



Department of
Primary Industries and
Regional Development

Digital Library

Fisheries occasional publications

Fishing & aquaculture

2-2015

AUSTRALIAN FISHERIES MANAGEMENT FORUM FISHERIES MANAGEMENT WORKSHOP ADELAIDE 26TH AND 27TH MARCH 2014

Department of Fisheries

Follow this and additional works at: https://library.dpird.wa.gov.au/fr_fop

 Part of the [Aquaculture and Fisheries Commons](#)

Recommended Citation

Department of Fisheries. (2015), *AUSTRALIAN FISHERIES MANAGEMENT FORUM FISHERIES MANAGEMENT WORKSHOP ADELAIDE 26TH AND 27TH MARCH 2014*. Government of Western Australia Department of Fisheries, Perth. Book.

This book is brought to you for free and open access by the Fishing & aquaculture at Digital Library. It has been accepted for inclusion in Fisheries occasional publications by an authorized administrator of Digital Library. For more information, please contact library@dpird.wa.gov.au.

AUSTRALIAN FISHERIES MANAGEMENT FORUM FISHERIES MANAGEMENT WORKSHOP

ADELAIDE 26TH AND 27TH MARCH 2014

FRDC Project No 2013/235

FISHERIES OCCASIONAL PUBLICATION NO. 119

Editors: L. Joll, I. Cartwright and S. Sloan



Published by
Department of Fisheries
168 St Georges Terrace
Perth WA 6000

February 2015

ISSN: 1447-2058 ISBN: 978-1-921845-86-4



**Australian Fisheries Management Forum Fisheries Management Workshop Adelaide 26th and 27th March 2014.
FRDC Project No. 2013/235**

February 2015

Fisheries Occasional Publication No.119
ISSN: 1447-2058 ISBN: 978-1-921845-86-4

Ownership of Intellectual property rights

Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this publication is owned by the Fisheries Research and Development Corporation.

This publication (and any information sourced from it) should be attributed to Joll, L., Sloan, S., Cartwright, I. (editors)

Creative Commons licence

All material in this publication is licenced under a Creative Commons Attribution 3.0 Australia Licence, save for content supplied by third parties, logos and the Commonwealth Coat of Arms.



Creative Commons Attribution 3.0 Australia Licence is a standard form licence agreement that allows you to copy, distribute, transmit and adapt this publication provided you attribute the work. A summary of the licence terms is available from creativecommons.org/licenses/by/3.0/au/deed.en. The full licence terms are available from creativecommons.org/licenses/by/3.0/au/legalcode.

Inquiries regarding the licence and any use of this document should be sent to: frdc@frdc.com.au

Disclaimer

The authors do not warrant that the information in this document is free from errors or omissions. The authors do not accept any form of liability, be it contractual, tortious, or otherwise, for the contents of this document or for any consequences arising from its use or any reliance placed upon it. The information, opinions and advice contained in this document may not relate, or be relevant, to a readers particular circumstances. Opinions expressed by the authors are the individual opinions expressed by those persons and are not necessarily those of the publisher, research provider or the FRDC.

The Fisheries Research and Development Corporation plans, invests in and manages fisheries research and development throughout Australia. It is a statutory authority within the portfolio of the federal Minister for Agriculture, Fisheries and Forestry, jointly funded by the Australian Government and the fishing industry.

© Department of Fisheries Western Australia, December 2014. All rights reserved.

Researcher Contact Details

Name: Lindsay Joll
Address: 3rd Floor, The Atrium, 168 St Georges Tce
Perth, Western Australia
Phone: (08) 9482 7319
Fax: (08) 9482 7224
Email: Lindsay.Joll@fish.wa.gov.au

FRDC Contact Details

Address: 25 Geils Court
Deakin ACT 2600
Phone: 02 6285 0400
Fax: 02 6285 0499
Email: frdc@frdc.com.au
Web: www.frdc.com.au

In submitting this report, the researcher has agreed to FRDC publishing this material in its edited form.

Contents

Contents.....	iii
Acknowledgments.....	vi
Executive Summary	vii
Introduction	1
Objectives.....	2
Results and Discussion	3
Workshop Introduction	3
Keynote addresses.....	4
Opening Address - Dr Patrick Hone (Executive Director, FRDC)	4
AFMF and national fisheries management policy directions. - Ian Curnow (Chair, Australian Fisheries Management Forum)	5
Balancing evidence based fisheries management and social licence to fish; recent challenges and lessons learned in Australia. - Richard Stevens (Government Relations and Fisheries Management Consultant)	7
The changing landscape of fisheries management: the Canadian experiences. - Robert Stephenson (Canadian Fisheries Research Network).....	10
National Strategic Issues.....	13
Allocation of shares to fisheries resources – Australian stock take. - Mark Edwards (Director, Fisheries Policy & Licensing, Fisheries Victoria)	13
Social objectives and indicators for fisheries management. - Lianos Triantafillos (Acting Manager, Strategic Policy PIRSA)	14
Implementation of the National Harvest Strategies Guidelines. - Sean Sloan (Director, Fisheries and Aquaculture Policy, PIRSA)	15
Preliminary Investigation of Responsible Fisheries Management (RFM) Certification. - Sevaly Sen (Principal Investigator FRDC project 2012/746)	16
Indigenous Fishing. - Robert (Bo) Carne (Manager, Indigenous Development Unit, Manager, Indigenous Development Unit, NT Fisheries)	17
Case studies of small-scale fisheries – successes, failures and innovation.....	18
Cost Recovery & Best Practice Small-Scale Fisheries Management: Mutually Exclusive? - Megan Higson (Principle Policy Analyst, Victorian Department of Environment and Primary Industries)	18
WA Temperate Demersal Gillnet & Demersal Longline Fisheries. - Jodie O'Malley (Fisheries Management Officer, WA Fisheries)	25
Managing controversial, small-scale fisheries in Queensland. Doing better than 'business as usual'. - Anthony Roelofs (Department of Agriculture, Fisheries and Forestry (DAFF), Queensland).....	31
Minor Fisheries in Tasmania: a contrast in types. - Greg Ryan (Manager, Commercial dive, shellfish and marine plants, DPIPWE).....	35
Challenges and opportunities for the NSW charter fishing industry. - Geoff Barrett (Senior Fisheries Management Officer Charter Boats, NSW Fisheries).....	40
The Port Phillip Bay Scallop Dive Fishery: Innovative Approaches To New Small-Scale Fisheries. - Kylie Wohlt and Mark Edwards (Fisheries Victoria, Department of Environment and Primary Industries)	44
Collaboration to innovation: How to develop and implement a harvest strategy in a small-scale, community-based fishery. - Sean Sloan, Alice Fistr, Greg Ferguson, Roger Edwards, Julian Morrison and Jonathan McPhail (Primary Industries and Regions South Australia)	49
Evolution of co-management in the Tasmanian scallop fisheries – successes and challenges. - David Jarvis (Manager Scalefish and Scallops, DPIPWE)	57

