither should impact upon the commercial lobster fishery.
- Freight is a major concern since the collapse of Ansett, given that the majority of the catch is sold live into China. Airfreight has been cut by 50% and freight charges have risen from 70 cents per kg to $3.40 per kg for processors that do not have a contract with Qantas. Unless resolved before Christmas this may cause considerable disruption.
- One area of concern that has been identified through then preparation of the TRLFA vision statement is the lack of young fishers entering the fishery. We have an aging group of skippers. Given the high cost of purchasing or leasing quota, as well as purchasing a vessel it has become increasingly difficult for young skippers to gain a foothold in the fishery
- The strengthening of access rights is being pursued. A new bill that allows financial institutions to register an interest against a license is in the final stages of preparation and should be tabled in the next session of parliament. It is anticipated that this will encourage banks to lend against a license as a form of security.
- Management costs continues to be an issue that is yet to be resolved. Currently the costs recovered from industry represent 55% of the total management costs (DPIWE estimates). The annual license fee is a per pot fee and for the current season is $200 per pot. Industry is keen to reach agreement with the government on a formula for apportioning management costs between the various user groups and including a component for 'public good'. We strongly feel that the government has responsibilities under the act that the government should fund. The total burden of management costs should not fall on the commercial fishery.
- Resource sharing arrangements have yet to be finalized. A trigger point of 10% of the commercial catch is set in the management plan. Given the dramatic increase in recreational licenses in the last 3 years from 10,000 to 16,000 and the subsequent increase in the recreational catch from a resource sustainability perspective the issue needs to be addressed.

References

Department of Primary Industry and Fisheries, *Rock Lobster Fishery; Policy Document,* December 1997, DPIF, Hobart

Gardner, C., Frusher, S.D. & Eaton, L. 2001, *Fishery Assessment Report: Tasmanian Rock Lobster Fishery 1999/2000*, TAFI, Hobart.

Acknowledgements

I would like to thank Caleb Gardner and Stewart Frusher from TAFI and Wes Ford from DPIWE for their assistance.

Regional Marine Planning

Ms Veronica Sakell

Introduction

Australia's Oceans Policy, is being implemented through the development of Regional Marine Plans. These Plans will provide a framework for integrated, ecosystem-based oceans planning and management. Regional marine planning covers all uses in the Commonwealth marine jurisdiction with the basic tenet of maintaining ecosystem health.

This paper provides an overview of *Oceans Policy* and regional marine planning as it is progressing for the South-east Marine Region. It will highlight the processes using the Rock Lobster Industry as an example. The paper will cover the implications of regional marine planning for marine industries in general.

Oceans Policy

In December 1998 *Australia's Oceans Policy* was launched as a whole-of-government initiative to manage the many uses and resources of our oceans in a way which best meets all of our needs and aspirations.

The Policy was developed in part as a response to our international obligations to protect and manage all marine areas under the Commonwealth's jurisdiction. This jurisdiction from 3 nautical miles from the coastline through to 200 nautical miles - our Exclusive Economic Zone (see Figure 1).

This area is approximately 16.2 million square kilometres of seabed, nearly twice the landmass of Australia.

Australia was the first government anywhere in the world to develop a national oceans policy. International obligations aside, the government was not convinced that traditional oceans governance arrangements are failing to take account of the important ecosystem processes.

What is clear to date, and we are learning this from looking at land management, is that the use of resources must be ecologically sustainable if we are to conserve the biodiversity and long term security of our marine environment. Irresponsible exploitation of resources now will only give us crippled industry and unemployment in the future.

What *Oceans Policy* provides is a unique opportunity for industry, the community and policy makers to work together to proactively manage our oceans. We know that ocean resources are not limitless. *Oceans Policy* is an opportunity for us to put some checks in place so that with care, Australia can continue to benefit from the economic, environmental, social and cultural values we place on Australia's oceans.

In short, *Australia's Oceans Policy* established a framework for integrated and ecosystem-based planning and management for Australia's entire marine jurisdiction.
The Policy promotes ecologically sustainable development of ocean resources and encourages internationally competitive marine industries.

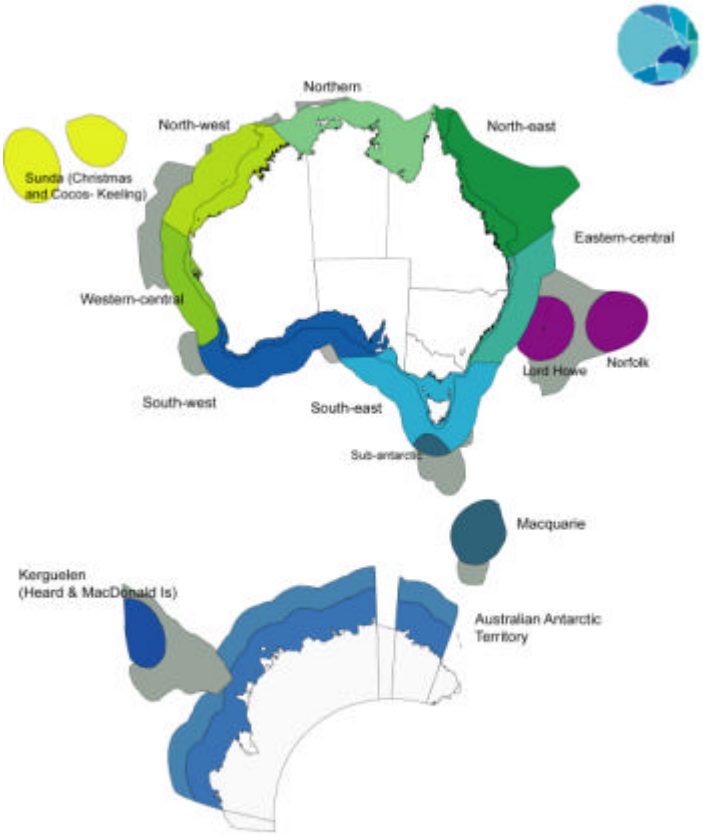


Figure 1: Large Marine Domains within Australia's Exclusive Economic Zone.

Regional Marine Plans

To implement ecologically sustainable development under Australian oceans governance, Regional Marine Plans are being developed to ensure decisions are integrated across all the relevant sectors in an holistic manner.

Regional marine planning uses large marine ecosystems as one of the starting points for planning (see Figure 1). These ecosystems are extensive areas of ocean that share relatively uniform structures, eg fish species, ocean currents and topography.

The first Regional Marine Plan is underway for the South- east region of Australia, covering waters off South-eastern New South Wales, eastern South Australia, Victoria and Tasmania including Macquarie Island, the South Tasman Rise and the extended continental shelf — an area covering some 2 million square kilometres.

For regional marine planning the Office views the South-east Region as a whole working system in which natural processes and human activities interact. This means we need to integrate our understanding of the physical environment, biological communities, impacts on the environment, as well as social and economic considerations through multiple-use management. This integration is fundamental to regional marine planning.

As the first of its kind, the South-east Regional Marine Plan presents new opportunities and will break new ground. It is the first regional marine plan of this size anywhere in the world and it is the first time governments, industry and the community are encouraged to become actively engaged in how the planning process unfolds.

The National Oceans Office has already completed phase one of the Plan. In this Scoping Phase, the Office described the planning process, the Region's characteristics and the critical stages for consultation.

The major outcomes of the Scoping Phase were the release of a Description Paper for the Region and more importantly, the Region's Scoping Paper. This paper, which was released for public comment, provided sectors with an opportunity to comment on how the planning process might proceed.

The National Oceans Office is committed to wide consultation throughout the planning process. The Office's work is supported by expert based Advisory Groups and Steering Committees, and several Working Groups have been established all of which include industry representatives. Without this input, the planning process would be flawed from the outset.

Extensive consultation with industry representatives and the community forms a large part of helping the Office gain an understanding of existing natural, economic, social and cultural values, ecosystem health and human impacts. This work forms part of the Assessment Phase where the overall aim is to create a shared understanding and appreciation of the unique characteristics of the Region, and how we manage our activities to sustain a healthy ecosystem. Through extensive consultation, the Office hopes to ensure this Assessment Phase incorporates the knowledge, concerns and aspirations across government, industry and communities.

We also need to make sure that consultation continues right through the planning process, and this presentation is part of that on-going consultation.

The Rock Lobster Industry is an important resource user within our Commonwealth waters. As part of the planning process, we need to take into account your needs and wants if we are to approach this management process in a transparent and equitable way. Part of that is understanding where the industry is currently focusing its resources, the economic benefits of the industry, and the industries future aspirations.

We also need to paint a picture of other resource uses impacting on or interacting with your industry, and, in terms of the future planning, can help with addressing potential future impacts and interactions.

In assessing the biological and physical characteristics of the Region, newly commissioned scientific research may be of great use in the identification of potential fisheries, or assist in developing efficiencies in industry processes.

Many of you work to different State legislature. *Oceans Policy* looks at the bigger picture. Ecosystems don't have boundaries, so regional marine planning is looking at resource usage within broad scale ecosystems. But in working through the process we are in close consultation with other commonwealth and state government departments.

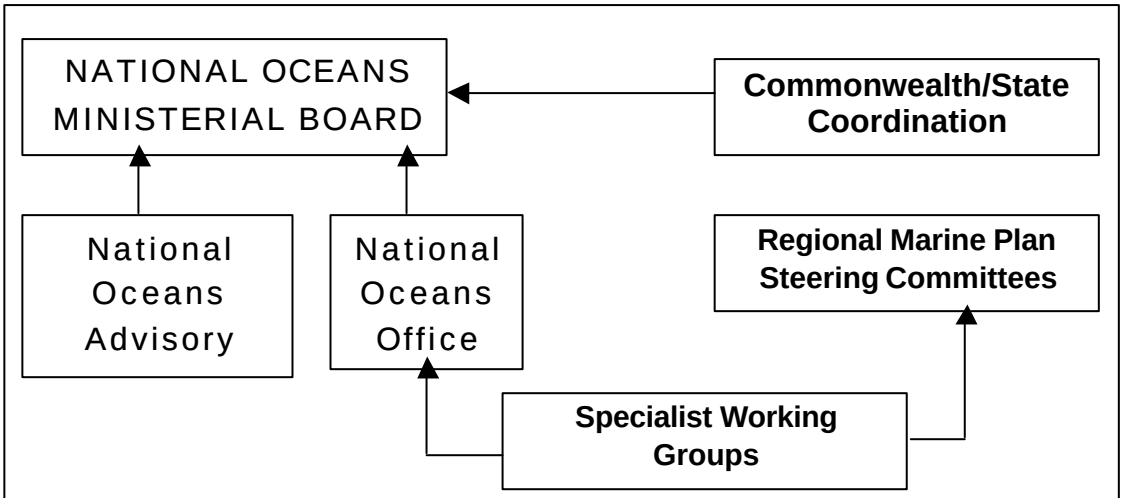


Figure 2: Australia's Oceans Policy Operational Structure.

Primarily, regional marine plans will be coordinated and developed by the National Oceans Office with advice and assistance from a Steering Committee.

A Steering Committee, made up of members with desired expertise, will be formed for each Region.

The National Oceans Advisory Group is made up of members with non-government interests who also represent sector specific input to the Plans. The sectors represented in the Advisory Group include industry, science, conservation and indigenous groups.

The National Oceans Ministerial Board will oversee the regional marine planning process, and is comprised of Ministers from environment and heritage, industry, science and resources, fisheries, tourism and transport.

We have also established a State Consultative Meeting with state government representatives from SA, NSW, VIC and TAS. The group is proving valuable in the exchange of information and highlighting obvious links in ecosystem based planning, including current management systems.

Oceans Policy is not about developing new regulations – it is about adding value to what is already in place by developing a shared understanding and by integrating planning and management decisions across sectors.

Regional marine planning presents a great opportunity for industry. It creates a business environment to develop, use and export Australia's ocean resources, technology and expertise to their full commercial potential, while maintaining the environmental quality on which industry depends.

Regional marine planning generates certainty by recognising the existing rights of industry and by using existing legislation in its implementation. It also recognises industry's needs for development and its changing technological capabilities. It helps industries to plan and manage their own development by providing security of access to high-quality environmental resources, while ensuring that these environmental values are not degraded.

At this stage we can only indicate what the broad steps are for developing options and performance systems which will formulate the final plan. Any options that are developed will be guided by the goals of the *Oceans Policy* and by the shared values of the South-east Region that emerge during the Assessment Phase. We need to understand any threats to those values and use risk management and the precautionary approach to develop and prioritise management options.

Similarly to the assessment process, specialist working groups will be established to assist in developing options and defining operational objectives and performance assessment mechanisms for the Plan. Their advice will be made available for public comment.

It is too early to second guess what options may surface from this process. What is clear, it that there has to be an objective to protect marine biological diversity, since the benefits derived from the ocean's environment and its resources depend on the maintenance of the biodiversity in healthy ecosystems. Irresponsible exploitation of resources now will only give us crippled industry and unemployment in the future.

Cooperation

This is a challenging project with far-reaching consequences. In order to achieve success, at any level, we need a great deal of cooperation.

We need industry to raise particular issues that may impact on our overall understanding of the Region.

We need you to keep informed of progress and initiatives generated as the planning process unfolds and we need your input and support in helping us review the options presented as part of the draft Final Plan.

Conclusion

The National Oceans Office and other bodies involved with *Australia's Oceans Policy* are at the beginning of a long road of discovery, understanding and development that will lead to the first Regional Marine Plan for Australia's South-east.

We want to engage as many people as possible in this journey so that we can build a level of appreciation and understanding that will lead to all Australians becoming stewards over their oceans.

Ecological Sustainability Assessment

Ms Kerry Truelove

Abstract

Recent legislative and policy initiatives by the Australian Government have substantially changed the framework within which the environmental performance of fisheries is to be assessed. The *Environment Protection and Biodiversity Conservation Act 1999* contains a series of provisions with direct impact on fisheries managers and the industry. These include a requirement for development of agreements relating to strategic assessment of two thirds of Commonwealth-managed fisheries by July 2003, with the remainder required by July 2005. Following the commitment given in *Australia's Oceans Policy* in December 1998, amendment on 29 September 2000 of Schedule 4 of the *Wildlife Protection (Regulation of Exports and Imports) Act 1982* means that the ecological sustainability of management arrangements for marine species must be assessed if the species harvested in that fishery are to be exempt from export controls under that Act. A grace period exists until 1 December 2003, during which assessments must take place and during which most marine species exports are unaffected. On 11 July 2001 the *Wildlife Protection (Regulation of Exports and Imports) Act 1982* was rolled into the *Environment Protection and Biodiversity Conservation Act 1999*. There are often differences in perspective adopted by fishery management and environmental assessment agencies, but the respective roles are complementary. We have a common and fundamental goal - best practice, ecologically sustainable fisheries management. The Government is committed to providing an efficient and strategic environmental assessment process and in providing certainty to industry, fisheries managers and the broader community. This paper examines briefly current progress in the development of arrangements for assessment of the ecological sustainability of Commonwealth, State and Territory managed fisheries.

Introduction

Australian marine fisheries take place in environments which have, in the global context, generally relatively low biological productivity and high biological diversity. Furthermore, other than a relatively small number of fisheries based on short-term aggregations, such as orange roughy, or where methods are highly specific, such as squid jigging or tuna pole fishing, most net and line-based fisheries in temperate and tropical Australia and its Territories will catch a large number of fish species in addition to the main commercially important species. Some will be retained as byproduct, others discarded, and while some fisheries seek to maximise the proportion of a few target species, in other fisheries operations may be intended to ensure a diverse mix of premium 'market fish' for local consumption.

Concerns about the capacity of the marine environment to sustain an ever-increasing diversity and intensity of human uses and impacts on marine ecosystems have been reflected in a number of international and national initiatives. Awareness amongst policy makers that fisheries have impacts well beyond those on the main target species, on ecologically-related species and on the wider marine environment have broadened the more traditional focus of fisheries management from the status of the stocks of commercially important species. It has resulted in the incorporation, at least in principle, of ecological sustainability as a fundamental and explicit objective in fisheries management. Australia is considered to be amongst the leaders in its fisheries management framework and in the operations of some industry sectors.

The pressure for change in fisheries and their management to ensure sustainability has come from within the industry, from management agencies, from fisheries scientists and from increasingly informed and articulate community and other interest groups. Within the industry itself, there have been significant developments and changes, driven in part by lessons hard learned and by the need to assure ecological sustainability as a pre-requisite for economic viability in the longer term. These include the development and refinement of bycatch reduction devices, and a more recent

industry interest in "green" certification. Community and industry -driven initiatives relating to environmental performance of fisheries include certification by the Marine Stewardship Council of the Western Australian Rock Lobster fishery, and proposals for green chooser projects and ecological efficiency and benchmarking developments.
A high diversity in the catches gives rise to a number of inter-related issues in management, including the need for more information on more species for assessments of sustainability; and the need for increased sophistication in fishing gear and its deployment to reduce impacts on habitat and/or non-target species. High-grading and other economically-driven discarding practices, where there are limited domestic or international markets for some species taken commonly, reinforce community perceptions of needless and avoidable waste of community assets.
These developments are all very encouraging, but the question remains: how effective have they been in the search for ecological sustainability of fisheries? For to put it bluntly, the consequences of failure to make the changes needed to ensure long-term ecological sustainability are likely to be more costly than the possible short-term benefits of inaction.
In essence, that is the thrust of recent developments in Commonwealth environmental policy and legislation as it affects fisheries: how effective is management in ensuring ecological sustainability.

Recent developments in Commonwealth legislation and policy.

At the Commonwealth level, the entry into force of *the Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) and the amendment of Schedule 4 of the *Wildlife Protection (Regulation of Exports and Imports) Act 1982* (the WP(REI) Act) heralds another stage in the process towards ecological sustainability in fisheries. It is fair to say these initiatives have met mixed receptions, with some sectors seeing it as a direct threat to established mechanisms and familiar approaches while other groups have welcomed it.
The new Commonwealth assessment regime requires no more than would be expected for best-practice strategic fisheries management. It has the potential to forge a powerful and effective partnership between fisheries management agencies, those responsible for assessment of environmental performance, and industry – all this in pursuit of the compelling national objectives of ecologically sustainable use of marine resources. If the new regime is a threat, it should be only to the continued poor performance in some fisheries.
The policy decision to seek ecological sustainability assessments predates the EPBC Act. It arose in December 1998 when the Commonwealth Government launched *Australia's Oceans Policy* which established the broad principles and planning and management approaches necessary for the ecologically sustainable development of our EEZ. The Policy contains a range of measures aimed at delivering ecologically sustainable fisheries that contribute to the social, cultural, environmental and economic well being of Australians.
Two particular commitments have implications for fisheries:

- the commitment to undertake environmental impact assessment of all new management plans for Commonwealth fisheries and, within a five year period, of those fisheries that do not have a management plan; and
- the commitment to remove the blanket exemption of marine species from wildlife export controls, to ensure exemptions are available only for marine species harvested in accordance with sustainable and ecologically-based management arrangements.

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act),

In June 1999 Parliament passed the *Environment Protection and Biodiversity Conservation Act 1999*, which came into effect slightly over a year later on 16 July 2000. As a result of this legislation, most actions and decisions, including fisheries related activities, which may have a significant impact on Commonwealth marine areas[5] and other matters identified as of national

5 the Commonwealth marine area itself essentially is defined to cover the waters, seabed and airspace of the Australian fishing zone and the extended continental

environmental significance, will require approval from the Commonwealth Minister for the Environment.
The EPBC Act aims to protect the environment, and promote ecologically sustainable development and the conservation of biodiversity, including the marine environment. It forms a comprehensive protection regime for the Commonwealth marine environment.
The Act requires that a person taking an action that will have, or is likely to have, a significant impact on a matter of National Environmental Significant (NES) (including the Commonwealth marine environment) must refer the action (defined to include a project, development, undertaking or any activity or series of activities) to the Commonwealth Environment Minister for approval. The approval of the Commonwealth Minister for Environment and Heritage for activities affecting the Commonwealth marine area is not required, however, in the case of fisheries in the Commonwealth marine area which are managed by a State or the Northern Territory.
The Act also makes it an offence in Commonwealth areas for a person without authorisation to kill, injure, take, trade, keep or move a member of a listed threatened species or community; a member of a listed migratory species or community; a cetacean (or indeed to import or possess cetaceans or cetacean products); or a member of a listed marine species. There is, however, provision for the Minister for Environment and Heritage to accredit a fishery management regime. If the Minister had accredited the management regime, if a person were to kill or injure any of the above species they would not have committed an offence *provided* the action was provided for and taken in accordance with the accredited management regime.
The Act also makes it an offence in Commonwealth areas to disturb an area of critical habitat for a listed species.

Strategic assessment of Commonwealth-managed fisheries
Section 148 of the EPBC Act provides that before a plan of management is determined under the *Fisheries Management Act 1991(*the FM Act) or the *Torres Strait Fisheries Act 1984*, the Australian Fisheries Management Agency (AFMA) must a) make an agreement under Section 146 for the assessment of the relevant impact of actions under the Plan, and b) consider any recommendations made by the Minister under the agreement. An agreement must be made whenever it is proposed to determine a Plan of Management, or a determination not to have a plan. Agreements on how to perform these assessments must be made between the AFMA and the Commonwealth Minister for the Environment and Heritage, and agreements must be in place by 16 July 2003 for two thirds of all Commonwealth-managed fisheries for which there are no plans of management in force. Agreements must be in place for all Commonwealth managed fisheries by 16 July 2005.
To simplify the development of fishery-specific terms of reference as required for strategic assessment, a set of generic terms of reference (TOR) for the development of strategic assessment reports has been developed. The TOR requires information to be provided under the following broad headings. Slight modification to meet any fishery-specific requirements is possible as the fishery-specific TOR are negotiated with the Minister:

- Description of the fishery.
- The environment likely to be affected by the fishery.
- Proposed Management Arrangements for the fishery.
- In particular, the assessment must demonstrate that the fishery is, or is likely to be ecologically sustainable in terms of its impact on:
  (a) target species;
  (b) non-target species and bycatch: and
  (c) the ecosystem generally (including habitat).
- Environmental Assessment of the Fishery :

- To include a comprehensive analysis of the potential impacts of the fishery on the environment, addressing all aspects of the *Guidelines for the Ecologically Sustainable Management of Fisheries*.
- Management measures and safeguards to ensure ecological sustainability
- Information Sources.

But what does it actually mean?

If the Commonwealth Minister for the Environment and Heritage is satisfied with the management plan or arrangements, then he or she must endorse the management of the fishery and declare under s.33 that further approval is not required in relation to matters of national environmental significance (NES) that are covered by the assessment. A person taking an action in accordance with the management plan or arrangements would not be in breach of the Act, albeit only in relation to those matters of NES covered by the declaration. In effect, strategic assessment is a mechanism for obtaining a form of approval for taking actions which might otherwise be an offence under the Act.

Essentially, the strategic assessment process is an environmental impact assessment, similar to that which has been sought of other industry sectors –notably the petroleum industry – for many years. While a new requirement for the fishing industry, it effectively brings the two main ocean resource use sectors –petroleum and fisheries – on par, at least in terms of requiring environmental impact assessment.

Do State or Territory managed fisheries have to be strategically assessed?

State or Territory managed fisheries, operating in State or Territory waters in accordance with State or Territory laws, do not require approval under the EPBC Act for impacts they may have on the Commonwealth marine environment. State or Territory managed fisheries operating in Commonwealth marine areas, under an agreement in place before the commencement of the EPBC Act, will also not require approval under the Act for impacts they may have on the Commonwealth marine environment.