Challenges facing small-scale fisheries in Australia – Working Group Discussions	61
Session 1 Working Group discussions	61
Session 2 Workshop outcomes and group discussion	61
Conclusion	69
Summary of key issues in the management of small-scale fisheries.....	69
Further Development	72
Where to from here – Outputs of the Workshop.....	72
Formation of an Australian Professional Fisheries Management Society.	72
Recommendations	73
Extension and Adoption.....	74
Project Coverage	74
Project Materials Developed	74
Appendix 1: Fisheries Managers Workshop Attendance	75

Tables

Higson

Table 1. Victoria’s fisheries cost recovery principles.....	20
Table 2. Example cost recovery schedule.....	21

Barrett

Table 1. NSW fishery sector comparison	41
---	----

Figures

Stephenson

Figure 1. Iterative approach, based on risk assessment and management.....	10
---	----

Higson

Figure 1. Level of under-recovery by service.....	19
Figure 2. Fisheries Victoria’s recoverable costs and concessions.....	22

O’Malley

Figure 1. Management boundaries of the WA Temperate Demersal Gillnet and Demersal Longline Fisheries.....	26
--	----

Sloan, Fistr, Ferguson, Edwards, Morrison and McPhail

Figure 1. Targeted catch, effort and CPUE of Papi from 1984/85 to 2012/13.....	51
Figure 2. Fishery independent relative biomass of legal-sized Papi from previous season (x-axis) determines the following season’s maximum total allowable commercial catch (TACC) (y-axis) for the Papi fishery with incorporated economic information.	53
Figure 3. Fisheries Gross Margin for two scenarios for 2013/14.....	54
Figure 4. The decision making steps and outcome for the 2012/13 fishing season..	54

Acknowledgments

The Workshop was organised by the members of the Fisheries Management Sub-Committee (FMSC) of the Australian Fisheries Management Forum. The FMSC is composed of a senior fisheries manager from each Australian fisheries jurisdiction, with the following membership.

Lindsay Joll (WA) – Chair

Bryan McDonald (NT)

Andrew Thwaites (Qld)

Andrew Goulstone (NSW)

Mark Edwards (Vic)

Grant Pullen (Tas)

Sean Sloan (SA)

Trent Timmis (AFMA)

Tim Karlov (DAFF)

Beth Gibson from AFMA (as proxy for Trent Timmis) provided valuable input.

Support funding for the workshop was provided by the Fisheries Research and Development Corporation while facilities to run the workshop were graciously provided by the South Australian Aquatic Sciences Centre at West Beach, Adelaide. The sub-committee thanks Gavin Begg and the staff at SARDI's West Beach centre for their support in running the workshop. The workshop was facilitated by Ian Cartwright who kept participants 'on track' and ensured that key elements of the thinking arising from the workshop were captured. Thanks to members of FMSC and their staff who took extensive notes on which to base the write-ups and to Ian Cartwright for his conversion of these notes into readable content. Alex Chalupa (PIRSA) assisted by formatting the raw manuscript into an FRDC format. Sarah Winslade-Mullane (WA Department of Fisheries) provided significant administrative support for workshop and in the finalisation of the manuscript.

Executive Summary

A national fisheries management workshop was held at the South Australian Aquatic Sciences Centre in Adelaide on 26/27 March 2014, which brought together fisheries managers from all Australian jurisdictions. The idea of holding a workshop was promoted by the Australian Fisheries Management Forum (AFMF) (composed of the Heads of Commonwealth and State/Territory fishery management agencies), which had identified that there was no forum for fisheries managers to exchange ideas and build networks. The task of putting the workshop together was undertaken by AFMF's Fisheries Management Sub-Committee (FMSC), with funding support being provided by the Fisheries Research and Development Corporation (FRDC).

The workshop was the first fisheries managers' workshop since 1995, when the last of a successful series of fisheries managers' workshops run during the late 1980's and early 1990's was held on Rottnest Island, WA. In promoting the idea of a workshop AFMF noted that while there was significant cross-fertilisation between researchers through the Australian Society for Fish Biology and other forums and through National Compliance Committee for compliance officers, there was no forum specifically for fisheries managers. As fisheries management had increased in complexity, and society was placing additional scrutiny on fisheries managers, there was a need for fisheries managers to meet as a group of professionals to exchange ideas and initiatives.