The Commonwealth Minister for the Environment and Heritage may accredit fisheries management plans in relation to cetaceans, migratory species, and listed threatened species if satisfied that the plans meet requirements for the protection and conservation of these species. This would enable people who are operating in accordance with an accredited management plan or regime, to be exempt from those offences relating to killing, taking or injuring these species under the Act. If fisheries management plans or policies (including bycatch action plans) are not accredited and operators take or interact with protected species, individual operators will need to seek permits under the EPBC Act to cover their by-catch of those species.

However, since strategic assessment is limited to Commonwealth-managed fisheries, and as far as I am aware only one lobster fishery fits this bill (the Torres Strait lobster fishery), the short answer to the question I posed above is "No". I suspect the strategic assessment element of the EPBC Act is of limited concern to this Congress; of far greater importance is the ecological sustainability assessments required for export fisheries.

None the less, strategic assessment of a kind is available to State and Territory fisheries. In late 2000, following announcement of the amendments to Schedule 4 of the WP(REI)Act the Commonwealth Minister for the Environment and Heritage indicated to fisheries Ministers he would consider accrediting State and Territory processes for the development of assessment reports. Accreditation would be considered if proposed arrangements could meet a set of benchmarks for the environmental assessment of fisheries for the purposes of the WP(REI) Act. The benchmarks are intended to be consistency with processes required under the EPBC Act, including development of agreed terms of reference for the assessment of a fishery operation, provision for public comment on a draft assessment, and the common use of the Guidelines developed for the ecologically sustainable management of fisheries.

Export Controls - the Wildlife Protection (Regulation of Exports and Imports) Act 1982 …

Concerns at the overall sustainability of Australian fisheries, and impacts on the marine environment, led to the change in the application of export-related controls to marine species. Amendments to Schedule 4 of the WP (REI) Act, foreshadowed in *Australia's Oceans Policy* in 1998 and made on 29 September 2000, provide an exemption from export controls only for species harvested in accordance with management arrangements that have been assessed for the purposes of the Act as ecologically sustainable. Schedule 4 of the WP(REI) lists those species of native wildlife the exports of which are not controlled by the Act

The WP(REI) Act is the instrument administered by Environment Australia to control the export and import of wildlife. It's primary objective is to give effect to Australia's obligations under the Convention on International Trade in Endangered Species of Wild Fauna and Flora, but it has the general objective of furthering the protection and conservation of the wild fauna and flora of Australia and of other countries.

… and beyond

On 11 July 2001 the EPBC Act was amended through the *Environment Protection and Biodiversity Conservation Amendment (Wildlife Protection) Act 2001*. Among the amendments was the so-called "roll-in" of the WP(REI) Act.

The new wildlife trade component of the amended EPBC Act, which replaces the WP(REI) Act, is scheduled to commence operation on 11 January 2002. The new legislation has not substantially changed the export regime, but brought it more into line with the new Commonwealth environmental protection regime. In particular, the blanket exemption for marine species listed on Schedule 4 of the WP(REI) Act are carried through into the wildlife trade provisions of the amended EPBC Act, and still will expire on 1 December 2003. Schedule 4 itself is replaced by a list of exempt native specimens.

The bottom line is that until 1 December 2003, current arrangements for export of most marine species remain in effect. The exception is exports of sea cucumbers (trepang or beche-de-mer, all of which now are under the controls of the Act.

The Guidelines for the Ecologically Sustainable Management of Fisheries

In August 2000 the Commonwealth Minister for the Environment and Heritage approved the *Guidelines for the Ecologically Sustainable Management of Fisheries* (the *Guidelines*). The *Guidelines* build on an approach developed by the Marine Stewardship Council and set out principles, objectives and guidelines for the assessment process. They were developed after extensive consultation with industry, State governments and environment groups, both through face-to-face negotiations and through two periods of public comment. The *Guidelines* were then further refined through "road tests" against selected fisheries.

The *Guidelines* are the fundamental tool for ecological assessment of fisheries, whether it be for strategic assessment or for export fisheries. They are intended to ensure a rigorous and transparent assessment process that should be conducted in close cooperation with fisheries agencies and the fishing industry and provides opportunities for significant input from the wider community.

The *Guidelines* consist of three components: a first section detailing the overarching management regime, and two Principles and objectives on ecological sustainability.

- *The management regime*

To satisfy the Commonwealth Government requirements for a demonstrably ecologically sustainable fishery, the fishery must operate under a management regime that meets the *Guidelines*. It does not have to be a formal statutory fishery management plan, and could include

non-statutory management arrangements or management policies and programs, but must meet the requirements set out in the *Guidelines*. However, the management regime must:

- take into account arrangements in other jurisdictions;
- adhere to arrangements established under Australian laws and international agreements;
- be capable of controlling the level of harvest in the fishery;
- be documented, publicly available and transparent;
- be developed through a consultative process providing opportunity to all interested and affected parties, including the general public;
- ensure that a range of expertise and community interests are involved in individual fishery management committees and during the stock assessment process;
- be strategic, containing objectives and performance criteria by which the effectiveness of the management arrangements are measured;
- contain the means of enforcing critical aspects of the management arrangements;
- provide for the periodic review of the performance of the fishery management arrangements and the management strategies, objectives and criteria;
- be capable of assessing, monitoring and avoiding, remedying or mitigating any adverse impacts on the wider marine ecosystem in which the target species lives and the fishery operates; and
- require compliance with relevant threat abatement plans, recovery plans, the *National Policy on Fisheries Bycatch*, and bycatch action strategies developed under that policy

The Principles and Objectives

The Principles and the main Objectives set out in the *Guidelines* are summarised in Table 1:

Principle	Objectives
PRINCIPLE 1. A fishery must be conducted in a manner that does not lead to over-fishing, or for those stocks that are over-fished, the fishery must be conducted such that there is a high degree of probability the stock(s) will recover.	**Objective 1.** The fishery shall be conducted at catch levels that maintain ecologically viable stock levels at an agreed point or range, with acceptable levels of probability. **Objective 2.** Where the fished stock(s) are below a defined reference point, the fishery will be managed to promote recovery to ecologically viable stock levels within nominated timeframes.
PRINCIPLE 2. Fishing operations should be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem	**Objective 1.** The fishery is conducted in a manner that does not threaten bycatch species. **Objective 2.** The fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities. **Objective 3.** The fishery is conducted, in a manner that minimises the impact of fishing operations on the ecosystem generally.

Table 1: Principles and objectives in the *Guidelines for the Ecologically Sustainable Management of Fisheries.* Under each objective guidelines seek information on the information requirements, assessment, and management responses.

The argument has been raised that the *Guidelines* require an unrealistic degree of knowledge about a fishery. Nothing could be further from the truth. They identify the knowledge base necessary to assess ecological sustainability and to forge long-term sustainable management outcomes. Rather than need total knowledge, the aim is to identify uncertainties and establish suitably precautionary management responses. Not all of the objectives and guidelines will be critical to assessing the ecological sustainability of all fisheries. The importance of individual components may vary from fishery to fishery. Furthermore, although we anticipate that much of the information required for assessments should already be held by fishery management agencies (for example in the form of scientific assessments, annual reports, catch returns, scientific literature and other material), we recognise that it is likely to be to varying degrees of detail and robustness. We realise that many Australian fisheries lack detailed information on specific aspects of the fishery, including its environmental impact, and that many also are of such limited value that the costs of full-scale scientific analysis would be prohibitive.

But ecological sustainability is not assured simply through high levels of information; the use of precautionary management approaches can also play a significant role, particularly where data is limited, of poor quality, or conflicting. In these cases where information is limited Environment Australia will be looking for fisheries managers to demonstrate that safeguards have been put in place to reduce the risk of the fishery being unsustainable. We are looking for genuinely precautionary management in the knowledge vacuum; we do not expect rocket science for all fisheries.

So how does it work?

Each fisheries management agency prepares a submission relating to each fishery for which there is an export component, outlining in the submission the case to demonstrate that the fishery is being managed in accordance with the *Guidelines*. The submission is sent to Environment Australia and, unless a State or Territory process has been accredited for the purposes of the WP(REI) Act, we take responsibility for running the public consultation on the submission. A significant part of the assessment process is a thirty day public consultation phase. Comment is sought both through the Environment Australia website, and through a directed approach to individuals on a register of those who have expressed a desire to comment upon the assessment reports. Any person interested in providing comment can be placed on that register; they have only to contact us.

While the public comment phase proceeds, or shortly afterwards, Environment Australia commences its own analysis of the fishery against the *Guidelines*. The assessment is not completed until all public comments are received and issues raised by those comments discussed with the management agencies.

After the public consultation, the results of our assessment and public comments are passed to management agencies for consideration and response. Following this period of dialogue with the management agencies, Environment Australia prepares a recommendation to the Minister for the Environment and Heritage. It must be clear, though, that we do not look to the fishery to "pass" all elements of the *Guidelines*; what we are looking for is a management regime which, on the balance, is likely to deliver ecological sustainability.

The entire process (from lodgement with Environment Australia of the final submission to decision by the Minister for the Environment and Heritage) takes a minimum of twelve weeks. It can take longer, depending on the complexity of the issues identified during the assessment and the number of assessments on the boil at the time.

To streamline the process, management agencies are strongly recommended to provide preliminary draft reports to Environment Australia for comment, and several jurisdictions have already done so. In providing comment on these reports we take the view that our comments are intended to assist management agencies refine their submissions so that they address the *Guidelines* as comprehensively as feasible and maximise the case the submission presents for the

fishery. Formal assessment of the submission does not commence until it has been released for public comment.
At the end of the process, if the fishery is assessed to be demonstrably ecologically sustainable, then that fishery will continue to be exempt from export regulation under Commonwealth environmental legislation, for a period of up to five years.

What happens if a fishery "fails"?

I also have been asked to provide some comment on what happens if a fishery 'fails" the assessment process. If at the end of the assessment the judgement is that the fishery should not be exempt, then the fishery becomes subject to the other provisions of the wildlife trade component of the EPBC Act. In these circumstances:

- Fishery management arrangements may be assessed to result in a low risk of being unsustainable and export can be approved under "approved wildlife trade operations" provisions of the Act. This involves the Minister for the Environment and Heritage making a declaration under section 303FN of the EPBC Act in relation to the species taken in the particular fishery. Each declaration can be for up to three years, after which the fishery would need to be reassessed, and may include conditions designed to bring the management framework up to the standards of the *Guidelines*. The overall purpose of the conditions would be to elevate management arrangements so that the fishery can eventually be granted an exemption.

  In practical terms this is not as diabolical as it may sound to people not used to the export regime under the WP(REI) Act. Once the Minister has made his declaration (and once the deadline of 1 December 2003 has passed), exporters are required to obtain from Environment Australia an authority to export. An authority can be issued for up to three years, covers multiple export events, and can cover a number of species.

  In the period of the declaration, management agencies will be required to provide annual reports on the fishery. Those reports should address the issues identified during the assessment as impeding – or not demonstrating – ecological sustainability. The fishery itself is not re-assessed during the life of the declaration, unless we are asked to do so.

- In some circumstances the assessment may indicate significant concerns and that exports should not be permitted. This is an extremely rare event; exports have proceeded from most fisheries which we have assessed in the past.

  Environment Australia does not expect many fisheries are being managed in such a manner that export approval cannot be granted, and is conscious of the economic and social consequences of such an action. We have not

I have outlined the consequences above as if the wildlife trade provisions of the EPBC Act have come into force and the WP(REI) Act itself is rescinded. This is to reduce the risk of confusion, since it reflects the status once the current exemption for export controls expires on 1 December 2003 – for the wildlife trade provisions are scheduled to come into effect on 11 January 2002.

Scheduling the assessments

Clearly, the ecological sustainability assessment of fisheries is not a minor task. One issue is the sheer volume of fisheries to be assessed in a relatively short space of time (there are of course many other issues, such as how long each will assessment take and how the process could be most efficiently managed). On current information, it would appear that there will be somewhere in the region of 120 or so fisheries or species groups, a high proportion of which are likely to have an export component and require assessment by 1 December 2003.
It is up to the individual jurisdictions to determine their priorities for selection and assessment, and State and Territory agencies have provided at least some indication of their priorities. Some,

indeed, have provided detailed schedules for submission of their assessment reports to Environment Australia. Building on the information provided by the Commonwealth, State and Territory management agencies, we have developed a putative timeline for assessments. The lobster fisheries in South Australia, Western Australia, Tasmania and Victoria are generally considered a high priority and assessment should have commenced on all by July 2002, with assessment of the Queensland fishery scheduled to commence shortly afterwards

Another issue of concern is how the various fisheries are likely to meet the requirements of the assessment process, and what can be done to ensure "problems" are identified early to avoid the loss of export approval on 1 December 2003. In the context of assessing the ecological sustainability of management arrangements, there appears to be a relatively high proportion of fisheries for which there may be insufficient information to allow an assessment of sustainability at the moment. The 2000 Bureau of Rural Sciences *Fisheries Status Report*, providing 1999 assessments, indicates that about half of the components of the major fisheries assessed have an uncertain stock status. A study of the *Status Reports* over time indicates that the number of species in the uncertain category is increasing. Most of stocks/fisheries classified as uncertain are considered to be lower priority stocks that have received little research attention. These species require careful monitoring and assessment to establish their status more reliably. The status of most bycatch species is uncertain (Caton and McLoughlin, 2000).

The process we have adopted for the assessments allows for a high degree of iteration to address problems that may be identified, before exports would be restricted. To maximise the opportunity for "problems" to be identified early and addressed, we have suggested to management agencies that if there are fisheries they considered to be unlikely to be assessed as ecologically sustainable, early submission for assessment would provide more time for issues to be identified and resolved ahead of the 1 December 2003 deadline. In addition, as noted earlier, management agencies are encouraged to provide early drafts of their assessment reports in an effort to minimise unnecessary delays once the formal assessment process commences.

Fisheries for which managers know in advance that there is little likelihood of meeting the *Guidelines* immediately can be submitted for approval as a wildlife trade operation. We encourage fishery managers to avail themselves of this opportunity – ecological sustainability assessments of these fisheries can take place at a later date, when data and management arrangements are more likely to meet the *Guidelines*.

Some jurisdictions have indicated that they are interested in seeking accreditation of state assessment processes in relation to the export control requirements of the WP(REI) Act. Others are prepared to let that option ride. The Government intends to seek to have assessments started as quickly as possible, because delays may impose severe constraints as the deadline of 1 December 2003 nears, with attendant risk and uncertainty for industries reliant on export markets. Has it all started? Indeed it has. At time of writing, Environment Australia has seven formal assessments under way. Three are strategic assessments, the remainder are for export fisheries.

Furthermore, dialogue has commenced with management agencies on a number of other fisheries and no less than six preliminary drafts have been submitted for our informal advice. Meanwhile, of course, assessments for fisheries which remain under the export control of the WP(REI) Act and the amended EPBC Act continue.

What does it mean for the lobster industry?

The state of play is this: export continue unaffected until 1 December 2003. During that time, several things must happen:

Assessments must be done:

- management agencies must develop assessment reports and submit them to Environment Australia for assessment
- Environment Australia must assess the fishery and provide the results of assessment to the management agencies
- dialogue to tweak management arrangements to improve environmental performance if necessary, must take place between management agencies and Environment Australia. The dialogue would also include establishing any conditions considered necessary, if the fishery is considered not to have demonstrated ecological sustainability

The Minister must make his decision

If the fishery is exempt, exports will continue unaffected. If the fishery is not exempt, exporters (not fishers) will have to obtain an export authorisation from Environment Australia to enable them to continue to export product. No further assessment will be necessary for the lifespan of the declaration. If the fishery is not only not exempt, but in such a parlous state the Minister for Environment and Heritage cannot contemplate exports continuing, then exports cease; but we hope to avoid this latter scenario.

Whether a fishery is exempt or not, a paper trail tracking the product from fishery to exporter will have to be established (if it does not already exist) and in place before 1 December 2003.
So far, the management arrangements for the lobster fisheries we have seen suggest a number of generic issues which may need to be addressed in order to achieve ecological sustainability. The clearest need is a lack of a robust understanding of the effect of lobster potting on the marine environment. This in itself has a flow-on implications: if the knowledge base is poor, then management needs to incorporate precautionary measures designed to deal with that. The management measures we have seen to date appear to be quite robust with respect to target species, but less so with respect to bycatch, threatened species or the wider marine environment.

Another generic area of concern is that understanding of the harvest in recreational and indigenous sectors is not as good as that for the commercial sector, and that arrangements to deal with this uncertainty are less stringent. Overall there appears to be a need for better assessment of the environmental risks inherent in management arrangements.

Conclusion

The framework for the assessment process is now in place for both the strategic and export assessments under the EPBC Act; benchmarks for accreditation of State / Territory processes are established; there are generic terms of reference for the preparation of reports on Commonwealth-managed fisheries; and there is a clear and relatively simple set of *Guidelines* intended for use in the preparation of reports and their assessment is in place.

Some fisheries will require assessment for both the EPBC and WP(REI) Act components. The framework is intended to avoid duplication, although there are clearly some issues to be resolved in terms of timing and priorities for assessment. It will need to be further tested through the early formal assessments, so that the administrative processes and timetables can be refined if required.

The initiatives under the EPBC Act and those under the WP(REI) Act in relation to export controls provide a powerful set of new tools for environmental assessment that can be brought to bear to ensure that fisheries meet environmental performance standards. They should provide the basis for a strong and effective partnership between those responsible for fisheries management, the industry and assessment of environmental performance. There are often differences in perspective adopted by fishery management and environmental assessment agencies, but the respective roles are complementary. We have a common and fundamental goal - best practice ecosystem-based

fisheries management, and the demonstrable ecological sustainability of fishing operations, which are such an important component in the spectrum of uses of our ocean resources.
The Government is committed to providing an efficient and timely assessment process and in providing certainty to the industry, fisheries managers and the broader community.

Acknowledgments
A number of people provided input in the development of this paper, either overtly or in innocence through their own writings. They include Mark Flanigan and Gordon Anderson of the Sustainable Fisheries Section in Environment Australia.

References and reading
Caton, A and McLoughlin, K (eds) (2000). *Fishery Status Reports 1999: Resource Assessments of Australian Commonwealth Fisheries*. Bureau of Rural Sciences, Canberra.
Electronic copies of legislation can be found on: http://SCALEplus.la.gov.au/
The *Guidelines for the Ecologically Sustainable Management of Fisheries* can be found at: http://www.environment.gov.au/marine/fisheries/assessment

The Good – WA Legislation in Practice

Mr Guy Leyland

Marine Management Strategies

- Pollution control
- Environmental impact assessment
- Fisheries management
- Wildlife protection
- Maritime safety regulations
- Marine conservation reserves

Objectives

- To preserve representative as well as special ecosystems in the marine environment

- To put a formal management framework in place to ensure the various uses of marine conservation reserves are managed in an equitable, integrated and sustainable manner.

Community Involvement in Planning

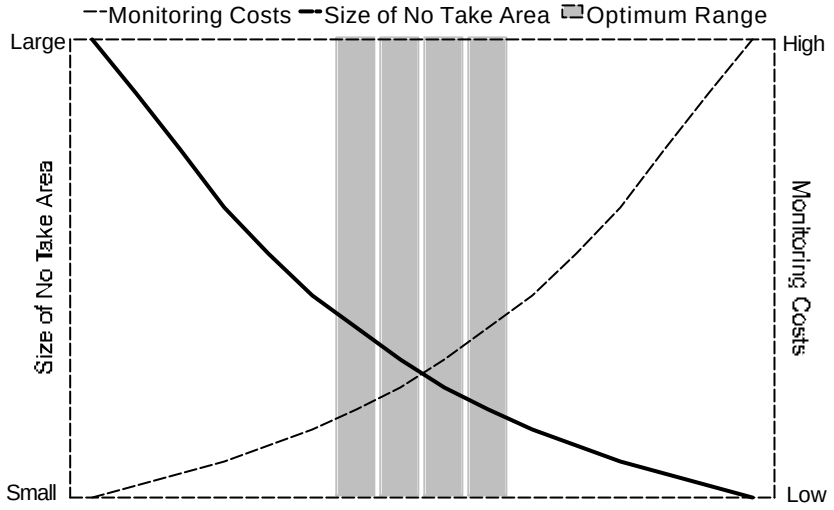
- Marine Parks & Reserves Authority
- Community education program
- Community Advisory Committee
- Sector Reference Groups
- Statutory public submission period

Functions of No-Take Areas

Refuge **-** for unique, important or threatened species and communities
Replenishment - as a source of larvae spores, eggs etc. for exploited areas
Scientific control areas - as reference areas for baseline research
Insurance - for the future

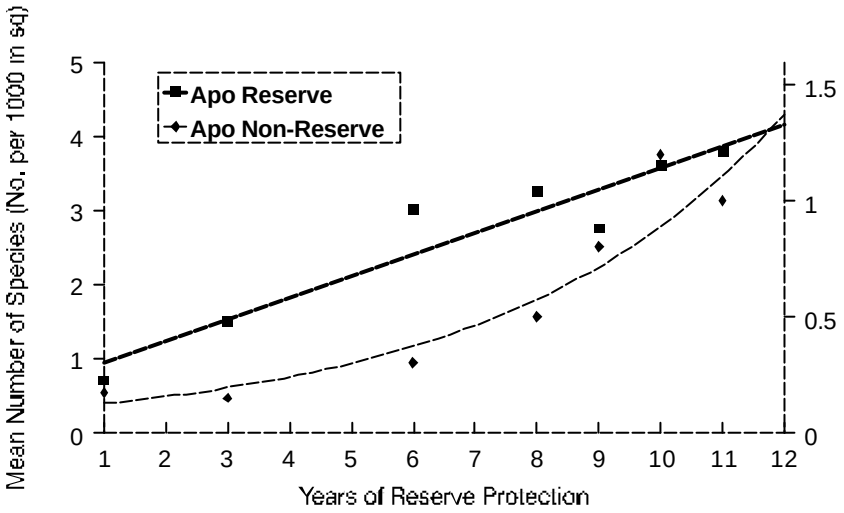
Conceptual Design of No Take Areas

Interaction between Size of No Take Area and Monitoring Costs



Diversity of Large Predatory Reef Fish

Apo Island, Philippines



(From Russ & Alcala, 1996a)

Sanctuaries in Marine Parks

- representativereplicatedbuffered

Community Involvement in PlanningMarine Parks & Reserves Authority

- Community education program
- Community Advisory Committee
- Sector Reference Groups
- Statutory public submission period

Plan Development

- Identify social & ecological values
- Identify pressures or threats to those values

- Define management targets
- Define management objectives
- Select management strategies

Marine Management Techniques

- research & monitoring community education public participation surveillance & enforcement administrative frameworks
- zoning

WA Marine Reserve Program

MARINE PARKS/ ZONES	TOTAL AREA (h)	DATE DECLARED
Ningaloo Marine Park	225,564	3/4/87
Marmion Marine Park	9,500	1/5/87
Shoalwater Islands Marine Park	6,545	25/5/90
Rowley Shoals Marine Park	78,833	25/5/90
Swan Estuary Marine Park	346	25/5/90
Shark Bay Marine Park	748,725	30/11/90
Hamelin Pool Marine Nature Reserve	132,000	25/5/90

The Bad – MPA Impacts – Displaced Fishing

Dr Malcolm Haddon

Introduction

There is a controversy concerning the value of Marine Protected Areas to fisheries. The extremes in the controversy extend from those who consider that MPAs will be able to solve all problems in fisheries management to those who believe that MPAs are the first step to dismantling commercial fisheries. Despite this there are many others who attempt to generate a reasoned debate about the issues raised by the demands that MPAs be introduced.

There are three general ways in which the relationship between fisheries and MPAs can be evaluated:

- Compare established MPAs with similar areas exposed to commercial fishing.
- Experimental manipulations aimed at tested the effects of MPAs on fisheries.
- Model the dynamics of fisheries with and without MPAs.

Researchers at the Tasmanian Aquaculture and Fisheries Institute have projects addressing all three of these options. In this present work, however, only the last dealing with the modelling of fishery dynamics with and without MPAs will be considered.

There are some limitations that can determine whether an MPA could provide any positive benefit for a fishery. If the species concerned happened to be migratory at some stage of its life cycle and the population moved totally outside of an MPA, then there would be a limit on the protection that could be afforded to the species. The size of an MPA would place obvious limits on the proportion of any stock that would receive protection. So one would need to ask "How big an area is needed?" In addition, the optimum location for any MPA is an important question that also needs answering. It would be possible to impose a large MPA over non-productive seabed that would have no effects either for or against any fishery. The idea that MPAs can be used to manage fisheries when there is little or no information (Johannes, 1998) is not universally valid. If MPAs are to be useful in countries where there is successful fisheries management, then a great deal of scientific information is required to determine the optimum size and location of an MPA.
In an exemplary piece of work Stockhausen *et al.* (2000) examined rock lobster populations in the Bahamas and how they would be affected by the introduction of an MPA. They modelled the whole population along with larval dispersal and oceanography. In this study they were able to identify different areas of the reef system that would act as larval sources while others would act as larval sinks. The outcome for the fishery was very dependent upon the size and location of any MPA put into the system. MPAs located in sink areas actually reduced recruitment into the system while those in source areas elevated levels of recruitment. So MPAs can be good or bad depending on how they are designed. Stockhausen (2000) concluded that MPAs are best suited to single species management rather than ecosystem management (what is good for one species may not be so for another). A great deal of information was required to select an optimal location for an MPA but if that were available then they also concluded that a single large MPA produced the best results for the species concerned.

There are generally two direct benefits to fisheries that are usually claimed for MPAs:

- The movement of large animals out of the reserve – leakage.
- An increase in the biomass within the reserve leading to increased egg-production and consequently in the larval supply to the system – recruitment source.

The basic idea behind such benefits is that large areas, closed to fishing, will act as reproductive centers and replenish areas both outside and inside reserves.

Extensive tagging data from TAFI indicates that most rock lobster do not move more than 1 km so the benefits from leakage will depend very much on the size of the MPA being considered. The larger the MPA the greater the distances that would need to be traversed so the benefits from leakage would be reduced.

There is, however, ample evidence that the biomass of rock lobsters within reserves increases markedly with an increased proportion of larger animals being present than in fished areas (Fig. 1)

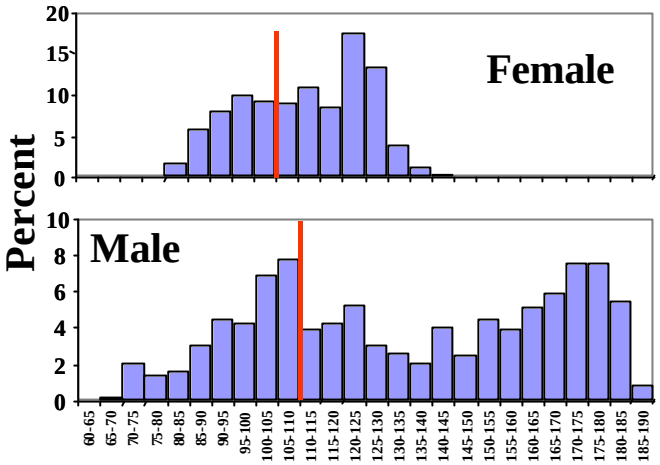


Figure 1. The size distribution of rock lobster in the Maria Island Marine Protected Area as measured in 2000. The vertical lines represent the minimum legal size for commercial fishing. Note the large numbers of larger animals that do not exist outside the reserve (Neville Barrett, unpublished data).

So there may well be a local increase in the egg-production but because *Jasus edwardsii* has a larval life that can be up to two years in length it will be extremely difficult to demonstrate enhanced recruitment following establishment of an MPA.

While the benefits for fisheries of introducing an MPA are well known the potential disadvantages are less well documented:

- They will be a reduced area in which to fish and displaced effort will put more fishing pressure on remaining areas.
- Any rebuilding that is already occurring outside the reserve may be reduced because of more catch being taken from a smaller area.
- If the MPA is large a reduction in the TAC may be necessary to offset the impact of displaced effort.

A model was used to investigate the potential impact of imposing an MPA on the Tasmanian rock lobster fishery. As most of the information is available at the geographical scale of the statistical reporting blocks it was decided to model all of the blocks and consider the effects of closing individual whole blocks. If no effects could be detected at that geographical scale then we argue that smaller MPAs would have no discernible affects.
The modelling has been done as a component of a FRDC funded project investigating the relationship between fisheries and MPAs. The main model is a size-structured, spatially explicit, population model. Up to 70 separate blocks can be modelled at once with any one or more of them having the ability to be closed to fishing. The geographical scale can be anything from hundreds of meters per block to the much larger statistical areas defined around Tasmania or another coast. The population in each block can be described individually in terms of growth character by sex, gear selectivity, recruitment, and other population characteristics. Having such flexibility permits

the population dynamics to be described more realistically with more options being available to describe recruitment and the effects of fishing on the population structure.

There are two aspects to the modelling that are problematical. The first is in trying to describe how the fishing fleet will distribute any displaced effort around the remaining fishery. There is nothing to force the fishers to spread the increased effort evenly over the rest of the coast. The second difficult aspect of the population dynamics is the relationship between spawning stock and subsequent recruitment. The solution chosen to these problems is to try a number of different options in each case. Thus, in the case of the fleet dynamics in the face of an MPA we have considered the outcome where the effort is distributed in proportion to the usual levels of catch from each area, also where the effort is focused on the top ten producing areas, or the top five. In addition, we have considered what happens when the displaced effort is dispersed among the blocks immediately adjacent to the closed area. By trying these many alternatives, and more, we will determine under what conditions any impacts observed arise. We are continuing to devise alternative strategies that may be used in distributing any displaced effort.

The present stock assessment for the Tasmanian rock lobster fishery suggests that the stock is rebuilding at between 5 – 12% per annum. When the modelled population is initiated so that it starts under such conditions a number of different outcomes arise depending upon which block is closed and how the displaced effort is redistributed.

If effort is redistributed in proportion to present catch, then, depending on level of rebuilding, the Tasmanian stock can usually absorb the closure of any single block (however, rebuilding of stock outside of the reserve may be compromised). This is the case because no single block contributed more than about 10% of the Total Allowable Catch (TAC). However, if effort is redistributed unevenly, then, depending on which block is closed, creating a large MPA, without reducing the TAC, can lead to serial depletion of commercial sized animals. The fishery, at current levels of TAC becomes unsustainable and the fishery can collapse. Because of the minimum size limit, the stock will survive but the stock in each block becomes depleted of legal sized animals and the catch rates become very low.

Depending on exactly which block is closed and depending on how displaced effort is distributed, rebuilding can decline significantly, sustainability of the TAC can decline, and the ability of the stock to absorb the effects of the MPA can decline (Fig. 2)

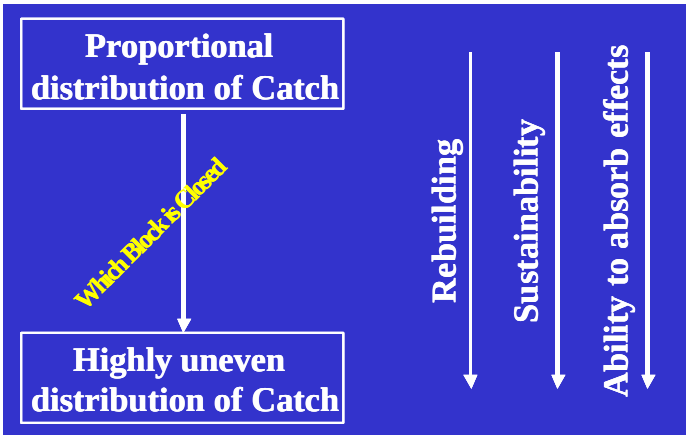


Figure 2. The inter-relationships between how an MPA is introduced and how displaced effort is distributed and the level of rebuilding occurring, the sustainability, and the ability to absorb the effects of the MPA.

In a fully exploited population, because of displaced effort, an MPA is equivalent to an increase in the TAC outside the reserve. The degree of increase would depend on the size of the MPA and the particular location closed to fishing.
How much catch is redistributed and where it is taken from determines whether the impact is just on stock rebuilding or also leads to depletion of legal sized animals. If the depletion becomes significant and the TAC is not reduced, then legal sized animals may become depleted in all fished blocks.

Conclusions (to date)
This is work in progress and there may yet be surprises waiting to be discovered. The finding briefly discussed here are only preliminary.

Large MPAs, without appropriate cuts in catch, could have serious deleterious impacts on southern Rock Lobster. Care must be taken when recommending large MPAs.

The introduction of large MPAs could be very expensive in terms of both human costs as well as capital costs.

Small MPAs have undetectable effects at the scale of the whole State. While the favourite reefs of individual fishers may become unavailable, in terms of the statewide stock, small MPAs have no perceptible effect.***Bibliography***

Johannes, R.E. (1998) The case for data-less marine resource management: examples from tropical nearshore finfisheries. *Trends in Ecology and Evolution* **13**: 234-246.

Stockhausen, W.T. (2000) Impact of spatial patterns of fishery exploitation on marine reserve performance. *Bulletin of Marine Science* **66**

The Ugly – Vic MPA Process

Mr Ross Hodge

On May 29, 2001 why did so many commercial fishermen tie up their boats for the day and spend hours traveling to Melbourne with their Families and Deckies?

In a nutshell it was the accumulation of 10 Years of frustration from dealing with the lopsided bureaucratic process of introducing marine parks and sanctuaries into Victorian Coastal waters.

The History

In the early nineties the Victorian Government of tasked the Land Conservation Council (LCC) with making recommendations for marine protected areas (MPA's).

From about 1991 on, the LCC started producing drafts reports and maps proposing MPA's for Victorian coastal waters.

In return Industry responded to those reports with submissions and responses to MPA proposals – In SIV's library the biggest section is taken up on MPA correspondence.

It was a reasonably amicable relationship in the beginning, as the LCC appeared to take some notice of industry's suggestions for suitable locations for the proposed MPA's

But as the fixation of the LCC's proposals centered on the state's major fishing grounds the relationship deteriorated.

In 1997 the Kennett Government replaced the LCC with the Environment Conservation Council (ECC) and introduced the *Environment Conservation Act 1997*.

The ECC release its first report in March 1998 for Port Phillip Heads

It was a complex proposal that included Special Nature Sites and Sanctuary Zones that were encompassed in a large Marine Park area.

Apart from the Special Nature and Sanctuary Zones, the remaining areas did allow commercial fishing, as long as wasn't netting, long lining or any form of fish traps.

Industry was suddenly awake to the fact that ECC's agenda was less industry friendly than its predecessor the LCC.

In December 1999 the ECC released a draft report titled *"Marine Coastal & Estuarine Investigation".*

Those in industry who did not sit up and take notice of the Pot Phillip Heads proposal were now fully awake.

The release of the Draft report was followed by a submission period and the ECC conducting a series of "consultations".

Perhaps some day we will be able to define exactly what consultation means.

In October 2000, the ECC released its Final report that was then tabled in Parliament.

The ECC's Final Report
The ECC's final report had made minor changes to the draft report and also included the Port Phillip Heads Marine Parks proposals.

Basically reduced impact on abalone by 30 to 40 Tonnes

Lacking Socio-economic analysis.

Impact on Industry
The direct impact to the Industry was considerable.

While only 6% of coastline, between 12-18% of catch of major species lost in proposed areas.

Volume of Resource:

-71 Tonnes of Rock Lobster

177 Tonnes of Abalone

-222 Tonnes (approx.) other species

Value of Resource (based on 1998-2000 prices):

Rock Lobster	$3,575,000
Abalone	$8,830,000
Other Species	$1,270,600 (approx.)
Total	**$13,676,600**

The ECC valued the lost resource at

Rock Lobster	$1,000,000
Abalone	$5,400,000
Other Species	$400,000 (approx.)
Total	**$7,000,000**

Other factors not costed into the ECC Figures

Capital costs

Access License value on lost resource

Rock Lobster	$9,230,000

Abalone	$53,000,000
Other	$2,000,000
Boats and Gear	$10,000,000

No account for value adding of product

Value of exported product

No costs of import replacement product.

The ECC's work referred to what had been a very basic desk top study of socio-economic impacts of their proposals.

No thorough Research undertaken.

-No industry interviews

-No contact or evaluations with post harvest sectors.

SIV's Response
Industry developed an alternative plan totaling about 3.8% of coastal waters as Sanctuaries and about another 5.5% in eco-management zones.

Alternative reduced financial impact on industry to 20% of the ECC's proposals.

Met with Premier and the Ministers responsible for the Environment and Fisheries.

Concerted lobbying directed at all Political Parties to get support for an alternative approach or a watering down of the ECC's recommendations.

Engaged media consultants to run public campaign.

The Government's Response
The Government did not provide a formal response to the ECC's recommendations outside of Parliament.

On the 17th May the Government introduced into Parliament the *National Parks (Marine National Parks and Sanctuaries) Bill,*

The Bill endorsed practically all of the ECC's recommendations with minor exceptions.

The most reported and notable aspect of the Bill was the Section 85 Provision.

The Bill was a heinous slap in the face to industry.

No compensation

Claims that the Parks would benefit fish stocks so need to reduce TAC or provide compensation.

Only provided $1.2. million transitional assistance to Industry.

This was to help Fishermen find grounds they had not fished before.

Bill linked to State Budget to increased Fisheries enforcement with an additional $39 million over four years.

Question why can only have a reasonable level of resource protection if there are Marine Parks.

Industry's Response Post Introduction of Legislation
Stepped up Media Campaign
Targeted Rural Government Members
Met with Opposition Parties
Gained support for opposition to certain section
Responded back to every Government Media Release.
Encouraged by Politicians to hold a major event stunt to attract attention in Melbourne.
Organised Industry Rally for the 29th May.
Tremendous industry unity, best ever, with Police estimations of 2,000 people at the rally.
Marine Parks debate attracted the largest amount of media attention of any single issue in the history of media monitoring.

What Happened to the Bill
The Government withdrew the Legislation 13 June

Why?

- Lacked/needed Independents and Opposition Support
- Concerns raised by the Parliamentary Scrutiny of Acts Committee

Key Procedural Issues Relevant to the Passing of the Marine National Park Legislation:
The proposed Marine National Parks and Marine Sanctuaries Bill that was withdrawn by the Government was, apart from being very threatening to the access rights of commercial fishers a very complex and intriguing piece of legislation. While much of the focus on the legislative package was on the section 85 provision of the Bill, there were also other aspects that industry needs to understand.

The following provides and overview of the implications of the Marine National Parks and Marine Sanctuaries Bill.

Issue 1: Restriction of Constitutional Rights to the Supreme Court
Where a Bill such as the Marine National Parks and Marine Sanctuaries Bill restricts access to the Supreme Court to seek compensation for loss or damage resulting from the introduction of the Bill, commercial fishermen pursuing compensation for the loss of income from the introduction of Marine National Parks and Marine Sanctuaries would be denied access to the normal course of justice normally provided in our constitution. When Parliament seeks to restrict the constitutional right of access to the Supreme Court it needs to amend Section 85 of the constitution insofar as the Bill under consideration is concerned.

For a Bill containing a Section 85 amendment is to pass through Parliament, the constitution requires the Bill to be passed by an absolute majority of the total numbers in the lower house and not just those present. Therefore, of the 88 members in the Legislative Assembly (Lower House) 45 votes would have been required to pass the Bill.

The Government has 44 members but one is the speaker. The speaker only gets a vote when the vote is tied. This left the government 43 votes and therefore for the Bill to be passed they had to pick up two votes from either the 3 Independents members or the Libs or Nats. The Libs and Nats combined have 41 members in the lower house.

If one independent went with the government they would of had 44 votes (still not a majority of the 45 required), then Liberals and Nationals parties plus two independents makes 43. It would not have been a tied vote ie. the speaker would still not have been entitled to get a vote, nor would the Government had a majority of the 45 out of 88 votes needed. At the end of the day Labor required at least two of the Independents, or two members of the Nats or Libs to support them to get the absolute majority of 45 to pass the Bill. It is also interesting to note that if any members of government were absent or ill on the day, the governments voting numbers would have also been affected, i.e. the Government required a majority of the House not just the numbers present to vote on the day.

Craig Ingram (Independent), declared he was not going to vote. Legally Ingram could have voted as long as his fishing interests were declared in the members register of interest. Where as Craig could of voted legally, it nonetheless left him wide open to public perception of a conflict of interest. Therefore, it is understandable why he took the stance that he did in declaring he would not vote on the Marine Park Bill.

Issue Two: Appropriation Bill

The Marine National Park legislation was classified as an Appropriation Bill.

Importantly for the Government an Appropriation Bill means it cannot be amended, e.g. the opposition members or independents could not have moved an amendment to the Bill to just delete or change the Section 85 provision or the Fisheries Act amendment (see issue 3). This is a particular issue for the Government in the Upper House where the Libs and Nats have the majority, e.g. if the Bill got through the Lower house there was two options for dealing with it in the Upper House:

a) Pass it in full;
b) Reject it in full.

It could not be amended or passed with House amendments.

The Government made it difficult for the Opposition and Independents in not being able to make any amendments to the Bill, as is often the case with changes being made to legislation as it passes through the parliamentary process. The pass or reject status of this Bill left no room for compromise with the other parties. The Government staked it all, on an all or nothing position.

The Nats were looking at a process called "Reasoned Amendment" which is a special Parliamentary process. However the last time any such process was successful was in 1933.

Issue 3: Fisheries Act Amendment

The scope of the Bill went further than no compensation for commercial fishers as the result of Marine Parks. There was a stand-alone amendment in the Bill which when read in the context of the Fisheries Act, removed compensation for fishers in other circumstances not just Marine Parks. In other words it was not restricted to just not compensating for loss or damage from the introduction of Marine Parks, it removed compensation for fishers for non marine park issues dealt with under the Fisheries Act.

The Government indicated that this was a drafting error. There is also an opposing view that it was a deliberate strategy. Some convincing is still required that it was only in the Marine National Parks and Marine Sanctuaries Bill by "accident".

Should the Bill have Proceeded

NO

Key Message

Must have appropriate Legislation in place to drive and facilitate process.

‘Swimming with the Tide’

Mr Daryl Sykes

Once again I am privileged to have been asked to deliver this dinner speech to my friends and colleagues in the rock lobster industries of Australia and New Zealand.

This Congress provides a unique opportunity for industry members and those in service to the lobster industries to share and learn, to challenge and debate, to undertake a sentinel duty and warn of future issues, and to guide and enlighten those who perhaps have not shared the unfortunate experience that goes with our business - whatever it might be.

What you know before you come to an event like this is that those in attendance have a sincere commitment to their industry and to their fisheries. What you know as a speaker is that you are standing before the converted, addressing the aware, and encouraging those who chose to move forward and overcome the many legislative and political obstacles to sensible, pragmatic, productive, efficient, cost effective and profitable rock lobster fisheries research, management, and fishing.

I have been given a theme for this address – *Swimming with the Tide*. Your hosts asked me to consider whether or not we - as industry advocates and service providers - are in the business of slowing the rate of wind back of our industries or in the business of growing our industries.

That is an interesting brief and one that provides me with a good deal of scope in terms of the content of my speech tonight.

Before I dive into the tide I ask you to reflect on the economic importance of export markets, reliable and timely airfreight services, favourable exchanges rates and buoyant economies that drive demand for luxury seafood. That combination of factors is increasingly uncertain as a consequence of the recent terrorist attacks and only serve to highlight that there defining aspects of our economic well-being that are just right out of our control or influence.

Within our respective fisheries there is potential for industry to be wound back - to be further burdened with costs; to be deprived of the rewards of effective fisheries management; to be denied the most economically efficient harvest strategies, and to be perceived by Government agencies and the community at large as a contingent liability to society and to the economy, rather than a valued asset to both and to the marine environment as well.

But I confidently hold the view that there is opportunity for the rock lobster industry to reaffirm its historical commitment to pragmatic and responsible fisheries management values - which encompass the full range of biological, environmental, social and economic benefits that are likely to be of interest and concern to politicians and to the community at large.

I believe that there is a sea-change of sorts occurring in government social and economic policies and I know that opportunities are available for the rock lobster industry to get out from under the burden of prescriptive administrative bureaucracies.

[*In this speech I use the term “property rights” as a term that is inclusive of a range of statutory fishing rights which include, but are not limited to, ITQs as we have them in NZ.*

Commercial property rights as we perceive them are under siege - there can be no doubt about that. This assault in manifested in a number of ways. In the case of NZ in particular the failure of the Government to complete the rights based framework which is the foundation of fisheries management policy. In the case of us all, the increasing loss of access to fishing grounds as a consequence of environmental protection policies, and the increasing competition from recreational fishing and seeming reluctance of Governments to effectively manage all non-commercial extractive use.

I want to challenge the way that you might currently be doing business on behalf of your industry by suggesting that one of the greatest weaknesses of our defense against the progressive erosion of our perceived rights - is our perception of those rights. I fear that too often we individually and/or collectively have an over-exaggerated sense of our own self importance which generates either a complacent or defiant stance, both of which generate an ineffectual advocacy.

Having endured the often painful transition from open access fisheries to more restrictive but potentially secure rights-based regimes many industry participants mistakenly believe that we have reached a plateau upon which only fine tuning of administrative detail is necessary.

There is an academic notion that the following characteristics adequately define the nature of commercial property rights - security of title, exclusivity of use, duration of the right, divisibility, transferability, and flexibility. In my view that definition is inadequate - it is a useful but incomplete definition of ownership qualities, but does not sufficiently capture what I will call the utilisation qualities of the commercial right.

As fishermen we assign other characteristics to our property rights – our ability to access historical fishing grounds in order to harvest a defined share of the available yield; our ability to harvest with certain methods, at specific times, within familiar environmental limits – these are the characteristics of our commercial property rights which are not understood and which are routinely ignored by bureaucrats, policy makers or politicians.

As fishermen we in NZ, and more recently those of you in Sth Australia, Tasmania, and soon Victoria, were significantly effected by the introduction of a more robust and prescriptive property rights regime. Our property rights have a particular value to us, both economic and emotional, because their acquisition entailed disruption, sacrifice, cost, and in many cases the breakdown of long standing personal associations and relationships. Unfortunately the “value” to Government was and is no more than a utility value - a means to an end - the end being economic efficiency and resource protection. Too often the plight of the individual or of the small community is secondary to the benefit of economic efficiency or to the discharge of a wider political obligation or ambition.

We find it increasingly difficult to hold our ground because as an industry we were initially too slow to recognise changing community sentiment in relation to environmental and indigenous issues. As an industry we were too easily dismissive of its influence on politicians and bureaucrats.

We have also misjudged the shift in public policy that has occurred between the free-market driven deregulation and privatisation of the early 1980s (a period in which property rights based management arrangements for natural resources were consolidated into legislation) to the increased emphasis on social equity and environmental protection that underpins many Government decisions in this new century.

As an industry we stood our ground against, and were somewhat dismissive of, all the “greenie stuff” because we are pragmatic, and because we have first hand experience of what happens at

sea and our experience does not equate to the hysteria promoted by the eco-fundamentalists. In standing our ground (and relying too heavily on our ineffectual defense of our commercial property rights) we have been overhauled by a very sophisticated and increasingly influential social and political movement - the environment industry.