In considering a theme for the workshop FMSC noted that there was significant interest in the issues surrounding small-scale fisheries (SSFs) and that many if not most issues with SSFs were common across all the jurisdictions. Furthermore, FMSC had been tasked by AFMF to consider matters around SSFs and provide advice back to AFMF on the development of cost effective and efficient management of SSFs. Thus a workshop provided an ideal opportunity to explore the issue of SSFs and to look at issues and approaches in the various jurisdictions to see if there were any learnings that could be incorporated into FMSC's advice to AFMF

FMSC designed the workshop to achieve two aims:

1. Increase the skills and understanding of Australia's fisheries management community.
2. Increase FMSC's understanding of issues around SSFs and approaches which might assist in cost effective and efficient management of SSFs.

The workshop was run over two days at the South Australian Aquatic Sciences Centre at West Beach, Adelaide and attended by more than 40 fisheries managers from all jurisdictions across Australia. The format included a number of Keynote and National Issues presentations, followed by presentations of Case Studies of SSFs by individual fisheries managers to highlight successes, failures and innovations. Following these presentations the workshop broke into four working groups to consider in detail particular issues that had come into focus during presentation sessions. At the end of the working group session the workshop re-assembled and, with the aid of the facilitator (Ian Cartwright), articulated and summarised the matters they considered were the key issues in the management of small-scale fisheries.

The feedback from participants at the workshop was that they had gained significantly in their understanding of national and 'big-picture' issues and of matters around the management of SSFs and that they now had new ideas about tools and approaches that they could use in their jurisdictions. There were also significant networking outcomes, with Fisheries Managers in the different jurisdictions realising that there were other people around the country experiencing similar issues with whom they could discuss matters. There was also interest in holding another workshop in the next 12-24 months to build on the knowledge and networks arising from the current workshop and to look at forming a National Association of Fisheries Managers. These matters will be fostered by FMSC in its overarching national fisheries management co-ordination role.

The ideas generated in the workshop will be used by FMSC as it continues developing its advice to AFMF on cost effective and efficient management of SSFs.

Introduction

A national fisheries management workshop was held at the South Australian Aquatic Sciences Centre in Adelaide on 26/27 March 2014 which brought together fisheries managers from all Australian jurisdictions. The idea of holding a workshop was promoted by the Australian Fisheries Management Forum (AFMF) (composed of the Heads of Commonwealth and State/Territory fishery management agencies), which had identified that there was no forum for fisheries managers to exchange ideas and build networks. The task of putting the workshop together was undertaken by AFMF's Fisheries Management Sub-Committee (FMSC), with funding support being provided by the Fisheries Research and Development Corporation (FRDC).

The workshop was designed to focus on small-scale fisheries and, in convening the workshop, FMSC recognised the wide range of issues particular to small-scale fisheries and the fact that most jurisdictions were facing similar management challenges. A series of contemporary and 'idea-broadening' case studies and forward looking presentations by fisheries managers provided material for discussion and exchanges of views as well as a resource for FMSC to draw on in its further consideration of cost effective and efficient management of small-scale fisheries.

More than 40 fishery managers from different levels within Australia's fishery management organisations and from all jurisdictions attended the workshop. It was the first time for more than a decade that such a gathering of fisheries managers had occurred.

To help maintain contact, those present at the workshop agreed to exchange contact information and a full list of speakers and attendees is provided at Appendix 1.

The text of the presentations published here has been developed in various ways. The text for the Keynote and National Strategic Issues presentations was drawn together by Ian Cartwright (facilitator) based on notes taken by FMSC members during those presentations (and subsequent discussions), with the presenter subsequently providing their approval of the summary. The Case Study presentations by individual fishery managers were written up for this publication by the presenters (note: where there are multiple authors the presenter is indicated by underlining). In the case of the Working Group reports, the outputs of the Working Groups were summarised by Ian Cartwright based on the notes the Working Groups developed to present their outputs to the Workshop – with the rapporteur for each Working Group approving the summary. And, finally, the Summary of Key Issues was developed by the three editors.

Objectives

The objectives set out in the application for FRDC funds were:

1. Increasing the skills and understanding of Australia's fisheries management community.
2. Refining and road-testing Fisheries Management Sub-Committee's proposals regarding "Developing cost-effective and efficient management of small-scale fisheries".

These objectives were developed ahead of some of the more detailed planning for the workshop and, as it turned out, FMSC did not have specific proposals regarding "Developing cost-effective and efficient management of small-scale fisheries" to put before the workshop. Furthermore, in the planning for the workshop, it was decided that rather than try to work through specific proposals it would be better to use the workshop as a source of ideas that could be incorporated into FMSC's thinking about cost effective and efficient management of small-scale fisheries. Thus, the second objective was therefore redefined as:

- increase FMSC's understanding of issues around SSFs and approaches which might assist in cost effective and efficient management of SSFs.

With regard to the first objective (increasing the skills and understanding of Australia's fisheries management community), this was further expanded during the workshop planning and framed as:

- i) increasing the awareness and understanding of fisheries managers of the range of issues and challenges facing small-scale fisheries across the jurisdictions and means to address them;
- ii) the establishment of professional networks of fisheries managers to facilitate the exchange of information; and
- iii) Capacity building for entry and middle level fishery managers.

Results and Discussion

Workshop Introduction

The workshop facilitator, Ian Cartwright noted that this was the first fisheries managers' workshop since 1995, when the last of a successful series of fisheries managers' workshops was held on Rottnest Island, WA. Other workshops had been run at other locations in Australia, including Terrigal, Bribie Island, and the Barossa. It was noted that as fisheries management had increased in complexity, and society was placing additional scrutiny on fisheries managers, there was a need to meet as a group of professionals to exchange ideas and initiatives.