There is an additional disturbance to industry, one that must be carefully considered and resolved. In some instances, and this comment is not restricted to my Australian colleagues, the seafood industry is attempting to stand its ground against the increasing implementation of policies that give effect to customary and/or indigenous fishing and fishery management rights and aspirations. We generally object to the implementation of these policies simply on the grounds that commercial property rights might be, will be, are being, adversely effected. We must be more clever than that. We must be more creative and constructive and facilitate legitimate change rather than impede it.

My first encouragement to you this evening is to pursue an effective political lobby and to cultivate credible and routine relationships with politicians.

My second encouragement to you as industry representatives and advocates is for your respective organisations to aspire to rock lobster fisheries management roles - to assemble amongst you the relevant skills, expertise and resources that will be required to undertake a fisheries management responsibility.

We must lift our sights. We should not be content only to participate in processes like National Oceans Advisory Groups and Marine Protected Area development groups - we must aim to step over consultation processes to a position of influence that defines both policy and process. Our industries must be even better organised. We must have greater coordination and communication within and between industry representative groups, and on key issues we should be a component of an effective peak body which encompasses the full range of industry sector groups.

The tide that is straining our grip, if not sweeping us along, is one that cannot be turned by rock lobster industry organisations alone. In my view there is a priority need for the diverse seafood industry sectors to support a peak body dedicated to maintaining and promoting the positive economic, social and environmental aspects of our industry.

The seafood industry must aspire to a position of providing policy advice to Government - a position of at least equal status to that conferred on the bureaucrats retained by Government agencies, but a position in which industry excellence provides the most professional, most credible, and most persuasive advice.

Our industry must expand its influence across the full range of marine environmental issues and considerations - sustainability of stocks, effects of fishing on the marine environment, animal rights, and food safety.

In order to achieve that measure of influence the industry must invest in the training and retention of skilled and effective service providers - professional legal and public policy analysts, professional scientists and professional advocates.

In summary my contention is this - in order to swim against the tide and bring about a more favorable sea-change, the rock lobster industries of Australia and NZ must become even more strategic in their approach. The rock lobster industry organisations must devote their resources to what I will call the “meaningful” issues and the meaningful responses. In other words, focus on the big stuff - the broader principles and high level policies that will continue to shape and re-shape our operating environment.

Rock lobster industry groups - be they local, regional, state, or national - should be engaged only in those activities that add to the reputation of the rock lobster industry and its participants, and only in those activities which add to the reputation of the seafood industry at large.

And of critical importance, individual industry members must do the same – add to the reputation of the industry. Where they choose not to, and therefore jeopardise the success of the overall strategy, those industry members must be encouraged and persuaded to modify their behaviour and attitudes.

The tide that threatens to sweep us back is a seasonal one. Its cause is the gravitational pull of populist social conscience and political expediency, which, in its first flush of enthusiasm, will ignore the economic and social consequences of its movement.

However, as communities of interest within our society becomes increasingly more aware that the political fashion accessories of environmental purity and the over-compensatory concerns for indigenous rights have a measurable adverse effect on their emotional, physical and financial well-being, there will be a turn in that tide. As an industry we need to be not only riding that turn of the tide, but guiding it.

I again encourage you to actively pursue the right outcomes for rock lobster fisheries, for the environment, and for the rock lobster industry – credible management policies, relevant research initiatives, intelligent fishing activities, strategic business planning, and profitable export and marketing.

Aquaculture Projects

Mr Rob VanBarneveld

Support for rock lobster enhancement and aquaculture in Australia by the commercial rock lobster fishing sectors is variable. Some sectors see aquaculture as a distinct threat to their fishery and livelihood, while others see aquaculture and enhancement as one of the few opportunities to increase outputs from fisheries at their maximum sustainable capacity. Whatever the perception, interest in rock lobster enhancement and aquaculture is increasing worldwide in-line with the development of other aquaculture sectors, and every existing rock lobster fishery must consider the potential implications locally, nationally and globally. The aim of this paper is to outline developments in rock lobster aquaculture in Australasia and the proactive rock lobster enhancement and aquaculture research program currently underway in Australia and New Zealand.

Commercial rock lobster enhancement and aquaculture activities in Australia and New Zealand

Rock lobster enhancement and aquaculture is already a reality in Australia and has been a reality in New Zealand for some years. The following outlines some of the existing activities by region:

Tasmania

Collection of puerulus from the wild and on-growing to a marketable size is now underway in Tasmania. This form of aquaculture and enhancement is based on high mortality of wild puerulus in their first year post settlement (anywhere from 75-97%) compared with animals brought ashore and ongrown in tanks where the mortality is minimal (2% in Tasmania). This gives rise to the theory aquaculturists can ongrow the 'excess' that would have died in the wild. This year in Tasmania, 7 licences were issued for the collection of 50,000 puerulus each. The licences are for an initial 12 month period, after which time they will be reviewed (in terms of successful application and commitment to use) by the Tasmanian Department of Primary Industries. The licences were issued at a cost of $5,000 each and a condition of use is that approximately 25% of the total number of puerulus collected are re-seeded into the wild fishery as juveniles at 1 year. An officer will be appointed within the DPI to monitor both the collection and reseeding processes. The development of conditions associated with the issuing of licences was in full consultation with the existing wild capture sector. At present, collection of puerulus has commenced, with collection from salmon nets alone (all of which would have otherwise died during normal net cleaning processes) already yielding 2000 puerulus which have been provided to the Tasmanian Aquaculture and Fisheries Institute for re-seeding research.

There are a number of interesting points to note in relation to issuing of puerulus collection licences in Tasmania:

- There were at least 20 applicants for the 7 licences on offer signalling significant interest in rock lobster aquaculture;
- Of the 7 licences issued, none are currently held by commercial rock lobster fishermen.

South Australia

Aquaculture activities in South Australia continue to focus on on-growing and value adding to adult wild-caught lobsters. In the past, pontoons have been used to hold and feed lobsters prior to sale facilitating more control over the market the lobsters are sold into and the timing of the sale. There is the potential to achieve weight gains of around 20% by growing the animals through the annual

moult, representing a 60% return on investment. Some difficulties have been encountered with the renewal of leases for sea cages in South Australia, and hence interest in this form of aquaculture is changing focus to land-based raceway systems. Current activities include investigations into the holding and feeding of lobsters in land-based tanks using both existing flow through systems and infrastructure or recirculation systems.

Queensland

M G Kailis have forged an alliance with the Queensland Department of Primary Industries to investigate the potential of culturing and growing tropical rock lobsters. To date research has focussed on many aspects of production, but propagation of tropical lobsters remains the highest priority. Phyllosoma have been grown to Stage 9 over a period of 85 days, with each attempt improving survival rates.

New Zealand

Rock lobster aquaculture based on quota buy-out schemes in return for puerulus collection licences (in the order of 1 tonne of quota in return for 40,000 puerulus) has been in place in New Zealand for some years. The success of these ventures has been variable.

Other developments

Interest continues to grow in other Australian states. Opportunities to develop rock lobster aquaculture enterprises in conjunction with existing aquaculture infrastructure is being investigated in both the Northern Territory and Western Australia. For example, management of pearl lines involves regular inspection and it is clear that puerulus are regularly brought to the surface with the lines. The frequency of appearance, the dominant species present and the potential to harvest and on-grow these puerulus requires further investigation, but is an existing consideration.

How is rock lobster enhancement and aquaculture likely to develop in Australia?

There are a number of ways that rock lobster enhancement and aquaculture systems could develop in Australia as evident from above, including:

1. On-growing of adults through a moult to increase weight whilst allowing sale at periods of peak demand/ value,
2. On-growing of wild-caught puerulus;
3. Culture of phyllosoma from eggs through the 11 larval stages to puerulus and subsequent ongrowing to market size as above.
4. Relocation of surplus juveniles to areas of low abundance.

In addition, the potential exists through improved survival rates, for aquaculture to provide stock for reseeding and enhancement of the wild fishery.

Collection of puerulus from the wild and subsequent on-growing is firmly seen as a short term basis for a sustainable rock lobster aquaculture industry, however, it could form a low-cost basis for on-going reseeding programs. By far the greatest potential for the development of a rock lobster aquaculture industry vests with closure of the life cycle. Unfortunately, spiny rock lobsters have a complicated life cycle. The eggs hatch as phyllosoma which drift in ocean currents for up to two years until they are ready to settle on a substrate and metamorphose into puerulus. The phyllosoma phase involves 11 distinct morphological stages and up to 17 moults (*J. edwardsii*). Culture of phyllosoma to puerulus has been successfully achieved in Japan and New Zealand in very small numbers, but to date the technology does not exist to commercial produce juvenile lobsters from eggs.

Strategic research to facilitate rock lobster enhancement and aquaculture capacity in Australia ?

Clear interest in rock lobster aquaculture in competitive markets prompted the establishment of a proactive rock lobster enhancement and aquaculture research program. The Fisheries Research and Development Corporation established the Rock Lobster Enhancement and Aquaculture Subprogram (RLEAS) in July, 1998 following consultation with industry and scientists. The Subprogram was established with the following objective or "mission":

"To provide technology for use in Australian rock lobster enhancement and aquaculture systems so they can be internationally competitive and can operate in harmony with the wild fisheries".

It should be noted that the role of the RLEAS is not necessarily to promote aquaculture development, but to ensure the existing rock lobster industries have the capacity to pursue enhancement and aquaculture of rock lobsters if the net benefits clearly exceed any negative aspects. The Subprogram also ensures that the research and development program gives due consideration for the following:

- Protection of the wild fishery in terms of economic and social viability;
- Neutral or positive impact on the wild fishery in terms of stock numbers;
- Commercial viability of closing the life cycle of rock lobsters;
- Increasing profitability and wealth for Australasia;

What are the key features of the existing research program ?

Species selection for aquaculture

At present, research is focussing on dominant wild capture species, while perhaps more resources could be directed towards comparative morphology and aquaculture potential of other less common species, particularly some of the tropical species.

Puerulus collection

Research in Western Australia and Tasmania has examined the development of collection methods for puerulus from the wild. Large 'fluffy' collectors set at different depths and in different areas off the Western Australian coast have been trialed with varying levels of success. This research has recently been extended to Tasmania where a number of different collector types on long lines are being examined. The Western Australian research has been hampered by low puerulus settlement, but has found that inshore collectors are more successful than those situated at a distance off shore. In Tasmania a survey of commercial aquaculture facilities has revealed some interesting spatial patterns of settlement on submerged structures while the research component has led to the development of suitable cost-effective collector types.

Biological neutrality

Historical data on the settlement of puerulus in specific areas in Western Australia has been used to assess the potential impact of puerulus removal on subsequent wild populations of adult lobsters. Extensive statistical analysis has been employed to assess a range of scenarios. The large numbers of puerulus involved and the high mortality rates in the regions examined suggest that removal of puerulus would have a minimal impact on settlement rates in these regions.

Larval rearing/Propagation

Research on propagation of the southern rock lobster in Tasmania has resulted in the successful culture through 10 of it's 11 larval stages in around 9 months. The outcomes of an International Workshop organised by the Tasmanian Aquaculture and Fisheries Institute through the Rock Lobster Enhancement and Aquaculture Subprogram suggest that the problems involved in larval

rearing make it a risky proposition. However, economic and biologically feasibility on a commercial scale do appear to be achievable. Subsequent research on the rearing of rock lobster phyllosoma suggests that the nutrition of these larval stages is limiting and new techniques need to be developed for the delivery and improved utilisation of feeds. It is hypothesised that nutritional status of the phyllosoma towards the end of their larval phases has a significant influence on settlement.

Nutrition

Nutrition research is being conducted on tropical, western and southern rock lobsters. All stages from early juveniles through to adults are being examined and cost effective manufactured diets are being evaluated. Recent work has shown that the protein content of diets for southern rock lobsters should be approximately 450 g/kg with lipid levels around 100 g/kg. The most noteworthy outcomes of nutrition experiments in all states to date are the apparent superiority of mussels over other diets and the distinct colour differences observed in lobsters fed different diets. It has been demonstrated that inclusion of approximately 100 mg/kg of carotenoids in southern rock lobster diets produces lobsters which are close to the natural colour of wild caught juveniles.

On-growing of juveniles and system requirements

On-growing of juvenile rock lobsters takes place in tanks and the animals grow best on a diet of fresh mussels. Artificial diets are readily accepted, but the growth and survival rates are not as good as with mussels. Despite this, artificial diets do support exceptional growth of southern rock lobsters if supplemented with mussels three times per week. Hides are placed in the tanks to reduce cannibalism that can occur at the moult. Under these conditions a marketable size can be reached in 2 years (Tasmania) or a weight of 500 g in 1 year (Queensland) with very low mortality levels. System design research is defining environmental requirements of juvenile and adult tropical and southern rock lobsters as well as identifying system design criteria for on-growing of adults. A recent experiment in Tasmania has shown that a temperature of 18-22° C is optimal for growth and survival of southern rock lobsters. Further research is required to identify optimal growing conditions in South Australia. Both dry and moist manufactured feeds have been examined as cheap alternatives to fresh mussels, yet cannibalism at the moult and a disease causing blackening and necrosis of the tail sections requires further attention.

Health

There are two facets of health research in relation to rock lobster enhancement and aquaculture – the maintenance of lobster health in aquaculture systems, and the protection of the wild fishery from introduced diseases. The early development of the lobster aquaculture sector means that few prevalent diseases have been identified. To this end, research has focussed on ways to identify diseases and assess the health of lobsters rather than specific disease research. The only exception is investigations into tail fan necrosis. This condition appears to exist in lobsters than experience some form of abrasion during capture allowing infection with natural marine *Vibrio* species that proliferates when the animal is held for extended periods. The condition is not contagious and can be prevented through improved handling practices.

In conjunction with developments in Tasmania, a new research project has commenced to undertake surveys of the health status of wild juvenile southern rock lobsters for comparison with surveys on the health status of cultured juvenile lobsters. This is to provide a risk assessment of the potential for re-seeded aquaculture reared juveniles to influence the health status of the wild fishery and to ensure that the health status of all aquaculture reared juveniles is adequately monitored.

Economics and marketing

A frequently asked question by commercial rock lobster fishermen is "will the introduction of an aquaculture reared product influence the existing market either in terms of price or the perception of product quality ?". A seafood processor and marketer would answer with a flat "no", but this hardly a convincing argument for one whose livelihood depends on these markets. The answer to the question may lie in an examination of the markets, but it is felt that until there is entry of aquaculture-reared product into the market place, the outcomes of such an assessment would hold little meaning. Hence, in the short term, it is thought that the use of comparisons with other industries in which wild caught and aquaculture reared products coexist may hold the best insights into potential impacts on rock lobster markets.

Production economics is another aspect of rock lobster aquaculture that is attracting some interest. Unfortunately, broad investigations at this stage into the cost of rearing rock lobsters in aquaculture systems is unlikely to hold much relevance given the very wide range of production options and the number of assumptions that would have to be made. It is also felt that those best placed to conduct this type of assessment are those that actually undertake the production rather than the public sector.

Enhancement

As an adjunct to the above research in rock lobster aquaculture and enhancement, research underway in Tasmania is concentrating on the survival of wild caught on-grown juveniles after release back into the wild. Using electronic tagging methods released juveniles have been tracked for up to two weeks with no mortalities recorded. This research program has now been significantly enhanced utilising scientists in both Australia and New Zealand to assess the effectiveness of re-seeding programs.

Conclusions

The commercial rock lobster fishing sector is currently presented with a unique opportunity in relation to capitalising on innovative research that provides the basis for a sustainable, competitive lobster industry. While the positive and negative aspects of rock lobster enhancement and aquaculture need to be carefully considered, and many of these issues are being addressed through the existing RLEAS research program, it stands to reason that the existing commercial rock lobster fishing sectors have the best chance of controlling any unforeseen negative impacts by embracing the technology themselves with a vision to enhance the value of their existing fishery. It is also clear from current rock lobster aquaculture developments in Australia that if the existing industry rejects aquaculture, others will enthusiastically embrace it. In short, the commercial rock lobster fishing sector can view developments in rock lobster aquaculture in one of two ways - "food for thought" or "thought for food".

Post Harvest Projects

Mr Bruce Phillips

To conduct research to increase the value of the rock lobster catch for Australia through improvements in post-harvest practices"

This Subprogram was established in 1996 to support the live section of the rock lobster industry. Its aim was to increase the percentage of lobsters delivered to the factory in a condition suitable for live export, and to examine if better methods could be identified for industry to use in identifying the lobsters selected for overseas shipment. It was externally reviewed in 1999 and it has adopted the mission stated above.

CURRENT PRIORITIES

Priorities for the Subprogram are revised annually and are at present.

Reduce appendage loss

International transport

Improve long-term holding information

Improve processing practices

Upgrade and expand Code of Practice

Condition indexes

Condition enhancement

Information transfer

The Post-Harvest Subprogram is directed by a Steering Committee, which determines the strategic directions of the research, which is carried out under the Subprogram. The Committee also prioritises the applications for research funding made to the FRDC and other funding agencies within its area of interest, and makes continuous examinations of the progress of the research which are funded, and whose investigators are required to make regular reports to the Subprogram. It is not a technical Committee, but management Committee, whose primary purpose is to ensure that the research that is endorsed is, directed at solving industry problems.

Members of the Steering Committee are appointed based on their expertise. They are selected from each State in which rock fishing is a major fishery and may have experience in either fishing or processing activities, or both.

CURRENT PROJECTS

96/344: Physiological studies of stress and morbidity during post-harvest handling and storage of western rock lobster: 11. Standard autopsy techniques and immune system competency

Principal Investigator: Dr Louis Evans
Curtin University of Technology
Aquatic Science Research Unit
GPO Box U1987
Perth W.A. 6845

Project Objectives:

1. To identify suitable immune system parameters which can be used to evaluate stress responses and health status in captive lobsters and to apply those parameters in a study of stress induced by post-harvest handling procedures.

2. To investigate the causes of mortality in captive lobsters held in processing factories. This study will focus on bacteriological and histopathological examinations and will result in the development of a standard protocol for the autopsy of lobsters.

3. To evaluate the influence of temperature change on immunological and physiological stress responses.

4. To study the influence of hormonal secretions on immunological and physiological stress responses.

5. To investigate innovative techniques which will boost immunocompetence but not adversely affect marketability of live product.

96/345: Physiological studies of stress and morbidity during post-harvest handling and storage of western rock lobster: 1 Physiological Stress Indicators

Principal Investigator: Dr Brian Patterson
Seafood Physiologist
CENTRE FOR FOOD TECHNOLOGY
Department of Primary Industries
19 Hercules Street Hamilton Q 4007

Project Objectives:

1. Identify key physiological stress parameters that either describe stress levels and/or predict likely further mortality in lobsters after harvest and apply these parameters in studies aimed at improving post-harvest handling practices.

2. Obtaining baseline measurements of physiological parameters in resting undisturbed lobsters, with reference to interactions between season and locality and the effects of moult stage and other biological variables.

3. Identifying physiological parameters, through field studies aimed at studying the effect of harvest and post-harvest handling on lobsters, which can be used to evaluate deviations from baseline values in captive lobsters.

4. Identifying physiological parameters through controlled laboratory experiments using identified stressors which can be used to evaluate deviation from baseline values in captive lobsters.

5. Develop simple methods of measuring one of the stress parameters identified in objectives 3 and 4 for use in lobster processing factories in the evaluation of stress levels in selected lobster shipments.

6. Apply the results and understanding of harvest and post-harvest handling gained from the field work in objective 3, and the stress parameters identified in objectives 3 and 4, in a study or studies of lobster post-harvest handling practices aimed at developing improved post-harvest procedures.

7. Use the findings of earlier sub-objectives to make recommendations for improvements in handling practices described in the recently published Code of Practice.

8. Use the findings to develop detailed knowledge and understanding of the physiological processes involved in the stress responses in lobsters which can be used by processing companies and fishers to devise improved methods of post-harvest handling and transport.

99/202: Rock lobster autopsy manual

Principal Investigator: Dr Louis Evans
Curtin University of Technology
Aquatic Science Research Unit
GPO Box U1987
Perth W.A. 6845

Project Objectives:

The publication of an autopsy manual to be used in the lobster industry.

362/250: Facilitation, administration and promotion of the post-harvest Subprogram

Principal Investigator: Dr Bruce Phillips
Curtin University of Technology
Muresk Institute of Agriculture
GPO Box U1987
Perth W.A. 6845

Project Objectives:

1. Coordinate the FRDC rock lobster post-harvest Subprogram.

2. Conduct an annual research workshop to present outcomes from the Subprogram and to define research objectives for subsequent years.

3. Facilitate travel of the Subprogram project principal investigators, industry representatives and Subprogram leader to biannual scientific committee meetings.

4. Facilitate travel of the industry representatives, Subprogram leader of the Enhancement and Aquaculture Subprogram, and Subprogram leader to biannual Steering Committee meetings.

5. Coordinate the preparation of Subprogram media releases and workshop publications.

6. Integrate with other FRDC funded rock lobster research programs including the Enhancement and Aquaculture Subprogram.

7. Coordinate the preparation and distribution of a biannual Subprogram newsletter.

8. Develop and maintain a strategic plan for post-harvest rock lobster research.

9. Develop a strategic plan for the Subprogram.

362/251: Development of a method for alleviating leg loss during post-harvest handling of rock lobsters

Principal Investigator: Dr Glen Davidson
Department of Zoology
University of Western Australia
Stirling Highway
Nedlands, W. A. 6907

Project Objectives:

1. To identify a cold-water immersion treatment that rapidly immobilises western rock lobsters, while allowing swift recovery from immobilisation upon return to ambient temperature seawater. To investigate the effect of season/acclimation temperature on effectiveness of cold stunning in western rock lobsters. To investigate the use of sea sprays vs immersion for cold stunning in western rock lobsters.

2. To investigate, in captivity, the effectiveness of the preferred treatment (identified in objective 1) for reducing leg loss in western rock lobsters.

3. To test the accuracy of factory grading of cold stunned western rock lobsters vs untreated controls.

4. To describe the occurrence of leg loss, morbidity and mortality of western rock lobsters subjected to cold stunning prior to episodes of handling during the post-harvest process (i.e. at the time of pot-pulling and sorting, prior to factory grading) and to compare these to the performance of animals handled using current methods.

5. To investigate the effects of multiple simulated pot capture and release events, either with or without cold stunning, on growth, leg loss and survival of undersized western rock lobsters.

6. To compare, in captivity, effects of handling, with and without cold stunning, on the reproductive success of setose, tar spot and ovigerous female western rock lobsters. To

investigate the effects of limb loss on the reproductive success of female western rock lobsters.

7. To conduct a survey to determine the extent and nature of leg loss in the southern rock lobster fisheries of Tasmania and South Australia.

362/252: Optimizing water quality in rock lobster postt harvest

Principal Investigator: Dr Brad Crear
University of Tasmania
Tasmanian Aquaculture and Fisheries Institute
Marine Research Laboratories
Nubeena Crescent, Taroona, Tasmania, 7053

Project Objectives:

1 Production of a manual on optimising the provision of oxygen during rock lobster post-harvest processes.

2 Determine the median lethal concentration (LC-50) of ammonia to adult southern and western rock lobsters (stressed and unstressed).

3. Determine the physiological consequences of exposing lobsters to sub-lethal ammonia concentrations, and the consequences of further exposing lobsters to acute post-harvest stressors.
4. Production of a manual on ammonia problems during rock lobster post-harvest processes.