The workload associated with small-scale fisheries (SSFs) is not always reflective of the scale, nature and value of the fishery. SSFs typically exhibit broader benefits to communities than is reflected in their GVP, and their management requires a trade-off between lifestyle and business/economic-based approaches. The other differences between small and large scale fisheries include: different ecosystem impacts (i.e. typically less intensive with a broader suite of species harvested), limited capacity and capability to realise development opportunities and a broader suite of resource users and interests.

The following more detailed objectives for the workshop were proposed and agreed, noting that the focus of discussion was to be on small fisheries.

- * Distill and discuss experience and contemporary issues in fisheries management
- * Identify key issues and challenges
- * Exchange of information and ideas – what has worked and what has not
- * Consider management solutions and innovations
- * Build networks between fisheries managers
- * Determine next steps, including consideration of an Australian Professional Fisheries Management Society

A definition for 'Small' fisheries was offered:

- * <\$5m GVP overall
- * Average operator has <\$100K annual turnover and take <5 tonnes shellfish or 10 tonnes wet fish
- * Vessel size in fishery <10m, crew <=3
- * Mostly owner operators / small family businesses

The workshop noted that this definition could not be applied uniformly, but the provided a useful guide.

Discussion points

- The operators in many small fisheries are not pursuing financial returns, but primarily a lifestyle.
- Increasingly governments are seeking development opportunities to foster economic growth through food production; this is adding to the challenges of managing small-scale fisheries.
- Small fisheries generally have limited economic importance and operate in areas where there is strong recreational interest and the chance of conflict is relatively high.
- Valuing fisheries more broadly than in terms of economic contributions and economic viability has merit with regard to small-scale fisheries.
- Government agendas to drive development of food production is adding to the pressure of managing SSFs

Keynote addresses

Opening Address - Dr Patrick Hone (Executive Director, FRDC)

Dr Hone welcomed participants, acknowledging the traditional owners and some of the great names in fisheries science and management in South Australia including Philip Sluczanowski and Mick Olsen.

The human elements of fisheries management were emphasised, in that managers are regulating the behaviour and catches of fishers, rather than fish. In such endeavours, human capacity is important and some jurisdictions, e.g. AFMA have invested heavily in capacity building while others have been less active.

FRDC has had a long history of capacity building, but fisheries managers have not been a prime focus, as evidenced by the 18 years between this workshop and the last. FRDC is willing to invest in capacity building for fisheries managers and requested ideas from the workshop as to how this could best be achieved. It is clear that there is a need to review the skill sets required by fisheries managers and to determine how best to ensure they match the current challenges.

The need to build public confidence in fisheries management is becoming increasingly evident and a number of tools are used in this arena including the new-format ABARES key stock status reports and MSC and other certification schemes. These are focussed primarily on biological performance; perhaps there is a need for equivalent systems that could certify management performance.

The pursuit of 'continuous improvement' and streamlining management processes are key in moving forward with fisheries management. Most jurisdictions have made considerable advances in fisheries management, and the issue now is to continue this process and, importantly, convince the public that our fisheries are in safe hands.

AFMF and national fisheries management policy directions.

Ian Curnow (Chair, Australian Fisheries Management Forum)

Managing private access to a public resource such as fisheries can be the most complex of all public policy endeavours, particularly given the nature of the data available on which to base decisions and the necessary judgement calls over what represents the 'optimal economic, environmental and social benefits from its fishery and aquaculture resources'.

The commercial sector is looking to reduce costs including management and licence fees, while looking for value for money from Government's services. In turn, Governments are facing their own budgetary challenges.

There have been few resources invested to support people development in recent history. The aim of the workshop is to achieve better consistencies between jurisdictions, avoid duplications in research and share lessons of both what worked and what did not.

AFMF is composed of the Heads of Commonwealth and State/Territory fishery management agencies. It is not a decision making body and provides an informal network for communication, information sharing and development of best practice approaches to management. While AFMF has a national statement of intent, coordinating approaches to deal with national issues is challenging due to management at jurisdictional level, and frequent changes of government.

Key AFMF goals are that Australian fisheries are sustainably managed, profitable and viable and that security of access is assured. AFMF plays a key role in ensuring that approaches taken by its members are as consistent as possible.

Specific focus areas of activities and key planned outcomes for the next few years have been developed to assist AFMF achieve its goals, building on a National Statement of Intent.

The fact that most Australian fisheries are achieving a high standard of management in global terms is not generally acknowledged by the public, despite being reflected in status reporting and through EPBC accreditation. Jurisdictions are looking at various methods of accreditation of their activities.

The growth of social media is providing a challenging environment for fisheries management. The ability of the commercial fisheries sector to communicate and extend good messages via social media is lagging behind that of groups that seek to undermine the reputation of fisheries management in Australia. There is a need to determine how the fishing industry is going to engage/use modern communication techniques (Facebook, twitter etc.).

Secure access to marine and aquaculture resources is an emerging issue. When competition for living marine resources occurs, there is an increasing tendency for politicians to base decisions on the strength of lobby rather than scientific advice. Greater surety of resource access is required for industry in the face of increasing pressure to re-allocate resources to recreational fishers or marine reserves. Industry and governments should not delay hard decisions on resource sharing – such decisions only get harder over time..

Australia needs profitable and viable fishing and aquaculture industries and a clear understanding is required by the community of the benefits that flow from having such industries. These industries need supportive legislation and policy, we should strive for as much consistency across the country as is possible and sensible.

There is an increasing demand for: reducing the burden of regulation through so-called red tape reduction, use of e-technology, and risk based approaches to cost effective compliance.

The health of marine habitats is coming under increasing scrutiny in an era of rapid climate change. Environmental impacts of fishing and aquaculture need to be minimised and biosecurity assured.

The boundaries for offering assistance to industry are being examined; can we and should we go further than we currently do. We must acknowledge that there are issues that are beyond the control of Government (e.g. export and import trade flows, fluctuations in the exchange rates, fuel prices) and there is only so much support that can be offered by Government.

Of particular importance to small-scale fisheries are:

- the establishment of formal resource sharing processes to establish secure access; and
- cost-effective management and red-tape reduction to promote profitable operation

Discussion points

- Jurisdictions at both state and Federal levels are seeking to increase the profitability of industry through the reduction of red tape, more effective and efficient delivery of research and management services.
- Notwithstanding these efforts, there are key overriding economic concerns that will impact on industry and reduce profitability, such as exchange rates; while these may reduce revenue, the costs of providing management services will remain unaffected.

Balancing evidence based fisheries management and social licence to fish; recent challenges and lessons learned in Australia.

Richard Stevens (Government Relations and Fisheries Management Consultant)

Fisheries in Australia are facing a challenging operating environment in which the following are key issues:

Funding

- Fisheries managers deal with a public resource requiring a range of judgment calls involving the skilled use of limited data limited by costs of research.
- The nexus between i) industry seeking to reduce operating costs, including licence fees and ii) shrinking federal and state fisheries management budgets driving a tendency to cost-shift to industry.
- There is increasing lobby pressure from ENGOs on fisheries managers to 'raise the bar' for environmental standards resulting in flow-on costs to the fisheries.
- Pressure from the recreational sector, which has substantial influence on expenditure of recreational trust and other similar funding and a preference for projects that facilitate access (boat ramps, buy outs etc) rather than addressing management issues. Funds from the recreational sector may be key to appropriate cost sharing.
- Increased scrutiny of annual fisheries budgets associated with competing government funding (schools, health), cost efficiency and the increasing application of user-pays approaches. The latter will be particularly challenging for small-scale fisheries.
- Requirement to deliver balanced budgets, maintain a viable commercial industry and meet the growing expectations of all those with an interest in fisheries management.

Community expectations

- Widespread public suspicion towards the intentions, integrity and effectiveness of government in general, and the management of natural resources in particular.
- Finding the correct words, images and medium to demonstrate sustainable fisheries has not been easy, as the Super Trawler debate has illustrated.
- While fisheries managers and scientists tend to deal in scientific evidence and facts, the messages about sustainability are had to 'sell' particularly given that there is always a level of uncertainty about the facts.
- ENGO's have the ability to make any claims they wish with no demand/ expectation that they have any substantive data to back up such claims; fisheries managers are constrained in this regard.
- The public does not consider government, including politicians, regulators and scientists, to be a highly credible source of information, especially in natural resource management.
- Other credible authorities are needed if the community is to be fully convinced that fisheries are sustainable and well managed.
- Evidence-based management, social licence to fish, private access to public resources, data to support decision making – there are many challenges that face modern fisheries managers.

Evidence based fishery management

Fisheries Agencies in Australia are strongly committed to evidence based fisheries management via research programs that are appropriate to the scale and value of fisheries. Despite that research, our knowledge on which to base fisheries management decisions remains limited, while the ability to increase funding to reduce uncertainty is also limited. Relative to terrestrial examples (e.g. fracking, harbour dredging and seismic surveys) it appears the precautionary principle is applied very differently to fisheries. While significant challenges remain, Australia has taken a world-leading approach to fisheries management, including through the use of ecological risk assessment and management and harvest strategies. Communicating these efforts and achievements is the key challenge.

Social licence to fish

The social licence to fish is difficult to get but very easy to lose – reputational risks are high. Social licence is obtained when a significant section of the community believes that the operation, whatever it may be, will enhance the economic wellbeing of the community in a sustainable or responsible manner. The view from ENGOs and some others is that the commercial fishing sector does not have (or has lost) a social licence to operate. Government as regulator and industry both have significant roles to play in dealing with the social licence issue so that fishing is acknowledged as a legitimate and credible part of that community. The commercial sector must play its role by demonstrating corporate responsibility and dealing with the minority who provide ENGOs with the opportunity for ‘mischief-making’ media (e.g. shooting seals on rocks).

The so-called Super Trawler debate illustrated that despite a sound knowledge base and a decision based in legislation, a substantial public media (Get Up) campaign was able to stop a vessel from fishing.

In addressing evidence based fisheries management and social licence, a number of challenges and lessons learned have been identified:

Communication

The key task is to get the Government and the community to acknowledge and support well managed fisheries. Fisheries management is a challenging and complex issue to deal with at the political level, with a resulting focus on the regulatory agency to deal with controversial issues. While this has resulted in positive developments such as harvest strategies, to effect real change requires political commitment and an informed and supportive minister.

The environmental lobby has been very successful in using fear, doubt and anxiety to generate very negative perceptions of the status of living marine resources and the impact of fishing on them. Challenging these assertions has been very difficult owing to the nature of fisheries and the marine environment i.e. even with the best science, there remains some uncertainty, which provides fuel for the anti-fishing lobby. The small size, capacity and leadership in all but a few fisheries means that it is relatively easy to play the conservation ‘card’ ahead of sustainability.

Communicating scientific information effectively is crucial, but difficult. The issues are complex, fisheries scientists are not all good communicators and institutional/ individual responsibility for communication of key events in fisheries is not always clear.

Seafood industry leaders

There needs to be a greater focus in creating a more stable business investment environment by improving access security and by encouraging the Industry to take up more of the responsibility in dealing with the sustainability challenges facing their fisheries in a strong partnership approach with Fisheries Agencies. The overall challenge is to recognise the current operating environment, create partnerships, build relationships and capacity in industry and try to achieve a coherent message on key issues of interest to the community and Government.