2001/235: Striking a balance between melanosis and weight recoveries in western rock lobster (*Panulirus cygnus*)

Principal Investigator: Dr Hannah Williams
Curtin University of Technology
School of Public Health
GPO Box U1987
Perth W.A. 6845

Project Objectives:

1. To establish the impact of temperature and food additives on the activity of *Panulirus cygnus* haemolymph phenol oxidase (PO) in vitro.

2. To establish the impact of current commercial practices on weight recovery and melanosis formation.

3. To establish the impact of post-harvest transportation on PO activity, weight recovery and melanosis formation.

4. To determine the effects of anti-browning agents on weight recovery and melanosis formation.

5. To validate the use of experimentally determined cooking profiles for improvement of cooked weight recoveries and prevention of melanosis.

6. To formulate recommendations and guidelines that will enable industry to apply the findings of the study.

INFORMATION TRANSFER

The Code of Practise has been used as the primary method of providing industry with useful information arising from the studies that have been undertaken in the Subprogram. This is now being updated, and will now include occupational health and safety issues and humane methods for holding and killing lobster. This new version will be available as a video, on a web site, and in hard copy.
The Subprogram issues regular Newsletters. A copy of No 2 included in your satchel provided for this Congress. From this next issue copies will be sent to every endorsement holder in Australia. In addition, copies of the Newsletter and other information will be available on a Subprogram "page" on the FRDC website.

We are also planning to issue a series of pamphlets on topics of interest such as live holding and local transport of lobsters.

PROPOSED NEW PROJECTS

The Steering Committee seeks pre-proposals from scientists and industry for its examination. During 2001, I and another member of the Steering Committee made visits to South Australia, Victoria, Tasmania and Queensland for discussion with industry of their needs in the post-harvest area, and for discussions with researchers in these States of research, which may provide the solutions.

Projects which are currently being examined are:

Salt/leg loss
Revised Code of practice
Pink lobsters
Selective Fishing Strategy
Basket Design

The Steering Committee meets twice a year, but I am available for consultation at any time re possible projects that will assist at any level with the post-harvest process.

Southern Rock Lobster Development Program

Dr Gary Morgan

IMPROVED MANAGEMENT OF SOUTHERN ROCK LOBSTER RESEARCH AND DEVELOPMENT.

INTRODUCTION

The southern rock lobster (*Jasus edwarsii*) supports major commercial fisheries in Tasmania, Victoria, South Australia and Western Australia with total catches from these states being around 4900t. in 1999/2000. Of this catch, South Australia is the largest producer with approximately 55% of the total catch, followed by Tasmania (30%), and Victoria (11%). The fishery is valued at around $180 million beach price and is therefore one of Australia's major export-orientated fisheries. The fishery, being based primarily in regional rural areas, is also a major contributor to the economies of rural, coastal areas in the southern States. Studies in South Australia (Econsearch, 2001) have shown that indirect economic impacts of lobster fishing on regional economies is greater than the direct impacts.

Management arrangements vary between the States with some jurisdictions having a quota system in place while others rely on input controls. Other management arrangements, such as size limits etc, also vary between jurisdictions.

Despite the various management arrangements in the different States, the industry has, over the past few years, been pro-active in addressing significant challenges in a unified way. The FRDC-sponsored First National Lobster Congress in Adelaide in 1999 was a major step forward in uniting the industry nationally. This initiative has been followed by the discussions at a national level of immediate industry priorities and the development, in South Australia, of a long term strategic plan for the industry (Reid and Spawton, 1999).

The significant progress that has been made in facilitating industry cohesion nationally provides a firm basis for the consideration of a national approach to R&D in support of industry development and resource sustainability objectives.

OBJECTIVES/TERMS OF REFERENCE OF THE STUDY

The agreed terms of reference of this study, which was funded by FRDC were:

1. Consult with industry and Government on the feasibility of establishing a FRDC sub-program for wild catch southern rock lobster. This would include consultations with peripherally impacted groups such as other FRDC rock lobster sub-programs, the New Zealand rock lobster industry and other Australian rock lobster industries.
2. Prepare a paper which identifies and critically assesses, against the status quo, the feasibility and costs and benefits of a southern rock lobster sub-program to achieve the aims of
    a. better co-ordination,
    b. better collaboration,
    c. facilitation of an expanded R&D program to address whole-of-chain issues
    d. better use of available R&D funds
    e. enhanced access to alternative sources of R&D funding
3. Presentation of the paper at the 2nd National Lobster Congress in Melbourne in September 2001.

The Existing System of R&D Management and Co-ordination

R&D for southern rock lobster is funded variously by state agencies, by FRDC and through other processes. The FRDC component is probably the largest component in dollar terms and, in any case, such investment by FRDC attracts additional state investment. There are obvious interactions between the R&D projects that are carried out within each jurisdiction, regardless of funding source. State-funded research tends to concentrate on stock and fisheries monitoring activities that relate directly to day-to-day management of the fishery whereas FRDC funded R&D projects are more methodologically based and output orientated.

The various components of the current system of R&D management and co-ordination for southern rock lobsters are:

(a) Jurisdiction.

Rock lobster management currently is the responsibility of the State Governments of Tasmania, Victoria, South Australia and Western Australia. Each jurisdiction commissions research (either explicitly or implicitly) to support the management of the fisheries within their jurisdiction.

(b) Research prioritization.

The system used for research prioritization varies between states and is often dictated by the extent of industry funding for R&D. All states have FRABs and, in addition, all but 2 States have specific rock lobster management committees (e.g. MACs or FMCs) that consist of both Government and industry representatives. These MACs or FMCs concern themselves, among other issues, with recommending overall research needs for the fishery, some of which is funded directly by state agencies. The FRABs are more closely linked to FRDC processes and funding and consider the research needs of other fisheries as well as southern rock lobster. The FRABs therefore usually only address part of the total research support process. In some states (e.g. Tasmania and South Australia) there is a formal linkage between the government/industry MACs and the FRAB through the development of a strategic research plan for the industry at the state level. Such strategic R&D plans guide both the MAC and the FRAB in research prioritization issues.

(c) R&D Funding

So far as can be ascertained, the total amount spent directly (i.e. excluding R&D such as MAC training which indirectly benefits the industry) on southern rock lobster R&D in the past decade in all jurisdictions is approximately $16 million. Of this, approximately $7.1 million has been funded through FRDC projects (including the existing rock lobster enhancement and rock lobster post-harvest subprograms) and most of the remainder through State Government, direct and indirect industry funding and other funding sources. Indirect industry funding includes, in some states, contributing via license fees to the applicant's contribution of FRDC projects and providing matching funding for other funding agencies such as SPIRT grants.

Current national industry contributions to FRDC by way of levies are approximately $280,000 per annum, or approximately 0.16% of GVP. This compares with a maximum potential levy (and matching funds) of around $360,000 per annum. As a result, some $160,000 ($80,000 of industry funds and $80,000 matching funds) is currently being lost per annum through under-investment by industry in FRDC. Given the current GVP of the industry, total annual R&D spending is therefore approximately 0.9% of GVP. This compares favorably with Western rock lobster (0.5% of GVP) and abalone (0.5% of GVP).

(d) Industry Involvement in R&D Prioritization.

There has been some progress in the development of a national industry development strategy (e.g. Reid and Spawton, 1999), particularly as a result of the first Lobster Congress and the initiatives of the South Australian industry. However, in no state are R&D strategies yet linked explicitly to such industry development plans. Stock sustainability issues dominate the research agenda in most states and, given that each State Governments have responsibility for ensuring such stock sustainability, it is not surprising that researchers and Government managers play a large role in the setting of research priorities in this area. Where MACs or FMCs exist, there is a recognition (often secondary) of industry development issues. However, these issues are not yet seen in a strategic context. This often results in a concentration on short term problem solving at the expense of longer term development.

THE STRATEGIC AND OPERATIONAL ASPECTS OF A NATIONAL R&D SUBPROGRAM

It is clear that there are two distinct issues involved in any consideration of better national R&D co-ordination for the southern rock lobster sector:

1. The ***strategic*** issues of R&D prioritization, funding and the linkages to (and support for) both industry development plans and Government objectives of resource sustainability and allocation.
2. The ***operational*** issues of facilitating national communication at all levels (industry/researchers, among researchers, among industry, FRDC/researchers etc).

Strategic Issues and Responsibilities.

(a) Supporting Resource Sustainability.

Long term sustainability of the rock lobster resource is both a legislated State Government responsibility (with some directions from Commonwealth Government agencies, such as Environment Australia) AND the foundation of a profitable and viable industry. The goals of resource sustainability should, therefore, be common to both Government and industry. There are certainly issues to be addressed in the type of research that is needed to ensure sustainability, the efficiency and cost-effectiveness of such research and the funding of the research.

However, responsibility for developing a research and monitoring program designed to (i) undertake routine stock assessments (ii) address broader ecosystem impact and management issues and (iii) develop the methodologies for undertaking such research in an effective and efficient manner should be **jointly** with State and Commonwealth Governments and industry. Current management structures (e.g. MAC and FMC arrangements) in most states achieve this joint responsibility to undertake (i), arrangements between Commonwealth and State Governments and industry are being developed to achieve (ii) while FRDC funds much of (iii). These arrangements appear to work reasonably well and should be retained.

(b) Supporting Industry Development Strategies.

Considerable progress has been made by the southern rock lobster industry in developing a national approach to future industry development. The next essential step is the development of an R&D strategy that ***supports*** *such a development strategy. This is clearly an* ***industry*** *responsibility, operating within the management boundaries that have been set to ensure resource sustainability***.**

Operational Issues.

There are clear benefits to be gained in improving the communication and co-ordination in relation to southern rock lobster R&D. However, these communication and co-ordination needs are on a number of levels:

(a) Among researchers. Current informal communication mechanisms are evidently not meeting the needs of all researchers with researchers in all states reporting that benefits would flow from more formal and consistent communications among researchers. The impact of inadequate communication would clearly be in research inefficiencies and duplication.
(b) Between current researchers and other disciplines. Current research outside the existing subprograms is concentrated on biological issues although the scope of R&D activities needs to be broadened to include industry development issues. There is currently no mechanism to facilitate communication between researchers of different disciplines.
(c) Between Industry and Researchers and Government Managers. For those states that have joint government/industry management or advisory committees, there is good communication between industry, Government and research representatives on strategic as well as operational issues. In many states, strong operational links have been developed between individual researchers and industry (in fact, often stronger than management/industry links). However, the policy and strategic context in which the R&D is operating (i.e. why we are doing this) is often unclear, particularly to industry.
(d) Between the Existing Lobster Subprograms and Researchers and Industry. There are good mechanisms for providing both industry and Government input into the 2 existing subprograms and for the dissemination and communication of results. However, recognizing that the 2 subprograms serve both southern and western rock lobster fisheries, the key element that is missing so far as southern rock lobster is concerned is the integration of the work of these subprograms into an overall industry strategy.

THE FRDC SUB-PROGRAM STRUCTURE
FRDC have the ability to create subprograms to assist in the administration of national R&D issues. Currently, there are two lobster-related subprograms, both based in Perth:

- The rock lobster enhancement and aquaculture subprogram, and
- The rock lobster post harvest subprogram.

Subprograms can be created by FRDC either at its own initiative OR at the request of a stakeholder group.

The way in which FRDC creates and manages subprograms is best illustrated by the following extract from their operating procedures:

Managed Subprograms

On occasion, it becomes evident that a planned R&D outcome could be achieved more successfully if a number of related projects were managed more intensively – by employing higher levels of co-ordination, integration and communication than for individual projects. In that event the FRDC, either on its own initiative or at the request of a stakeholder group, establishes a managed subprogram. An example is the Rock Lobster Enhancement and Aquaculture Subprogram.

Formation of a managed subprogram provides a higher level of service in project management. The role of managed subprograms is to:

- develop strategic plans for R&D that take into account other strategic plans, and subsequently maintain strategic directions and be responsive to changing circumstances;
- set R&D priorities to maximize investment in that field, avoid duplication and achieve the greatest potential return;
- invite R&D applications to address those priorities;

- maximize collaboration between researchers, and between researchers, fisheries managers and fishing industry interests;
- attract other R&D funding and influence the way in which other funding entities apply their investment in that field;
- standardize on the best scientific methods;
- communicate regularly with potential beneficiaries; and
- influence the adoption of R&D results.

The cost of this service depends on the level of management that is required. The focus may be on a species, a fishery, or a nationally significant theme. Normally, a managed subprogram pursues one or more strategies within an FRDC R&D program.

The FRDC appoints a subprogram leader who reports to a steering committee, which in turn is advised by a scientific committee. The subprogram leader and the steering committee may be independent of the collaborating researchers.

The Relationship Between Sustainability Research, Industry Development and the Subprogram.

Any new southern rock lobster subprogram needs to address both the strategic and operational aspects of a national approach to R&D (see section IV). It also needs to acknowledge the legislated and implied responsibilities of Government and Industry (see section IV – Strategic Issues and Responsibilities). Given these responsibilities, and the progress that the industry has made in developing a unified, national profile, it is suggested that the following form a set of 5 guiding principles to clearly relate the R&D subprogram to essential sustainability research as well as to industry development priorities for southern rock lobster:

Principle 1: Priority setting for R&D related to routine stock assessment and allocation issues remains within existing state processes and be the joint responsibility of State Governments and industry through those processes. This is essential since each jurisdiction has responsibility for management of its own rock lobster stocks.

Principle 2: Priority issues related to methodology development in support of sustainability assessment and ecosystem impact assessment and management be identified by FRDC working in co-operation with the States, FRABs and industry through the normal FRDC processes.

Principle 3: A national industry development strategy be completed (building on the work of Reid and Spawton (1999)), be endorsed by all State's industry bodies, and this used to guide the development of the southern rock lobster industry over the medium term.

Principle 4: A national R&D plan be developed that includes **both** the priority issues identified by FRDC for sustainability/ecosystem methodology development **and** the issues identified in support of the national industry development strategy.

Principle 5: As part of the subprogram management, funding be specifically allocated and identified annually for support of the two parts of the national R&D plan (research supporting sustainability and research supporting industry development), taking into account other available sources of R&D funding for both of these activities, including State funding.

RECOMMENDATIONS FOR SUBPROGRAM IMPLEMENTATION

It is clear that, given the state of development of the southern rock lobster industry, a subprogram structure for R&D can better facilitate the support of a national industry development strategy while not detracting from responsibility for, or research supporting, stock sustainability issues.

FRDC has an established model for the operation of sub-programs although this model is not prescriptive and allows for considerable variation to accommodate differing circumstances and needs in different industries.

Building on this model, the following actions are recommended to achieve the objectives of a subprogram as set out in Section II:

- All concerned state southern rock lobster industries support in principle the creation of a FRDC southern rock lobster subprogram as well as the principles of the subprogram operation as set out in Section VI.
- A sub-program leader be appointed to provide the necessary continuity of communication, management, planning and co-ordination among researchers, industry and Government managers as well as providing the co-ordinating link with the rock lobster enhancement and the rock lobster post-harvest subprograms. Such activities would include an annual rock lobster research workshop with specific links to the biennial Rock lobster Congress.
- A Sub-Program Steering Committee be appointed to oversee the operation of the sub-program. Ideally, this Steering Committee should be industry-led and expertise-based and may include specialist, independent members. A suggested composition is (a) 3 industry representatives (to include all sectors) (b) 2 research specialists; (c) 1 fisheries manager representative (perhaps appointed by SCFA) (d) 1 FRDC representative. There does not appear to be an overwhelming case for an independent chair and hence it is suggested that the chair be chosen from among the members. The sub-program leader would report to the Steering Committee and be an *ex officio* member of the Steering Committee.
- The Steering Committee, working with the subprogram leader, would be responsible for developing a national southern rock lobster R&D strategy, based on the Principles of Section IV.
- A formal Memorandum of Understanding be developed between FRDC and the national industry. In this case, the 'national industry' would be the relevant industry bodies of Tasmania, Victoria, South Australia and Western Australia. This MOU would define the operation of the subprogram, the funding arrangements and would guarantee the flow of funds to support southern rock lobster R&D nationally. This is essential to enable long term planning of R&D in support of an industry development strategy. A suggested checklist of issues that need to be addressed within an MOU are included as Appendix 1.
- The subprogram would be proactive in soliciting research proposals (within the annual R&D budget) to support the national R&D strategy rather than responding to research applications. This would include the subprogram leader establishing close links with the other 2 rock lobster-related subprograms to ensure activities under those subprograms are aligned with the national southern rock lobster R&D strategy. The subprogram leader would also be responsible for working with researchers to ensure collaboration and co-ordination in the preparation of research proposals.
- The subprogram leader would also be responsible for identifying and developing other funding sources for supporting projects carried out under the R&D strategy.
- Research applications that are received by FRDC that are directly related to southern rock lobster would be assessed and prioritized by the Subprogram.
- The subprogram leader would ensure that all concerned state FRABs are fully informed of subprogram activities, particularly the issues of R&D application prioritization and funding.

- FRDC would recognize the R&D priorities established by the sub-program and fund projects as funds allow and in accordance with the provisions of the MOU.
- FRDC would ensure that industry levies from the southern lobster industry, together with matching funds (as agreed to in the MOU, but not less than dollar-for-dollar) are accounted for separately and that funds are thereby quarantined for use only on projects endorsed by the sub-program or with the approval of the subprogram. The costs of administration of the sub-program would have first priority for such funding.
- FRDC may also fund projects endorsed by the subprogram that will provide direct or indirect benefits to the southern rock lobster industry (e.g. training and skills development) over and above the agreed matching funds.
- FRDC will evaluate applications supported by the subprogram in accordance with its usual procedures. However, if FRDC rejects an application, then FRDC will provide the subprogram with a written explanation for such rejection.
- The subprogram would be subject to specific, measurable performance indicators (see below) to ensure that benefits are accruing to the national industry as a result of the subprogram structure. These performance indicators would be measured on an annual basis and reported to each jurisdiction, FRDC and to industry by the Steering Committee.
- After the subprogram is established, the issue of including other south rock lobster fisheries (particularly New Zealand) within the subprogram arrangements be investigated by the subprogram and FRDC.
- Using the performance criteria as a guide, a review of the performance of the subprogram would be held after 3 years of operation.

PERFORMANCE INDICATORS & OUTCOMES.

It is important that any new R&D subprogram delivers improvements over the current system and these improvements be measurable and monitored. The subprogram should therefore be subject to specific and measurable performance indicators to ensure that that the new arrangements are delivering benefits to R&D support for the southern rock lobster industry. These performance indicators should also be incorporated into the MOU between the industry and FRDC. This process needs also be combined with a review process so that changes can be made if the new subprogram process is not working to the benefit of all stakeholders.

The performance indicators identified as being the most important to stakeholders and relevant to the operations of the subprogram are as follows:

- The extent to which R&D supports a clearly defined industry development strategy AND contributes to improved ability to ensure sustainability of the rock lobster resources.
- The dollar value of funding available for southern rock lobster R&D, both from FRDC and other sources.
- The success rate of FRDC research applications.
- The quality of research applications
- The costs of administration and management in comparison with the benefits derived. While the costs of the subprogram can be readily assessed, the benefits derived can be both tangible and non-tangible. Some of the tangible benefits are increased R&D funding, greater success rates of project applications etc. However, during discussions with stakeholders, the intangible benefits such as closer co-operation between researchers and between researchers and industry were identified as equally important.
- The degree of communication, co-ordination and collaboration among researchers and between industry and researchers. This can be measured by annual surveys.

The desired outcomes of a new sub-program structure are essentially strategic in nature and as follows:

- A national R&D strategy which is adequately funded and which clearly supports long term industry development plans as well as Government resource sustainability objectives.
- A more efficient process for planning, managing, funding, undertaking and monitoring research projects linked to the national R&D strategy.
- A continuous improvement in the quality and co-ordination of research undertaken in support of a national R&D strategy.

RECOMMENDATION TO THE 2ND NATIONAL ROCK LOBSTER CONGRESS, GEELONG, 20/21 SEPTEMBER 2001.

The draft report was presented to the 2nd National Rock Lobster Congress. It was recommended that the Congress endorse the following:

1. That the southern lobster industry in each State endorse in principle the creation of a FRDC southern rock lobster subprogram;
2. That the Principles of the operation of the Subprogram (Section VI) be endorsed by the southern rock lobster industry in each State;
3. That, subsequent to the endorsement of (1) and (2), FRDC be requested to establish a Southern Rock Lobster Subprogram;
4. That a formal Memorandum of Understanding be developed between FRDC and the national industry to define the operation of the subprogram and the funding arrangements.

There was support for the recommendations from all four states involved in the fishery for southern rock lobster. In addition, the Congress unanimously agreed that:

- A national southern rock lobster organization be formed to co-ordinate industry development strategies and supporting R&D programs.
- That a southern rock lobster subprogram be supported in principle and
- That FRDC be requested to implement such a subprogram.

REFERENCES.

Econsearch (2001). Economic Indicators for the SA Southern and Northern Zone fishery, 1999/00; Report prepared for Primary industries and Resources, SA, February 2001.
Reid and Spawton (1999). Planning for Future Competitiveness 2000-2005. Report prepared for the South Australian Rock Lobster Industry;21pp.

Appendix 1 – checklist of issues that need to be addressed and negotiated as part of a memorandum of understanding (MOU) between FRDC and the Southern Rock Lobster Industry. The checklist is not an exhaustive list.

- Funding arrangements. The contributions guaranteed by the industry and the returns guaranteed by FRDC.

- Call for project applications. The role of the subprogram steering committee and FRDC and the relationship of projects to the industry development strategy and the R&D plan.

- Project approval process. The roles of the subprogram steering committee and FRDC in approving projects, the ground rules for approving projects, the protocols for advising each other on approval issues and dispute resolution procedures.

- The power of the steering committee to represent and to commit each State's industry and the limits of that power. This is an important issue. Whether an MOU needs to be developed between each State industry body and the subprogram to define these powers.

- The composition of the steering committee, including whether the committee is representative of state industry organizations or expertise based..

- The form of the relationship between the subprogram and the 2 existing subprograms. Do specific southern rock lobster-related projects currently administered by the rock lobster enhancement and rock lobster post harvest projects need to be transferred to the subprogram?

- FRDC additional support. How is the process for approval, communication and administration to be handled for projects that deliver benefits across a number of fisheries, including southern rock lobster? Examples are training and skills development, access security and issues that have relevance to both southern and western rock lobster (such as post harvest issues, aquaculture, live holding etc).

- Subprogram administration. The procedure for selecting and appointing the subprogram leader, whether steering committee members receive remuneration, administrative support, the powers of the subprogram leader and the annual administration budget.

Re-Seeding

Mr David Mills

Opportunities for the rock lobster industry through re-seeding

Introduction

Rock lobster resources contribute a large proportion of total seafood earnings in Australia, so increased harvests would be expected to have large benefits, both economically and also socially in regional areas. There may be opportunity to increase catches both through "fine-tuning" traditional management regulations, or through more novel techniques such as re-seeding; the focus of this paper.

"Fine-tuning" of existing management is a continuous process, with current management arrangements in most states that are a mix of rules introduced at varying periods. These rules can range from early regulations introduced in the late 1800's (such as the taking of berried females) to recent introductions such as output controls and changes in season length. In terms of maximising sustainable harvests, we would expect many of these rules to be sub-optimal given that they were formulated under conditions of limited data or research. Changes to management strategy impact on the size of harvests; with the pattern of regular changes to management strategies historically, we can expect to see more changes in the future and subsequent alterations to the size of total harvests. One of the drivers of management changes is increased knowledge of the resource through research and this provides opportunities to raise catches in the future – by harvesting the resource smarter.

Smarter harvesting of the resource can involve attempting to maximise yields by adjusting the average size at harvest, though a range of management techniques such as the manipulation of residual legal sized-biomass with quotas, or regional size-limits. Regardless of the management method, the objective is to focus the harvest of lobsters at a size, which balances the competing processes of growth and mortality to optimise yield, while maintaining egg production. That is, the aim is to harvest lobsters not too large, or too small, but just right. We have seen substantial growth in other fisheries through this process, such as the Tasmanian abalone fishery, which has increased yields by over 30% since 1996 (Officer and Tarbath, 2000), with a concurrent 200% or $700 million increase in market capitalisation. Similar opportunities exist for Australian rock lobster fisheries, although a detailed understanding of biological parameters such as growth and natural mortality is required. Legal sized biomass has increased over the last few years as a result of management in the Tasmanian rock lobster fishery and this is expected to translate into opportunities for increased catch in the future.

The gains in productivity that can be made by adjusting management rules are the result of improved fitting of fisheries rules to the natural biology of the exploited species. Although this "smarter" application of standard management rules provides the greatest opportunity for increases in yield, there are alternative options. These alternative approaches could be based on manipulating aspects of the biology of lobster populations that affect yield. Theoretical possibilities include:

1. Increasing growth, perhaps though shifting animals from low growth to high growth areas.
2. Protecting or enhancing productivity of reef systems by improved whole ecosystem management (eg minimising risk of urchin barren formation, or replanting of string kelp).
3. Increasing recruitment by protection or even enhancement of egg production in larval source areas (which requires detailed oceanography modelling).

4. Provision of habitat targeted to developmental stages where “bottlenecks” exist (eg design of breakwaters to maximise lobster recruitment, artificial reefs).
5. Shift of juveniles from regions of high settlement but low survival to more suitable areas.
6. Collection and on-growing of puerulus through the period of high mortality in the first year after settlement, followed by subsequent release (eg. though collaboration with aquaculture operations where a portion are retained for on-growing, and a portion returned to coastal reef)
7. Culture of juveniles from egg, followed by release onto natural reef.

Several of these concepts rely on “re-seeding” or the release of animals onto coastal reef (numbers 3, 5, 6, and 7). Issues relating to the viability of reseeding are discussed below in the context of biological feasibility. There is no attempt to evaluate the economical feasibility, which is clearly an important consideration in the viability of any reseeding exercise. For instance, concept 7 – the release of juveniles cultured from eggs, would require the production of large numbers of juveniles for a period of over 2 years prior to release, followed by several years of exposure to natural predators before recruiting to the fishery. If hatchery production of rock lobster larvae becomes possible in the future, the economics of reseeding juveniles would clearly be critical for any move to re-seed.

Critical steps in the viability of re-seeding are: (i) obtaining a source of animals, or “seed” to release; (ii) rearing of lobsters in the period prior to release; (iii) optimising the survival of animals at the vulnerable period during and shortly after release; and (iv) evaluating the success of the re-seeding exercise to evaluate whether future expenditure is warranted.

Obtaining animals for re-seeding

Three alternatives for sourcing animals for reseeding are considered here: the harvest of animals from areas with low growth relative the rest of the fishery under management; the collection and ongrowing of puerulus; and the hatchery production of puerulus.

Harvest of animals from low growth areas

All lobster fisheries in Australia have spatial variation in growth rates – so that lobsters in some areas grow faster than in others. Experiments on the shifting of animals from areas with typically low growth to areas of higher growth were conducted with *Jasus edwardsii* in the 1970’s by Winstanley, and on several subsequent occasions by other researchers in Tasmania. These small-scale experiments clearly showed that growth rates would increase after the animals were transported.

Tasmania has large areas in the south west with exteremely slow growth and high biomass where a substantial amount of potential yield is lost through natural mortality (ie the reource is under-exploited in this region). Figure 1 shows the size distribution of female lobsters in research traps which are fished without escape gaps. Note that very few females reach legal size, the majority die from natural mortality. Catch rates of these unexploited animals in this region are very high with some research shots averaging over 50 animals per pot, with occasional individual pots catching over 200 animals. This example is especially extreme but similar situtations of areas with slow growth animals exist in many areas of Australia.

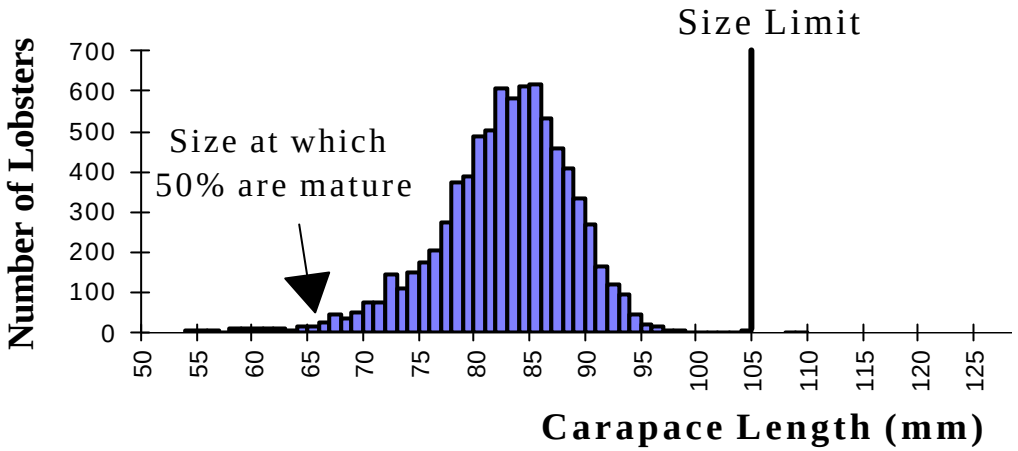


Figure 1. Size distribution of female lobsters from research sampling at Maatsuyker Island, SW Tasmania. Note that few females grow to reach legal size.

These animals in slow growth areas represent a source of "seed" that could be harvested at high catch rates and shifted to areas with fast growth. Numerous issues remain unresolved and would require research, such as the effect of removals on growth of lobsters in the source areas, but the concept appears simple relative to other alternatives for reseeding discussed below.

Puerulus harvest followed by culture for 1 year

There is little published data on mortality of spiny lobster pueruli settling onto reef although it is clearly much higher than for later stage juveniles and adults. Natural mortality of *Panulirus argus* for the year following settlement is estimated at about 97% (Herrnkind and Butler 1994). Small-scale experiments in Tasmania yielded highly variable but similar results for *J. edwardsii* (Edmunds 1995). In contrast, mortality rates of less than 5% for the same period have been achieved with pueruli ongrown in captivity (Crear et al. 1998, Kingston 1999). This large discrepancy in captive and wild survival underpins the potential of culturing puerulus for reseeding to enhance yields.

Large-scale and economical harvest of puerulus appears viable with estimated costs per animal around $1 along eastern Tasmania (Mills and Crear, 2001 and Mills, 2001).

Attempting to coordinate a reseeding operation based on ongrown puerulus is logistically difficult due to the large expenses involved in capture and ongrowing with diffuse benefits affecting a large number of individuals when the animals recruit to the fishery.

One option for sourcing ongrown pueruli for reseeding is through collaboration with the development of an ongrowing industry: A percentage of harvested pueruli can be reseeded as juveniles after a period of ongrowing. When this percentage equals natural survival over the same period, and reseeded animals survive and assimilate fully with wild populations, the direct effects of puerulus removal are neutralised. If the reseeded percentage exceeds natural survival, enhancement is achieved. In this scenario, the benefit to aquaculture operators, who bear the cost of collection and on growing, is access to puerulus stage lobsters, which are otherwise unavailable. Evaluation of this scenario commenced in Tasmania with the issue of permits for the collection of puerulus, contingent upon release of 30 mm carapace length juveniles.

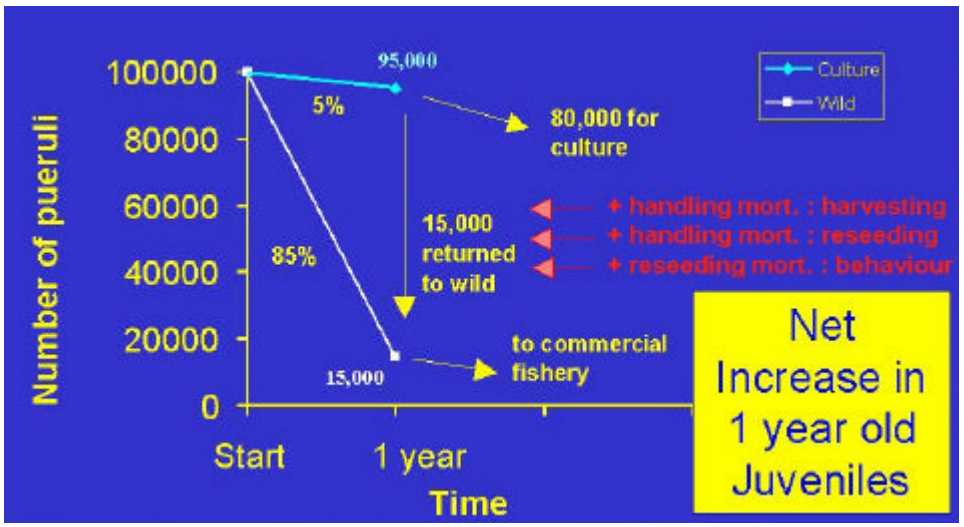


Figure 4. A hypothetical scenario for harvest of puerulus by aquaculture operations. As part of access to the resource, the harvesting operations are required to release a proportion greater than the number that would have survived normally, accounting for additional handling and reseeding mortality. The operation could be structured to produce a net increase in juveniles after 1 year.

Hatchery production of juveniles

While research into spiny lobster seed production has gained world-wide momentum over the last 5 years, to-date few juveniles have been produced (Kittaka 1997, Illingworth *et al*. 1997). Considerable research effort is currently directed to larval culture of rock lobsters in Australia yet no puerulus have been produced to date. This is clearly difficult and high-risk research, and it is impossible to realistically evaluate the potential for economical production of juveniles for re-seeding at this stage.

Rearing lobsters prior to release

Puerulus obtained from collectors need to be reared to a larger size prior to release if the period of highest mortality is to be avoided. As noted earlier, there is little information about rates of natural mortality so it is unclear at what size animals should be released to optimise the balance between costs of rearing the animals for longer versus higher mortality after release. Current permit conditions for the reseeding of juveniles produced by ongrowing in aquaculture require animals to be released above 30 mm carapace length. This size was selected as it approximates the size of juveniles 12 months after settlement (Edmunds, 1995), which simplifies calculation of schedules to ensure the biological neutrality of puerulus harvest. It is also a size, which approximates the size at transition from asocial to gregarious behaviour, that is, they begin to live in communal dens (Edmunds, 1995).

Rearing of lobsters from puerulus through to 1-year-old juveniles is comparatively easy relative to many marine species. They are robust, tolerate high density, and will readily accept artificial diets. Survival rates in trials have been consistently over 95% during this 1 period (Crear et al., 1998). An outstanding issue is the development of economical artificial feeds.

Optimising survival during the period around release

Conditions of captive rearing may lead to inappropriate response to predators, inability to gather adequate food, or modified diel activity rhythms (Nagata and Koike 1997), any of which may translate to low survival following release. A range of additional factors that may influence survival

after release such as the optimal time of day for release, habitat type, and broadcast versus single large batch release.

Research is underway on many of these issues although early results indicate that modification of behaviour while in captivity is readily reversed upon release. Animals held in captivity have distinctly different patterns of emergence from shelter with much more foraging during daylight hours (Fig. 6). While this would be expected to increase predation after release, the emergence behaviour can be made to track normal daily rhythms by placing a predator in tanks (eg a fish) or feeding animals at night instead of day.

Video tracking of juveniles after release has shown that cultured juveniles exhibit normal avoidance behaviour in response to predators. Feeding also appears to be normal with the stomach contents of reseeded juveniles found to be full and containing prey items similar to those of wild animals.

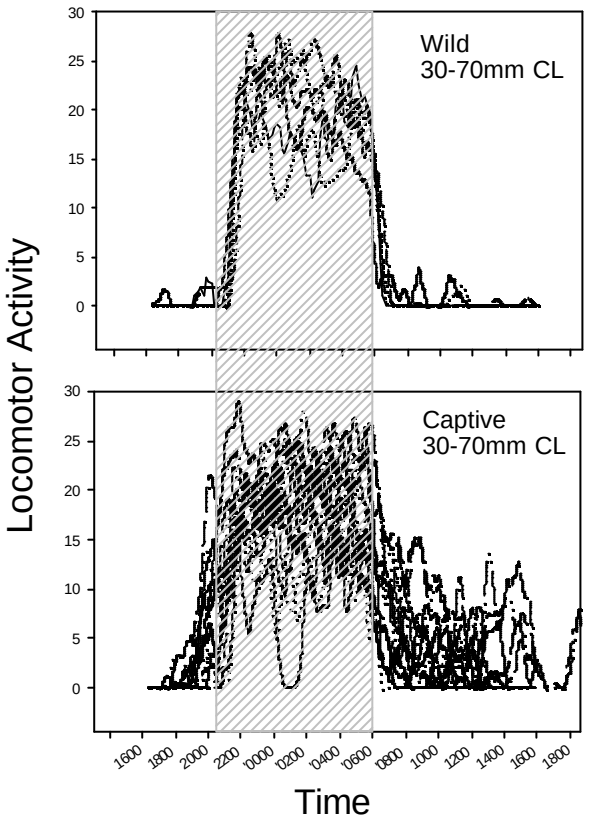


Figure 6. Emergence behaviour of wild and captive-reared juvenile rock lobsters over 24 hour cycles. Each line represents the mean emergence of a replicate of 10 animals. Note that wild animals spend less time out of shelter during daylight hours.

Evaluating the success of the reseeding exercise

Programs to protect, enhance or rebuild marine stocks through reseeding must be carried out in the context of a good understanding of post-release survival (Blankenship and Leber 1996). Early attempts at reseeding for enhancement of many species were rarely followed up by survival estimation, so the level of success was unclear. Research is underway towards quantifying post-release survival of 1-year-old reseeded juvenile lobsters in pilot scale releases of several hundred animals.

Methodology for this evaluation of survival is provided in detail elsewhere (Gardner et al., 2000). A component of that study was to get an indication of distances moved by juvenile southern rock lobsters, and behaviour with respect to reef boundaries. The project also provided information on habitat selection of re-seeded juveniles and provided a 'first glimpse' of short-term survival.

Important conclusions were that the study was able to quantify the probability of movement of animals between reefs and also the probability of divers resighting reseeded juveniles. Consequently, these factors could be incorporated into the estimate of survival. No difference in survival was detected between control wild juveniles and reseeded juveniles. This study is to be repeated in the future at various other sites more representative of the Tasmanian coastline.

References

Blackenship, H.L. & Leber, K.M., 1996. A responsible approach to marine stock enhancement. In: Hancock, D.A., Smith, D.C., Grand A., & Beumer, J.P. Developing and sustaining world fieseries resources: The state of science and management. Proceedings of the 2nd World Fisheries Congress. Brisbane Australia 1996.

Crear, B., Mills, D., Ritar, A., Thomas, C. and Hart, P.1998. Rock Lobster (Jasus edwardsii) aquaculture annual report 1997/98. Tasmanian Aquaculture and Fisheries Institute Internal Report.

Edmunds, M. 1995. The ecology of the juvenile southern Rock Lobster, *Jasus edwardsii* (Hutton 1875)(Palinuridae). PhD thesis, University of Tasmania.

Gardner, C., Mills, D., Ibbott, S., Wilcox, S. and Crear, B., 2000. Preliminary investigation towards ongrowing puerulus to enhance rock lobster stocks while providing animals for commercial culture. Tasmanian Aquaculture and Fisheries Institute Final Report to FRDC.
http://www.utas.edu.au/docs/tafi/TAFI_Download.htm

Herrnkind, W. F. and Butler, M. J. I., 1994. Settlement of spiny lobster, *Panulirus argus* (Latreille, 1804), in Florida: Pattern without predictability? *Crustaceana* **67,** 46-64.

Illingworth, J., Tong, L. J., Moss, G. A. & Pickering, T. D. (1997). Upwelling tank for culturing rock lobster (Jasus edwardsii) phyllosomas. Marine and Freshwater Research, 5. Int. Conf. and Workshop on Lobster Biology and Management, Queenstown (New Zealand), 10-14 Feb 1997*;* pp*:*911-914.

Kingston, S.W. 1999. Factors influencing the on-growing and restocking of *Jasus edwardsii*. Unpublished M.Sc. thesis. University of Auckland.

Kittaka, J. (1997). Culture of larval spiny lobsters: a review of work done in northern Japan. Marine and Freshwater Research, 5. Int. Conf. and Workshop on Lobster Biology and Management, Queenstown (New Zealand), 10-14 Feb 1997*;*pp*:*923-930.

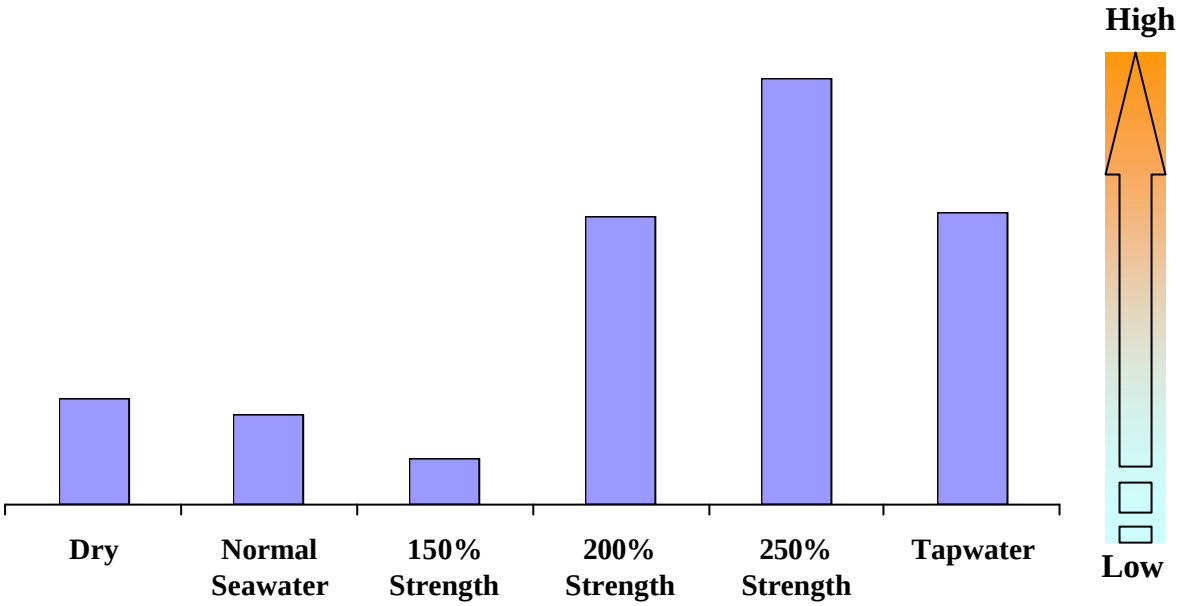
Mills, D. and Crear, B. 2001, Outcomes from southern rock lobster puerulus collection research: industry information paper. TAFI Report, 23 pp. http://www.utas.edu.au/docs/tafi/TAFI_Download.htm

Mills, D. 2001. Puerulus collection cost calculator. http://www.utas.edu.au/docs/tafi/TAFI_Download.htm

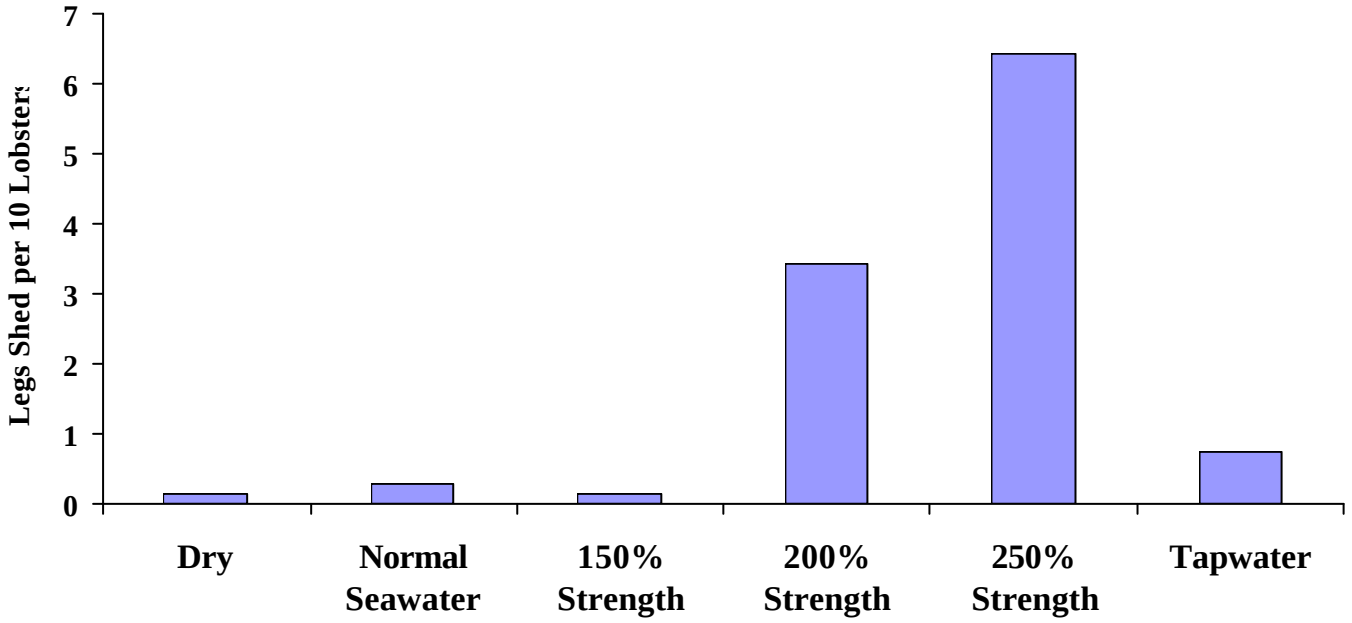
Nagata, Y and Koike, K.,1997. Collapse of the diurnal variation pattern of lobster activity and its causes. Bulletin of Marine Science 61(1): 129-138

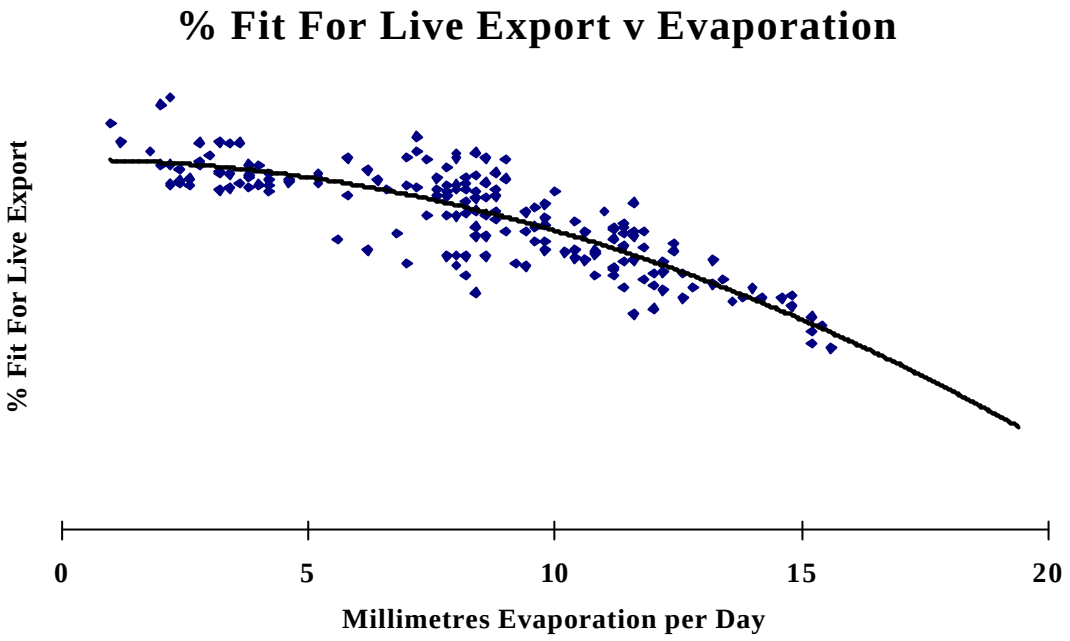
Officer, R. and Tarbath, D., 2000. The Tasmanian Abalone Fishery, 1999. TAFI Fishery Assessment Report, 65 pp. http://www.utas.edu.au/docs/tafi/TAFI_Download.htm

The Effect of Surface Salinity on Activity Levels During Handling



The Effect of Surface Salinity on Autotomy During Handling





Location	% Seawater Concentration
Ambient Seawater	100%
Grading Table Film	120 to 300%
Weighing Tubs Film	120 to 300%
Graders' Baskets	Salt Crystals
Gloves	Salt Crystals

	Glove dipped in seawater	Glove dipped in 65g/l sea-salt
Legs Autotomised	0	43
Legs per Lobster	0	3.91

High Risk Areas

Fishing vessels

- Approximately 1400 bags of salted hide used last season
- Outer film of fish baits may contain hypersaline seawater
- Hypersaline films in cacka-boxes and chutes and on gloves and handrails

Lives and Factory

- Lobsters on ramp, grading tables, gloves, weighing tubs, transfer baskets

Lobsters

- Sensory hairs of lobsters present the perfect environment for the concentration of seawater salts through evaporation.