Resourcing and capability

A proper assessment is required of the dimension and scale of what can be achieved, along with the resourcing, training and skills needed to progress new initiatives such as incorporating social considerations into fisheries management. Simply expecting such initiatives to be implemented without additional resources will be problematical. There is now an unhealthy reliance on external research funding agencies and there are serious risks associated with that reliance. Other research challenges exist, such as improving the information base to contribute to better stock assessments and the possible impacts of recent government decisions including red tape reduction and the introduction of the FRDC marketing levy.

Environmental NGOs

While there are a number of sound and rational ENGOs who understand the complexities of fisheries and who are focussing on fisheries improvement rather than fisheries elimination, there are growing numbers of more extreme, conservation-oriented and anti-fishing organisations. This latter group uses approaches based on the adversarial approach that has been applied in the US. This approach intentionally targets the politics and the integrity of the regulator, as well as encouraging counter-views often of limited applicability to the

circumstance, to build a public support based on emotional responses to the issue. Australian fisheries have faced some of this pressure not addressed as forcefully, professionally and capably as has occurred recently.

How to respond?

Social media provides an opportunity for organisations including Fisheries Agencies to target and reach out to new audiences, and be in no doubt that audiences these days are very well informed. Messages via social media and on websites can be controlled, provided they are factual, succinct and honest.

Industry leaders need to recognise the need for greater accountability and responsibility for the actions of the fishing industry and should seek to ensure that the industry conducts itself accordingly. Similarly, fisheries managers need to gain recognition as competent professionals and thus gain credibility with the public and within key debates.

Political champions are needed to engage in media debates to offset the misinformation associated with challenges to management decisions based on best available science and legislative objectives.

Fisheries regulatory authorities in Australia must continue to position themselves to better promote their credibility as a fisheries management agency, and better respond to the media on fisheries management issues of interest or concern. In doing so, the scientific basis of the agency's approach to Fishery Management and harvest strategies and the integrity and effectiveness of the agency's management governance and processes must be emphasised.

Discussion points

- The importance of having a sound communication strategy in place was emphasised particularly in the event of controversy where science and/or management is challenged by elements of the community.
- Fisheries management agencies require some form of media strategy to effectively influence the agenda including radio, TV and, increasingly, social medial channels
- Experience has shown that media releases and other communications that use facts to explain circumstances or decisions are not as effective as those that address social values i.e. the community is less interested in facts about a significant fisheries event, more about how their values will be impacted.
- Engagement with the recreational sector is essential, particularly in coastal fisheries
- Engagement with NGOs has tended to yield variable results; they can be engaged and not feel obliged to support decisions arising from consultation. The outcomes of ENGO engagement is often personality driven and there have been some very useful engagements, including with WWF in the NT.
- Fisheries managers are tasked with making judgement calls in complex circumstances and need to be skilled in the use of limited data.
- The environmental impact/EBFM bar is being set at increasingly high levels. How high can we realistically jump?
- A significant constraint to progress is the issue of patch protection and 'jurisdictional ego' at a time when fisheries management in Australia needs to be harmonised. Management in Australia is only as strong as our weakest link and there is no value in leaving areas behind in a competitive process.
- Management needs to be proportional to the circumstance and should address critical uncertainties
- We operate on facts and communicate facts. Community trust is based on belief systems. How does what we do impact on community values? Communicating effectively needs to be about communicating values if public resonance is to be achieved
- How do we measure community values and put those values at the centre of SSF management.
- The 'science of fisheries management' needs to expand to provide clear advice about how to merge biological social and economic knowledge with community value systems.

The changing landscape of fisheries management: the Canadian experiences.

Robert Stephenson (Canadian Fisheries Research Network)

The Canadian experience in fisheries management was described, drawing initially on the Atlantic herring fishery. A brief history of the fishery was provided outlining the innovations in management that have occurred in the two components of that fishery (a small-scale nearshore trap fishery and an offshore, large industry mobile fleet). These including overall quotas, ITQs, industry participation in science and management and spatial management of the stock.

Despite these sorts of innovations in fisheries management, stock collapses, overcapacity, corporate ownership and collapsed coastal communities have occurred, and a range of reasons/criticisms behind these outcomes was provided. Coupled with these negative outcomes, increasing societal expectations are clearly greater than the minimum established in law, including meeting objectives based *inter alia* on productivity, biodiversity, habitat, social and economic outcomes.