The Occy Pot

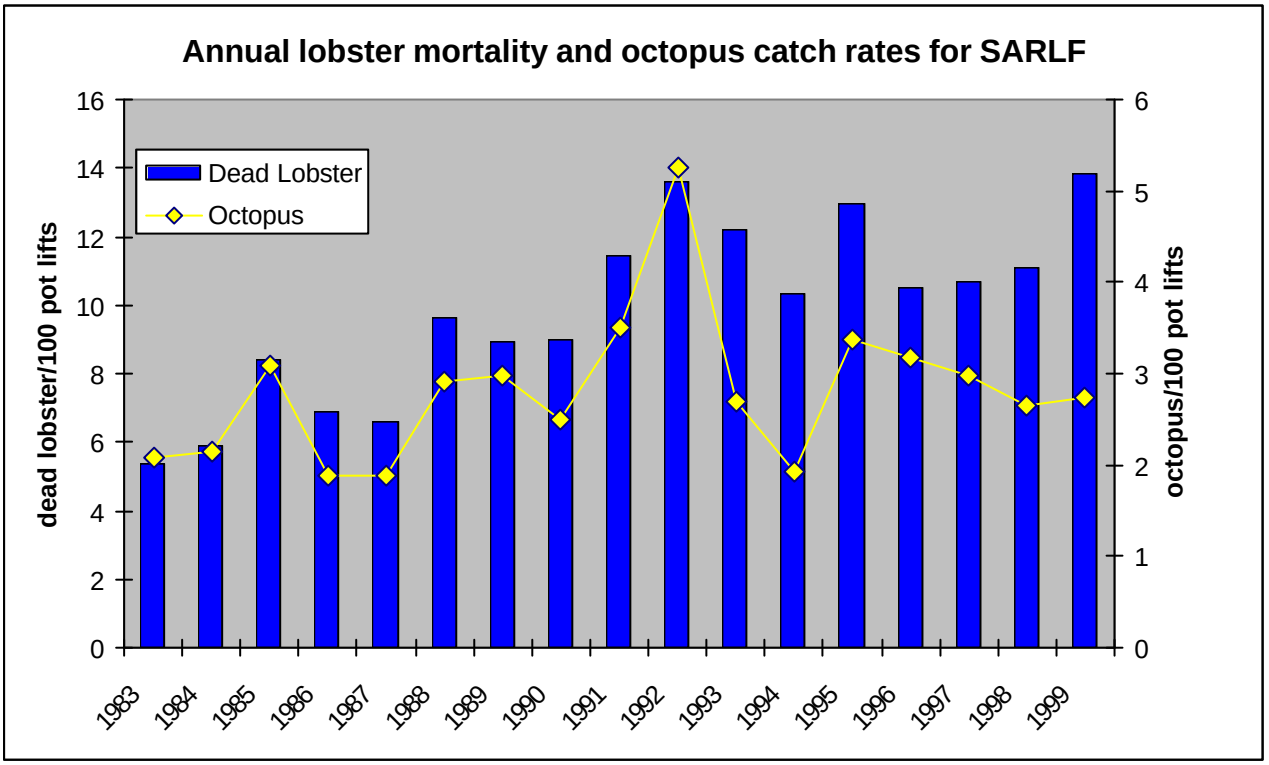
Mr Danny Brock

Octopus Predation in the South Australian Rock Lobster Fishery

Towards a Solution?

Summary of octopus predation since 1983

- Lobster mortality = 5% of total catch
- 240,000 lobster killed in pots each year
- >95% of mortality attributable to octopus



Performance of Prototype Pot

- 60% fewer dead lobster
- 20% reduction in lobster catch rates
- 50% reduction in octopus catch rates

On Board Safety Code

Ms Tania Adams

Onboard Safety Code

Why?

- Need – Accidents / fatalities
- Absence of guidelines – state or national
- Worksafe or self regulation

Objectives

- Improve work practices and conditions
- Achieve commitment from industry for long term change
- Gain industry attitude change towards safety in general
- Gain industry understanding of the aspects and requirements of occupational safety and health legislation

How?

- Established industry support
- Liaison with Worksafe, DOT & Fisheries
- Development of draft code
- Industry consultation and input

Structure and Content

- Responsibilities of owners, skippers & crew
- General work guidelines
  - Emergency equipment
  - Sun protection
  - Dangerous species
  - Accident reporting
  - Pot and trap
  - Trawl, seine etc.

Pot and Trap

- Deck safety and deck lighting
- Pot setting / handling
- Noise
- Crew induction and training
- Diving

Cost Recovery Statement

Mr Neil Stump

"Show me the money"

Abstract:
The majority of state governments have implemented a policy of recovering the costs of providing fisheries management services from the 'beneficiaries' of those services. It is therefore the responsibility of those beneficiaries to ensure that the services for which they pay are delivered in a cost-effective manner. This paper seeks to briefly outline why cost recovery is an important issue for industry to consider and why industry should be actively involved in the cost recovery process

Why is cost recovery important?
The process by which the costs of fisheries management services have been recovered from the 'users' or beneficiaries of those services has received little attention in the fisheries literature. Arnason, Hannesson and Schrank (2000) state that one possible reason for the omission of this topic from the literature is because generally, the costs of those services are small when compared to the benefits and are thus a minor consideration when developing and implementing fisheries management arrangements. Further they state that this assumption is flawed, management cost can be significant and they should be subjected to greater scrutiny by industry.

From a management perspective it has been claimed (Kaufmann & Geen 1997, Andersen, Sutinen & Cochran 1998) that in the absence of cost recovery there is little incentive for both fisheries managers and fishers to insure that management services are delivered in a cost effective, transparent and accountable manner.

Why is cost recovery important to industry?
Management costs can not be viewed in isolation. If recovered form industry they must be included when calculating the overall operating costs of a fishery and thus will effect the net benefit that is generated from a fishery.

If we do accept that 'who pays and how they pay' for management services (Andersen, Sutinen & Cochran 1998) is an important consideration form industry, then further examination of the fisheries literature revels that industry appears to have very little input into how management costs are determined and apportioned for the fisheries managed by state governments.[6] Kaufmann and Geen (1997) state that for fisheries managed by the commonwealth the preparation of budgets includes participation by industry through the MAC process and is open and transparent. The veracity of this statement was not investigated from an industry perspective.

What are services are required for fisheries management?
Generally fisheries management services are grouped under three broad headings which contain various sub-groupings.

- Management / Administration
- Compliance / Enforcement
- Research (biological / economic)

[6] Industry Commission 1992, DPIF 1997, Fisheries Dept. of W.A. 1997 and Mackie 1998

I believe a fourth category should be considered industry support or industry requested services. Particularly in Tasmania and South Australia industry has requested that the government collect fees to fund specific services required by industry i.e. extension services.

Charging philosophies

If we accept that commercial fishers will be required to pay for management services the next question to be answered is what proportion of the total management costs can legitimately be recovered from industry. In New Zealand cost recovery was introduced in 1994 (Wyatt 2000). The 'avoidable cost' principle was used to determine the apportioning of costs. A simple definition of avoidable costs is, that in the absence of a commercial fishery there is no need for fisheries management therefore the commercial fishery should pay all management costs. The implementation of cost recovery under this principle caused considerable conflict between the government and the commercial fishery, which lead to a parliamentary inquiry into the governments cost recovery regime (Roy 1998). The committee made a number of recommendations to the government with one of the key findings being that 'the "avoidable cost" principle is a barrier to effective stakeholder participation in the management of fisheries'.

In South Australia since 1995 industry has paid 100% of the agreed 'attributable costs' i.e those costs that are mutually agreed by both industry and government should be paid by industry as the 'beneficiaries' of management services. Since 1998 cost recovery in South Australia has been developed using a 'funder, purchaser, provider' model which uses the 'attributable costs' principle seeks to identify what management services are required (Mackie 1997). Even given the active industry involvement in the cost recovery process through the FMC [7]. There are still industry concerns particularly in regard to the cost-effective delivery of compliance services (Stump unpub. data).

Charging base

The charging base for the Tasmanian, South Australian, Western Australian and Victorian rock lobster fisheries are provided in Table 1. It should be noted that Victoria is the only state that does not have a cost recovery policy in place. In addition as with all services there are advantages to be gained where economies of scale exist. For example WA has a large industry compared to the other states and therefore the management costs are spread across a larger number of operators i.e 600 compared to the South Australian Southern Zone 183.

Table 1: Current license fees in 4 state managed lobster fisheries

Tasmania	per pot currently $200 50 pots $10,000
South Australia	license fee and a per pot fee: $5261.59 / $96 per pot 50 pots $10,061 (SZRL)
Western Australia	per pot $138 50 pots $6900
Victoria	license fee and pot fee: $603 / $17 50 pots $1453

7 FMC Fisheries Management Committees

Industry requirements

I believe that industry has three main requirements that need to be considered in the delivery of management services. The cost recovery process should be

- **Transparent**: All the beneficiaries of fisheries management services should be clearly identified and the process by which costs are determined and then apportioned to the various beneficiaries of management services is mutually agreed
- **Accountable**: An agreed auditing system to be put in place and all budgets to be provided to industry and agreed to at a management committee level
- **Cost effective**: there is a need to ensure that the agreed services are delivered in a cost-effective manner that enables the objectives of the management plan (if in place) to be met.

The first step is the most important there is a need to clearly delineate the services it is the responsibility of the government to fund and the services and activities industry should fund.

To highlight the differences in accountability between states Table 3 provides an outline of the level of detail that is available to industry in South Australia under the agreed protocols for determining management costs, compared to Table 3 the amount of detail provided to Tasmanian industry.

Table 3: Management costs in South Australian Southern Zone 2000

PROJECT	SZRL	SZRL POT FEE	Total
SARDI	$ 199,296.95	$ 238,215.05	$ 437,512.00
ECONSEARCH	$ 3,941.19	$ 4,710.81	$ 8,652.00
POLICY	$ 15,688.23	$ 18,751.77	$ 34,440.00
LEGISLATION	$ 3,456.51	$ 4,131.49	$ 7,588.00
LICENSING	$ 15,592.57	$ 18,637.43	$ 34,230.00
COMPLIANCE	$ 360,989.07	$ 431,481.93	$ 792,471.00
DOCK SIDE MONITORING	$ 182,209.35	$ 217,790.65	$ 400,000.00
DIRECTORATE	$ 3,245.60	$ 3,879.40	$ 7,125.00
FMC OPERATING	$ 31,886.64	$ 38,113.36	$ 70,000.00
SAFIC	$ 1,366.57	$ 1,633.43	$ 3,000.00
PEAK BODY	$ 4,099.71	$ 4,900.29	$ 9,000.00
EXTENSION OFFICER	$ 43,844.13	$ 52,405.87	$ 96,250.00
OTHER RESEARCH	$ 3,348.10	$ 4,001.90	$ 7,350.00
PEURELUS SETTLEMENT	$ 12,059.53	$ 14,414.47	$ 26,474.00
FMC ADDITIONAL SERVICES	$ -	$ -	$ -
FRDC	$ 55,061.39	$ 65,813.61	$ 120,875.00
COMMUNITY AWARNESS	$ 14,690.63	$ 17,559.37	$ 32,250.00
QUALITY ASSURANCE	$ -	$ -	$ -
INDUSTRY TRAINING	$ 6,832.85	$ 8,167.15	$ 15,000.00
	$ -	$ -	
TOTAL	$ 957,609.00	$ 1,144,608.00	$ 2,102,217.00

Table 4: Costs of information supplied to Tasmanian fishers 2001

- Fishing license (vessel) $ 306.00
- Fishing license (rock lobster) $10,800.00
- TRLFA Levy @ $ 8.00 per po $432.00

Total $ 11,538.00

Summary

Cost recovery is important industry must be involved to ensure that the costs of management are justified and management services are delivered in a cost-effective manner. In high per unit value

fisheries where the costs of access rights either on a permanent or seasonal basis is increasing. If management costs an increase particularly where there is not a demonstrable increase in the standard of service delivery an added unnecessary impost will be placed upon industry. It is in our interest to work together to ensure that the cost of fisheries management services are justified and that those management services are of a standard that meets our expectations.

References

Andersen, P., Sutinen, J.G. & Cochran, K. 1998, 'Paying for Fisheries Management, Economic Implications of Alternative Methods for Financing Management', in Eide, A. & Vassdal, T. eds, *IIFET'98 TromsØ Proceedings,* Vol. 1, International Institute of Fisheries Economics and Trade (IIFET), Corvallis, Oregon. pp439-454

Arnason, R., Hannesson, R. & Schrank, W. E. 2000, 'Costs of fisheries management: the cases of Iceland, Norway and Newfoundland', *Marine Policy*, Vol. 24, pp233-243

Kaufmann, B. & Geen, G. 1997, Cost Recovery as a Fisheries Management Tool, *Marine Resource Economics,* Vol. 12. pp57-66

Mackie, D. 1997, *Guidelines For Implementing The 1998 / 99 Cost Recovery Process*, Government Management Framework, Fisheries Group, Department of Primary Industries and Resources South Australia, Adelaide.
Roy, E (Chairperson) 1998, Inquiry into the Governments fisheries Cost Recovery Regime: Report of the Primary Production Committee; New Zealand House of Representatives.

Wyatt, N. 2000, Why Recover Costs? Cost Recovery and Property Rights in New Zealand, in Shotton, R. ed., *Use of Property Rights in Fisheries Management: Proceedings of the FishRights99 Conference Fremantle, Western Australia 11-19 November 1999 Workshop Presentations,* FAO Fisheries Technical Paper 404/2, Rome pp. 402-404.

Negotiated Resource Sharing

Mr Bardy McFarlane

Overview

- Access security - the basis for negotiation
- Resource sharing - a changing approach
- Lessons Learnt - water and forestry
- The WA Model - in theory and in operation
- Where To - some thoughts

The Right of Access

"What was formally in the public domain is converted into the exclusive but controlled preserve of those who hold licences...
It is an entitlement of a new kind created as part of a system for preserving of a limited public natural resource in a society which is coming to recognise that ... to fail to protect may destroy and to preserve the right of everyone to take what he or she will may eventually deprive that right of all content."

- High Court in 1989 in *Harper v Minister for Sea Fisheries*

Access security

The Guiding Principles

- Licence Duration - Perpetuity
- Licence as Property - Personal
- Licence Transferability - Freely
- Licence Protection – Compensation

The Reality

- very few fisheries have all the elements of access security present

Why?

- some have negative management processes
- most have some element of negative profile
- few have embraced other stakeholders in their processes

Public Policy Processes

Why do we need to consider the process?

- government establish the rules
- what is the underlying rationale?
- prejudices and biases prevail
- political decisions
- problem for industry

Essentially three styles

- *Authoritative*
  - Imposition of the decision without consulting those affected
- *Consultative*
  - Consultation with those affected before the decision is made
- *Negotiative*

- making trade-offs with those affected by the decision

A Changing Approach

Why?

- international obligations
- greater focus on marine environment
- accountability
- recognition of wider and better organised range of interests
- following other resource areas

Lessons from Other Resources
Forestry, Water and Soil

The Forestry debate

- high level of conflict, huge drain on resources

The Murray Darling - sustainability, salinity,quality

- huge diversity of interest holders
- a more cooperative technique

Te NFF/ACF approach - Landcare

- a consensus. Negotiated resource sharing?

Greater scrutiny and accountability
Public Opinion

- tough it out
- profiling the positives

Acceptance of broad public participation in processes
Building relationships

Outcomes of adversarial processes

- chews up resources and debilitating
- destroys relationships
- often poor outcomes susceptible to change
- waste of energy and goodwill
- political polarisation
- increased burden of Govt regulation

Neutralising the Politics

- strong rights
- agreed process
- strong cross-sectorial linkages
- equity and fairness
- binding and enforceable outcomes

The WA model
Voluntary Resource Sharing

- development of guidelines
- a five stage process
  - initialisation
  - discovery
  - assessment and priority setting
  - notification,negotiation & arrangements
  - implementation
  - time frames apply

Three main goals with this process

- capture and use stakeholder energy to resolve the issue
- increase support for and defensibility of resource sharing decisions
- enhance the accountability of the management agency implementing such decisions

The Cockburn Sound Crab Managed Fishery

- Embayment south of Fremantle
  - eastern shore heavy industry - aluminium smelter, oil, fertilizers
  - western shore, WA's main naval base
- adjacent to large population centre, large recreational
- damage to seagrasses, significant public focus
- 1995 change from tangle nets to pots
- Change led to initial increased commercial catch (from 200 to 350 tonnes in 1997/98) and coincided with reduced recreational take
- 1999 commercial catch poor. Was it adverse environmental factors or overfishing?
- no stock assessment available
- began the voluntary process October 1998
- representatives of three parties to the mediation
  - commercial crab fishers
  - recreational fishers
  - fisheries WA
- lot of time spent talking about the process and mediation protocol
- common concern was the environmental degradation of the Sound -joint statement issuedIdentification of issues
- Core issue
  - progression of historical catch over recent years which all could see was significantly weighted towards the commercial sector.
  - But unable to say why?
- Moved onto possible solution
  - referred back to other crab fishers to consider
- Commercials came back with a proposal
- Scrutiny by
  - fisheries managers
  - research division of Fisheries WA
  - legal
- in principle acceptance by recreationals
- sign off and implementation

Assessment

- successful outcome

- achieved the objectives of the guideline
    - support for and defensibility of the resource sharing
- cost effective and efficient way of proceeding
- all parties must commit to the process

A Few Thoughts

- Strong access security
    - state and national
    - acts as a strong disincentive for govts. to succumb to political pressure
    - sound basis for entering negotiation
- Need to resolve the constitutional issues surrounding the marine environment
- Need consistent established processes where you know the rules
- A well trained industry so that it can lead the process and participate effectively
- Don't get too bound up in process
- Be reasonable with your expectations
- Be prepared to honour any agreements

Trading with Recreationals

Mr Roger Edwards

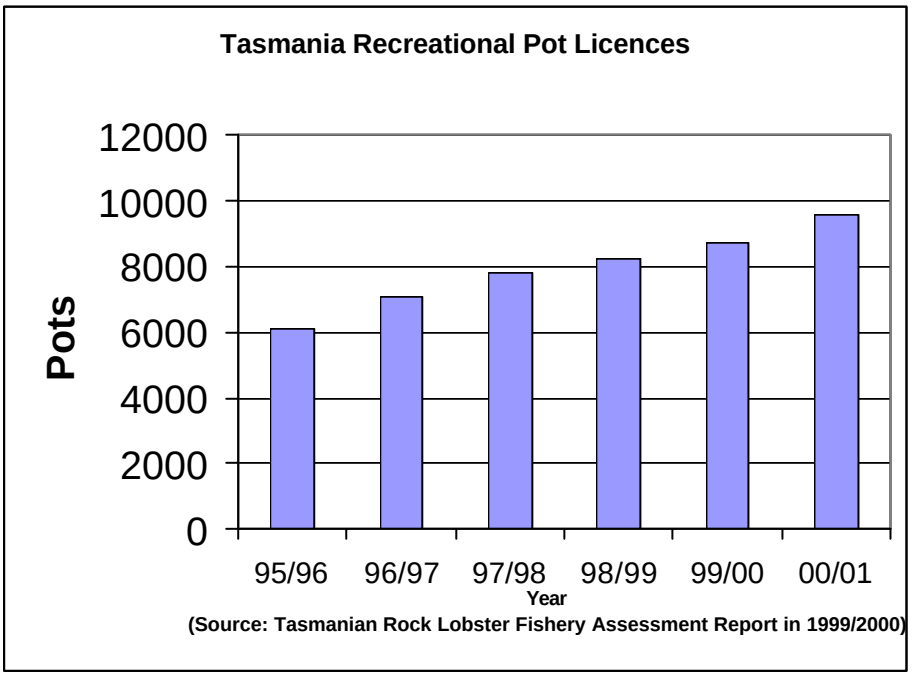
History - Pt 1

- 1980s - Commercial effort reductions
- 1980s - Recreational bag limits and no new pot registrations. (Unlimited diving and nets allowed)
- About 18,000 rec. pot registrations existed
- Registrations expired on death and contracted over time.
- By mid-1990s registrations were down to about 2000 by 3 pots/person - 6,000 in total

History - Pt 2

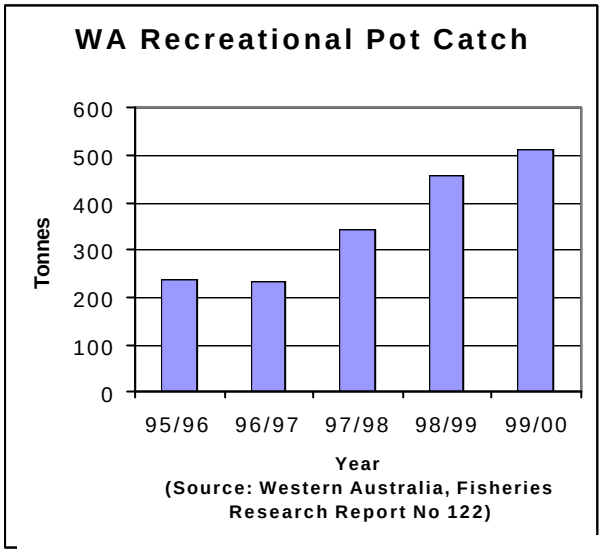
- Late 1990s pots reduced to 2 per recreational - allowed more people access
- Additional pots issued
- Total of about 12,000 pots available by '98-99
- Bag limit reduced to 4 per person
- System was by written application.Familiar Ring?•Phone-in for recreational pot licences - 1m calls - exchange melt down.
- Minister releases extra 2,000 pots by Xmas!!
- Minister sets cap on catch at 100t - no counting
- Parliamentary Review of recreational pot licences in 2000.