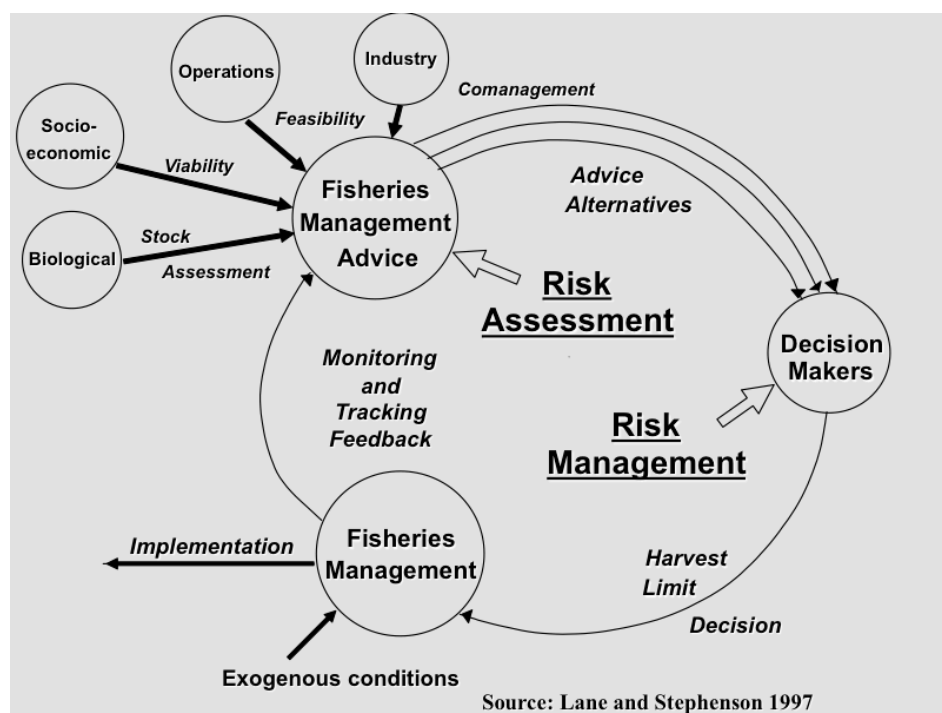
It was concluded that most of the issues cannot be solved with the existing assessment and management structure and that a new approach is needed. The new approach suggests an increasing need for an integrated approach to the management of multiple human activities in relation to a more diverse set of objectives and a changing environment that include a higher standard of ecological integrity, and diverse aspects of sustainability.

The complexity of the Southwest New Brunswick region was emphasised using a GIS-based presentation illustrating the range of stakeholders and interests, competition and conflicts related to fisheries and living marine resource management. It was noted that many of the things that are 'valued' are not currently being considered adequately. Consequently there is a need for a more diverse set of objectives reflecting 'Community Values' which would be applied to all activities using an open and transparent, participatory, process for trade-offs among activities/objectives,

Achieving an ecosystem approach and integrated management in a fishery requires diverse yet common objectives to be applied to all activities, taking account of cumulative effects. This approach requires an appropriate management structure and methods such that issues can be articulated, compared and used as basis for rational decisions, using participatory process and appropriate jurisdictional arrangements.

It was concluded that an iterative approach, based on risk assessment and management as per the Figure 1 (below) was preferred.

Figure 1. Iterative approach, based on risk assessment and management.



Fisheries management science to inform decision making goes beyond biological data and analysis and should include i) fisheries science, ii) fisheries management and iii) social/management science.

The Canadian Fisheries Research Network (CFRN), of which Robert Stephenson is Principal Investigator, was described. It was noted that the key aim of the network is to reshape fisheries research in Canada by bringing together industry, academia and government to answer strategic questions through collaborative research. The Network will also train the next generation of researchers and managers, working towards a sustainable fishing industry by improving the sustainability, viability and competitiveness of industry.

The requirements of Canadian fisheries policy demands consideration of a broader set of objectives and comprehensive evaluation which can only be achieved effectively through required interdisciplinary collaboration. This collaboration seeks to achieve sustainable fisheries according to the following definition:

A sustainable fishery respects the ecological integrity of the ocean and its resources; is ethical, responsibly governed, economically viable and technologically appropriate; supports communities; draws on local culture, heritage, and diverse knowledge systems; and enhances health, wellbeing and the public good

The framework/process for working through the ecological economic, social /cultural institutional issues and the information required to inform management towards the achievement of a range of fisheries management objectives was described.

The second part of the presentation focused on the Canadian lobster fishery, as an example of small-scale fisheries which may be categorised as being relatively:

- high in number and comprising small operations;
- poorly organised;
- disparate in views;
- poorly represented with limited lobby power;
- lacking in financial resources;
- vulnerable to control by processing sector;
- reliant on a portfolio of species/licences; and
- arguably difficult to manage due to the large number of participants.

It was noted that small-scale fisheries are rooted in communities and are linked closely to community values. They generally operate in areas that may be subject to coastal habitat degradation and ecosystem change. Further, they are undervalued by using the usual metrics and may well be a more important part of the economy than is appreciated.

The value of an 'effective threesome' using effective collaboration between industry, government and academia was again emphasised. Examples of collaboration including at-sea sampling were provided and the benefits outlined.

The presentation concluded with some observations on the future of Canadian fisheries:

- Clear need for an interdisciplinary approach
- Requirement for clearer articulation of objectives and methods and decision support for evaluating management strategies tools to achieve them.
- New data requirements
- Increasing public pressure to demonstrate sustainability which will be addressed through EBFM, IM and the achievement of 'social licence'
- Capacity development
- Important gaps in information and methods could be addressed by the unique potential contributions of fishing industry, academia and government

- Recognition of the need for a new way of doing things through participatory management and an approach based on Collaboration→ capacity building→ participation.
- Major challenges include dealing with changes related to EAM/IM, governance, facilitation and capacity.

Discussion points

- Recreational fishers are able to mobilise a considerable lobby to achieve their policy objectives, while ENGOs are also prominent in fisheries management discussions; both these groups make their views very clear and have the resources and supporters to drive change. On the other hand, little is heard on the matter of food security and the right of seafood consumers to expect to be able to access, purchase and enjoy local seafood. The latter group is often not adequately considered and provides an important, and often untapped source of support for sustainable coastal fisheries.
- The Canadian example has similar issues with the emotive issue of use of herring for fish meal. It is clear that there is a need for discussions on resource sharing that go beyond simple economics or ecosystem issues.
- There is a body of information on shopper preferences for sustainability which the seafood industry must pay due attention to.
- Food security is a significant issue sometimes missing from discussions.
- The concept of ‘cross training’ in an academia-industry-government partnership is important
- Integrated fisheries management planning should be based on risk assessment and management, set in an iterative process and informed by fisheries management science, which includes fisheries management, fisheries science and social/management science.
- Be cautious about the management approaches chosen. Quota management in Canada has driven social change as trade systems centralise holdings and small coastal communities lose components of fishing practice and communities.