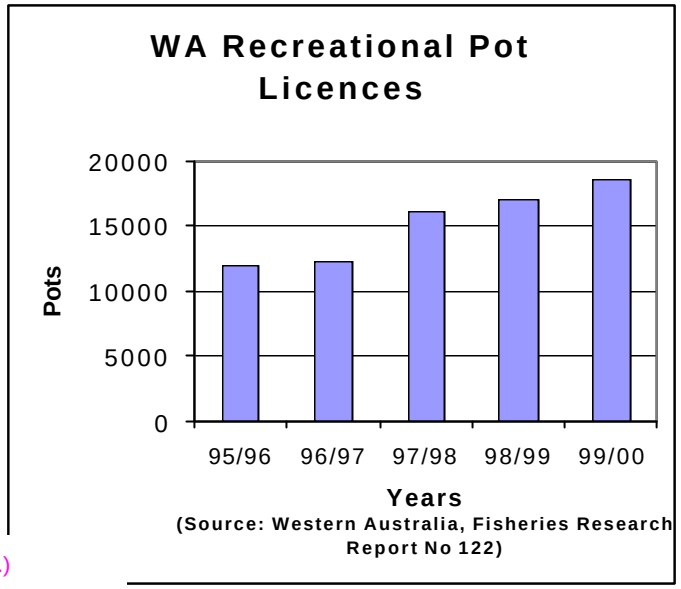
Tassie Situation



(Source: Tasmanian Rock Lobster Fishery Assessment Report in 1999/2000)

WA Situation





(Note: 99/00 catch figures are estimates based on government advice.)

Review Process

- Takes no scientific advice
- Advised "other States catch has stayed around same levels"
- Takes no industry advice
- Ignores WA & Tas situation
- Ignores EA requirements:
  - reliable estimates of all removals
  - management strategies to control take
  - minimal bycatch

Review Recommendations

- Recommends:
  - unlimited pots
  - let's see what happens!!

The Scenario 2001

- Recreationals are urging Minister to implement Review recommendations
- Recruitment decline is evident (Nth Zone down 18%)
- Recreational AGM, issuing of unlimited recreational pots, 2 per person is announced.
- No change in bag limit
- Price - 1st pot $50 and 2nd $90

Pot Licence Summary

- 1980s 18,000
- Early 1990s 6,000
- Mid 1990s 12,000 (reduced bag limit)
- Late 1990s 14,000 (post phone in)
- 2001 unlimited (with 21,000 commercial trade trigger) ***The Maths***
- Estimated that 1 recreational pot catches about 5kgs
- Average commercial pot catches 180 kg's
- 36 recreational pots = 1 commercial

- 36 pots @ $90 = $3240
- Commercial lease = say $2800 per pot

Issues/Outcomes

- 14000 - 21000 (50% increase) pot registrations with no management offset
- Above 21,000 offset through acquisition of commercial catch by the Director
- Catch may not be available to the Director
- Shares recognised and trading recognised
- About 9,000 registered so far
- Regulations drafted by industry- not implemented yet by the Director

Actions, Hand Over & Closing Remarks

Dr Paul McShane

Critical threats and opportunities facing the Rock Lobster Industry

Introduction

Issues raised during the second National Rock Lobster conference reflect recent and profound changes in fisheries management and its application nationally and internationally. These are discussed below. Many of the current threats (e.g. access rights) may well be opportunities given a coordinated approach by the seafood industry. The issues summarized below touch on points presented by speakers and raised in discussion during the congress.

Global and national economic climate

Recent tragic events are reminders of the fragile global community in which we live. Perceived negative economic consequences such as the current low value of the Australian dollar have positive consequences for exporters. Rock lobster fisheries generally benefit, but consumer confidence and demand can also be negatively affected by local and global factors. Proactive promotional programs including supply chain management (South Australia), green labeling (West Australia), can assist in maintaining Australian rock lobster in premium global markets. Furthermore, consumer demand (and prices) can be enhanced by promotion of values such as sustainable harvest and environmentally friendly.

Access rights/security

Access rights to rock lobster fishers are a major and unresolved issue. Current threats include imposition of "no take" marine protected areas, native title claims, illegal fishing, unconstrained recreational fishing, and changes to government policy (particularly relating to catch quotas). The current emphasis on access rights and security of fishing entitlements presents an opportunity to reinforce rights particularly with changes or proposed changes to legislation (state and Commonwealth). For example, the South Australian *Fisheries Act* is currently under review and the rock lobster fishing industry has made a submission to provide for greater access right security. Pro-activity in environmental management, described below, can also reinforce access security by aligning with community standards of ecological sustainable development and related policy (e.g. Environment Australia, principles of sustainable fishing).

Environmental policy and its application

Recent changes to environmental policy as they apply to marine and coastal areas have been profound. In 2000 overarching environmental legislation, the *Environment Protection and Biodiversity Conservation Act* (1999) (EPBC Act) was introduced with a broad scope with particular emphasis on matters of national environmental significance. For marine industries including fisheries, it is not entirely clear what such matters might be. The Act consolidates and replaces a number of other statutes relating to the environment (e.g. the *Endangered Species Protection Act* 1992). It specifies key threatening processes, which for fisheries includes the incidental capture of seabirds by long-liners. The *Wildlife Protection Act (Regulation of Exports and Imports)* 1982 was changed to remove the blanket exemption of fish products from export approval. It means, via Schedule 4 of the act, that fisheries must first get approval from Environment Australia to export their product (from 2003). From 2002, the *Wildlife Protection Act* and its provisions will be included in the EPBC Act.

From the perspective of the fishing industry, much of the applicable environmental legislation and its related policy e.g. the Oceans Policy contain vague terminology without clear operational

definition. For example, although Ecological Sustainable Development (ESD) presents as an overriding principle, it is difficult to see what this means for fisheries and how the performance of individual fisheries can be evaluated against ESD. As the burden of proof will invariably be with the fishing industry, this is an issue that presents as a threat as commercial fisheries have a generally poor public image.

A nationally representative system of marine protected areas (NRSMPAs) is part of the Oceans Policy but no clear policy on the location, extent, and management arrangements has emerged beyond a polarized and often acrimonious public consultation exemplified in the recent Marine Parks conflict in Victoria. Generally speaking, commercial fisheries are seen by many in the community as inconsistent with marine "protection" and that solutions to perceived problems of over fishing lie in the proclamation of "no take" marine protected areas.

Thus, while environmental legislation and related policy have laudable objectives for protection of marine and coastal ecosystems, the fishing industry has an opportunity to assist key agencies in the development of clearer and more tractable guidelines for management of marine ecosystems.

Public perception

The commercial fishing industry in general, and the rock lobster industry in particular is exposed to ill-informed public perception. The well publicized and high profile collapses of northern hemisphere fisheries, e.g Atlantic Cod are frequently promoted as examples of the general failure of traditional fisheries management and the need for proactive measures to stave off disastrous collapses of Australian fisheries (e.g Marine Protected Areas). In reality, through limited entry, quota management, and other management initiatives introduced by the fishing industry, Australian fisheries are demonstrably well managed. In particular, the major rock lobster fisheries are productive and demonstrably sustainable (South Australia, West Australia).

The value of the Australian Seafood industry is at least that of the Australian wine industry but suffers a much lower public profile. Perhaps this is because the vertically integrated wine industry has been more successfully promoted to the public. Perhaps it is because the average wine consumer is more informed with respect to wine than the seafood consumer is with seafood. In any case, the access security of the wine industry participant is demonstrably much greater than that of the seafood industry participant reflecting a generally favourable public image. There is a need for the seafood industry collectively to improve public perception and develop the same community pride in its performance as enjoyed by the Australian wine industry.

Pro-active environmental management

–accreditation systems/supply chain management

The Western Australian rock lobster industry has been recognized under the Marine Stewardship Council's fish for the future program (World wide fund for nature). This pro-activity has been recognized world wide as the first commercial fishing industry to be so endorsed. The South Australian rock lobster industry goes further in seeking accreditation of its entire supply chain "from pot to plate". Both systems engage independent, internationally recognized, accreditation systems. Both are proactive measures addressing negative public perception with potential or actual benefits measurable in favourable consumer response (e.g. USA markets for Western Australian rock lobster).

Importantly, the bottom up support from participants in the fishing industry (e.g. lobster industries of SA and WA) must be matched by top-down recognition by key agencies such as Environment Australia, AQIS, ANZFA and other statutory authorities involved in management of fisheries and their products.

Alliances with stakeholders

Constructive alliances with stakeholders can assist in enhancing access security and promote holistic management of marine and coastal ecosystems. There is an opportunity to engage stakeholders for mutual benefit as described below:

Aquaculture

Culture of rock lobster presents as both a threat (disease, genetic integrity) and an opportunity (rock lobster grow out systems, product development, year-round supply, new markets). Issues to be addressed include formal processes for collection of juvenile lobsters (pueruli) for grow-out (recognized against quota management systems applicable to wild fisheries). This issue has been dealt with in New Zealand where 40000 pueruli are counted as 1 tonne of rock lobster quota in their ITQ managed fishery. Rock lobster product sourced from wild fisheries is likely to supply a different market segment to that product sourced from cultured lobster. Constructive alliances with the aquaculture sector present an opportunity to address the issues raised above.

Environmental Movement

Much has already been said about changes in environmental policy and potential threats to the commercial fishing industry. Public perception can be influenced by perspectives offered by non-government organizations, particularly those with strong environmental platforms. Yet the fishing industry and mainstream environmental groups generally share similar aims: the maintenance of healthy productive coastal and marine ecosystems for the benefit of future generations. By engaging responsible environmental groups in a shared environmental protection agenda, the public is more likely to be exposed to accurate and informed information on ecosystem processes than they are at present.

In South Australia, the rock lobster industry and the conservation council have shared policies on compensation for fishers displaced by the application of “no take” marine protected areas. By developing greater awareness of commercial fishing operations, an alliance with environmental organizations can potentially yield more rational and informed outcomes in relation to marine protected areas and their operation. In particular, such an alliance may lead to mitigation of land management processes threatening marine and coastal habitats (e.g. pollution, sedimentation).

Environmental Agencies

Agencies such as Environment Australia have substantial responsibilities for conserving Australia’s natural resources. Managing coastal ecosystems differs greatly from managing terrestrial ecosystems but all embracing environmental legislation such as the EPBC Act offers little distinction. Grappling with resource allocation issues in a multiple user, three-dimensional aquatic environment challenges existing land management paradigms and invites different management approaches. Vague operational definitions relating to ESD and it application in management do not help. Managers in environmental agencies need to come to grips with marine ecosystem management and its inherent complexity. Solutions to complex management issues are more likely to come from a constructive alliance with the fishing industry rather than polarization of government agencies and commercial fishing sectors. Issues such as marine mammal interaction, stakeholder conflict resolution, marine protected areas, export permits are examples raised during the rock lobster congress. These issues are complex and involve trade offs assisted by informed and rational advocacy from commercial fishing sectors.

Recreational Fishers

The political potency of the recreational fishing sector is exemplified by resource allocation decisions made recently in New South Wales among other examples. It is difficult for the rock lobster industry to challenge recreational fisher access to its fishery. The industry risks losing a public relations battle in the media fuelled by community perceptions of greed and denial of access to a traditional target species now out of financial reach of the average Australian. The recent

change to recreational fisher access to the South Australian rock lobster fishery exemplifies the issue. The political strength of regional communities combined with a disastrous attempt at innovative allocation of recreational pots by the South Australian government has yielded a substantial increase in recreational pot entitlements. Of note is that the government as placed a cap on recreational fishing pots (21000) above which further access rights will be "bought" by the government from the commercial sector. This foreshadows a formal resource reallocation within a commercial share arrangement. This policy has potential to reinforce existing property rights for commercial fishers.

Constructive dialogue with the recreational fishers has the potential to yield mutually beneficial arrangements. For the commercial fisher, formal recognition of the right of access to the resource is enhanced by the share access arrangements under consideration for the South Australian lobster resource. Improved information with respect to the recreational take is an important prerequisite to effective management of the lobster resource. For the recreational fisher, responsible management of the lobster resource will preserve reasonable access rights. Recreational fishers have a shared responsibility for sustainable management of the lobster resource.

A Shared Vision For The Australian Seafood Industry

The issues presented above can be encapsulated in a shared vision for the Australian seafood industry. Australia does not have abundant seafood resources. Rather it has valuable inshore resources with high profile species including rock lobster potentially positioned in premium world markets. With proactive environmental management and innovations in supply chain management, Australia has an opportunity to enhance demand in premium world markets. With a skilled workforce, the catching and aquaculture sectors can add further value through innovations in product handling, development, packaging and distribution. A shared vision based on premium seafood product presents as a secure sustainable and prosperous future for the Australian seafood industry.

Training And Career Path Opportunities (OH & S)

The new seafood-industry training package provides a template for training of industry participants from the catching, aquaculture, processing, wholesale and retail sectors. However, the seafood industry is yet to demonstrably embrace training. Relating to innovations in environmental management and supply chain management, the lobster industry has an opportunity, and a need, to integrate targeted training. Such training will result in better outcomes including:

- occupational health and safety and concomitant reductions in insurance premiums
- improved product handling
- enhanced environmental management and performance
- quality assurance relating to sustainability of lobster stocks and habitat
- career paths for young people
- enhanced pride in the Australian seafood industry.

Already the lobster industry has supported initiatives in training. The leadership program supported by the South Australian seafood industry council, the Australian Fisheries Academy, and FRDC has been enthusiastically embraced by industry participants. The supply chain management project supported by the South Australian rock lobster fishery will be linked to training protocols to develop awareness among industry participants and to provide quality outcomes from pot to plate. Training is a necessary prerequisite for the seafood industry to favourably respond to the current critical threats and opportunities.

Congress Resolutions

National Industry Council of Associations

- All States agreed to form a informal National Council of State Bodies - Australian Rock Lobster Industry Council (ARLIC)
- Agreed to adopt the congress logo as the National Rock Lobster Industry logo
- Agreed Council will:
  - take carriage of dissemination Congress outcomes to appropriate target groups
  - undertake future activities of national relevance but only with all State support
  - be responsible for convening future Congresses

Sth Rock Lobster R&D subprogram

- 4 producing States endorsed the concept
- agree to move to develop a detailed memorandum of understanding
- agree to seek industry & FRDC funds to immediately to commission a strategic plan for Sth rock lobster

Marine Protected Areas

- called for
  - a national approach by Federal and State Governments to a Legislative Framework for implementing Marine Protected Areas based on the Western Australian model
  - National framework to deal with funding for displaced fishing sustainability impacts and regional economic impacts
  - transparent stakeholder driven processes

Cost Recovery Process - critical elements

- Transparency - agreed apportionment, stability involvement
- Accountability -independent audits
- involvement
- Cost effectiveness - competitive pricing
  - No support for Resource Rent

Access Security

- called for all Governments to legislate property rights regimes that deliver:•recognition of licenses as property
  - perpetual & tradable
  - explicit use rights
  - secure proportionality
  - expropriation on commercial terms–rejected concepts of tendering, ballot and/or auction

Critical threats and opportunities

- Global and national economic climate
- access rights/security
- vague environmental policy and its application
- ill informed public perception
- pro-active environmental management
  - accreditation systems/supply chain management
- productive alliances with stakeholders
  - aquaculture
  - environmental movement
  - environmental agencies
  - recreational fishers
- A shared vision for the Australian seafood industry
- training and career path opportunities (OH & S)

Appendix 2: Staff

Mr Ross Hodge
Ms Kate Saunders
Mr Rodney Treloggen
Mr Roger Edwards
Mr Richard Stevens
Ms Carolyn Anderson
Ms Sally Lange

Appendix 3: Congress Program

REGISTRATION AND PROGRAM BROCHURE

2nd National Lobster Congress

September 20 - 21, 2001
Geelong, Victoria

'Just Holding Ground'

RockLobster 2nd CONGRESS

Highlights

You are not alone in dealing with the challenges of marine protected areas, marine planning, public image and political strategy.

Peter Taylor, formerly from Environment Australia and now with the **Australian Petroleum and Gas Industry**, will speak on how the oil and gas sector is meeting the challenges.

Sharing with recreationals and marine protected areas are high on the New Zealand issues list. **Daryl Sykes**, New Zealand lobster industry leader, will provide an update on the key developments in New Zealand.

The situation on **marine parks in Victoria** saw a push for marine parks without compensation. **Ross Hodge**, Chief Executive of Seafood Industries Victoria, managed the industry's involvement on the parks issue in Victoria, with the result that the legislation has been withdrawn.

Regional marine plans will eventually cover all Australian waters and affect all lobster fisheries. The South East Regional planning process is already impacting the South Australian, Victorian and Tasmanian lobster industries. **Veronica Sakell, National Oceans Office Director,** will explain the benefits and costs of this national program.

Venue
Royal Yacht Club Geelong
Eastern Beach Road
Geelong, Victoria

Telephone 03 5229 3705
Facsimile 03 5223 2768
Email info@rgyc.com.au

Brought to you by

Victorian Rock Lobster Industry

Sustainable Fishing - Healthy Seafood
Seafood Industry Victoria Inc.

FISHERIES RESEARCH & DEVELOPMENT CORPORATION

Invitation

The rock lobster industry of Victoria warmly invites you to the 2nd National Lobster Congress to be held from 20-21 September, 2001 in Geelong, Victoria. This follows the first Congress held in Adelaide in 1999, at which we made a start at analysing the key issues critical to the business of rock lobstering in Australia.

The Congress will focus heavily on industry issues - the things that are affecting you more than ever: marine parks, resource sharing and cost recovery. As well there will be a state-by-state round up of the issues and opportunities, where no doubt cost recovery will be a feature and research and development opportunities will be profiled.

The Congress kicks off in the evening of Wednesday 19 September, with an informal meet & greet for those who arrive early. The Congress dinner will be on Thursday 20 September and will feature the traditional national species taste-off award - be assured Tasmania will not win!!

We urge you, your family and crew, lobster scientists, managers and industry developers, to join friends and colleagues from around the lobster nation at the 2nd National Lobster Congress.

The Congress is proudly brought to you by the Victorian lobster industry and sponsored by the Fisheries Research and Development Corporation.

We look forward to seeing you in Geelong in September.

Lobster Industry of Victoria.

The Issues

- State round up: Industry issues and stock status
- Marine Protected Areas: The Good (Western Australian legislation), the Bad (displaced fishing), the Ugly (Victorian approach)
- Opportunities: Lobster research sub-programs and leading edge R&D
- Cost Recovery
- Access Security

Program (as at 1 July 2001)

Wednesday 19 September

TIME	THEME
7.00pm	Meet & Greet and Registration – Royal Geelong Yacht Club

Thursday 20 September - Morning

TIME	THEME	SPEAKER
8.00am	**Registration**	**Chair: Ross Hodge**
9.00am	Welcome & Housekeeping	Ross Hodge
9.10am	Official Opening & Major Sponsor (FRDC) Address	Patrick Hone
9.30am	Learning from Others - Oil & Gas Industry	Peter Taylor
10.00am		**Break – coffee**

TIME	THEME	SPEAKER
	National Lobster Scene	**Chair: Ross Hodge**
10.30am	Victoria	Rod MacDonald
10.50am	Western Australia	John Ritchie
11.10am	New South Wales	Ron Firkin
11.30am	Queensland	Jim Fogarty
11.50am	South Australia	Terry Moran
12.10pm	Tasmania	Neil Stump
12.30pm		**LUNCH**

Thursday 20 September – Afternoon

TIME	THEME	SPEAKER
	Opportunities & Threats	**Chair: Richard Stevens**
1.30pm	Regional Marine Planning	Veronica Sakell
1.55pm	Commercial Use of MPA's	Bob Kearney (TBC)
2.20pm	Ecological Sustainability Assessment	Mark Flanigan
2.45pm	Environmental Accreditation	Tor Hundloe
3.10pm		**Break – coffee**
3.30pm	The Good - WA Legislation in Practice	Guy Leyland
3.55pm	The Bad - MPA Impacts – Displaced Fishing	Malcolm Haddon
4.20pm	The Ugly - Vic MPA Process	Ross Hodge
4.45pm	Industry Position Development	Panel

Thursday 20 September – Evening

TIME	THEME	SPEAKER
7.00pm	**Species Taste-Off and Dinner** – 'Swimming with the Tide'	Daryl Sykes

Friday 21 September - Morning

TIME	THEME	SPEAKER
9.00am	**Sub-Program Reports**	**Chair: Patrick Hone**
9.05am	Aquaculture Projects	Rob VanBarneveld
9.25am	Post Harvest Projects	Bruce Phillips
9.45am	Sth Rock Lobster Development Program	Gary Morgan
10.00am		**Break – coffee**

TIME	THEME	SPEAKER
	Opportunities – R&D	**Chair: Patrick Hone**
10.30am	Re-Seeding	Caleb Gardener
10.50am	Leg Loss and Onboard Handling	Glen Davison/ Wayne Hosking
11.20am	The Occy Pot	Danny Brock
11.40pm	On Board Safety Code	Tania Adams
12.00pm	Cost Recovery: Good, Bad and Ugly	National Comparisons & Issues
12.30pm	Cost Recovery – Industry Position Development	Panel
12.45pm		**LUNCH**

Friday 21 September - Afternoon

TIME	THEME	SPEAKER
	Access Security	**Chair: Gary Morgan**
1.30pm	Recreational Sharing	Daryl Sykes
1.55pm	Negotiated Resource Sharing	Bardy McFarlane
2.25pm	Trading with Recreationals	Roger Edwards
2.50pm	Access Security – Industry Position Development	Panel
3.30pm		**Break – coffee**

TIME	THEME	SPEAKER
	Congress Outcomes	**Chair: Paul McShane**
4.00pm	MPA Statement	Richard Stevens
4.05pm	Cost Recovery Statement	Ross Hodge
4.10pm	Access Security Statement	Rodney Treloggen
4.15pm	Actions, Hand Over & Closing Remarks	Paul McShane

Congress Venue

The Congress will be held at the Royal Yacht Club Geelong.
If needed take a Gull Airport Services bus from the Melbourne Airport to Geelong – the service departs regularly.

Accommodation

Discounts have been secured at the following hotels which are located near the Congress venue. Please make your own arrangements informing the hotel that you are a Lobster Congress participant:

★★★★ Sheraton 03 5223 1377 ($175 single/double),
★★★★ Mercure 03 5221 6844 ($132 single/double),
★★★ Aberdeen 03 5221 2177 ($66 single $76 double).

Contact Congress Management (see below) for other options.

Congress Management

For further **general information** about the Congress please contact Sally Lange from Carolyn ANDERSON & associates on
Telephone 08 8357 9833
Facsimile 08 8272 7767
Email sally.lange@cmmg.com.au

For **registration information** please contact Katy Saunders from Seafood Industry Victoria on
Telephone 03 9824 0744
Facsimile 03 9824 0755
Email katys@siv.com.au

*please photocopy this form

Registration Form

Please register for the Congress by completing the form below and **post a copy to Seafood Industry Victoria** (SIV), Level 2, 177 Toorak Rd, South Yarra VIC 3141.
Please make your cheques payable to SARLAC. Full and partner registration includes: meet & greet, morning tea, lunch and afternoon tea each day, but not the Congress dinner.

Name _____

Partner's name, if registering _____

Address _____

_____ State _____ Postcode _____

Telephone _____ Facsimile _____

Tick (✓) registration requirements:

☐ Full registration (includes GST) $145 | $ _____

☐ Partner registration (includes GST) $80 | $ _____

☐ Congress dinner/ per head (includes GST) $55

Number of Dinner Places: _____ @ $55 | $ _____

Total Registration | $ _____

Cancellation Policy
Full refund prior to September 13th. No refunds after this date.

***Please bring this brochure with you to the Congress.**