National Strategic Issues

Allocation of shares to fisheries resources – Australian stock take.

Mark Edwards (Director, Fisheries Policy & Licensing, Fisheries Victoria)

In introducing the topic, the negative behaviour arising from competition between sectors for marine resources in small-scale fisheries was highlighted, using the Corio Bay fishery as an example.

The challenges of intesectoral allocation were highlighted and included:

- Data difficulties with recreational catch levels and the relative value and economics of fishing
- Increase in participation and demand for access and use driven by population growth is probably a common factor across jurisdictions
- Demographic change (more retirement age people) and lifestyle changes – seachange, exacerbating the tensions
- Uncertainty and contention about the nature of rights – between recreational and commercial fishers which affects investment decisions and economic viability of fishing operations, divides communities, and creates high transaction costs
- Large and vocal groups of voters, often willing to use emotive arguments, resulting in arbitrary changes/decisions

Progress with resource sharing in the various jurisdictions was presented, with particular elements of each regime highlighted.

From the policy development and experience across the jurisdictions – the following were concluded concerning best practice approaches to resource sharing:

Precursors – measuring catch, stock status, determine changes in overall catch that may be necessary and be clear about the outcomes sought.

Core management – establish baseline shares, manage catch to allocation, develop rules for adjustment and ensure a principled approach through Act provisions or policy statements

Enablers – Responsible and capable leaders, licencing of recreational fishers to generate the revenue to support representational organisations and meaningful engagements, and professional mediation and conflict resolution skills.

Support mechanisms and tools – Including valuations to inform negotiations and decisions, buybacks, spatial separation and means to facilitate autonomous sectoral adjustment.

In conclusion it was noted that the hard part is getting decision makers to make the right call when the pressure is on and the politics pile up. Success, like much of fisheries management, is not just having a coherent policy – but it is getting understanding/consensus and support across stakeholders and with politicians. Getting that stakeholder support means you may not have to rely on government-centric decision making which has significant risks because of the politics.

Discussion points:

- Allowing catch to vary from allocated levels between sectors (resource sharing) infers some form of mechanism is in place to allow this to happen and provide adequate compensation as required. An issue arises where the degree of reallocation from the commercial sector to the recreational sector begins to remove fishers to the point where a substantial proportion of take is recreational and the commercial sector becomes unviable. In some cases resource sharing has resulted in the exclusion of commercial fishers, albeit for some form of compensation (e.g. marine parks). The key issue is that the community is in danger of losing its supply of fish in favour of one sector, particularly where strong political influence is exerted through the recreational sector.

Social objectives and indicators for fisheries management.

Lianos Triantafillos (Acting Manager, Strategic Policy PIRSA)

The importance of social objectives in fisheries management is recognised in many policies and programs that are intended to guide sustainable fisheries management. This includes the principle of ESD principle, the MSC certification processes and the FAO Code of Conduct. Yet, little is known about the social dimension of sustainable fisheries management. The recent Super Trawler incident highlighted that the landscape of fisheries management has changed and there is now more of a need to effectively manage the social aspects of fisheries than ever before.

In response to the increasing demand for tools to meet the requirements to account for social aspects in fisheries FRDC funded project 2010/040 *'Developing and testing social objectives for fisheries management'*. The aim of the project was to provide information and tools a fisheries manager needs to incorporate social objectives into fisheries management. The process of developing a comprehensive guide to the understanding and use of social objectives was described, along with the challenges encountered.

Phase 1 of the project identified a range of provisional social objectives and indicators.

Phase 2 covered the testing of select objectives and indicators by working with the commercial, recreational, indigenous, local community and fisheries management sectors. Innovative means of testing the relevance of a range of social objectives and indicators were used by the project team to solicit meaningful responses.

Candidate objectives were then rated by fisheries managers for importance using an Analytic Hierarchy process (AHP) and a Bayesian belief network (BBN) developed to analyse sensitivity of the indicators in informing the objectives to help clarify which indicators were most informative.

Phase 3 involved reviewing the tested social objectives and indicators with fisheries managers and policy makers at a workshop, to make final recommendations regarding which are applicable across jurisdictions, and about which to include in a comprehensive Guide that can be used by fisheries managers to incorporate consideration of social dimensions in their decision-making processes

The final product of this project was a guide (http://frdc.com.au/research/social_research/FR-2010-040_social_objectives_for_Fisheries_mgt/Pages/default.aspx) that will help fisheries managers make decisions on:

- Which social objectives are relevant to their fishery
- Which indicators can be used to inform objective
- Other social data that may be collected to help better manage social dimensions of fishery
- Survey questions and data collection methods that can be used to collect social data

The guide is in two parts; Part 1 is an introduction to social objectives and indicators while Part 2 covers their implementation.

Implementation of the National Harvest Strategies Guidelines.

Sean Sloan (Director, Fisheries and Aquaculture Policy, PIRSA)

The use of a harvest strategy framework is now recognised as world's best practice for fisheries management by a range of Regional Fisheries Management Organisations, and as a requirement for MSC certification and Commonwealth fisheries under the Commonwealth Fisheries Harvest Strategy Policy. The language and methodologies used across the country vary and the role of a national framework is to try and achieve consistencies and best practice across fisheries and jurisdictions.

A set of national guidelines have been developed (http://frdc.com.au/research/Documents/Final_reports/2010-061-DLD.pdf) which provides:

- a stock take of the current application of harvest strategies across Australian fisheries jurisdictions;
- a harvest strategy definition;
- a description of the key elements of a harvest strategy;
- the design principles and process for developing harvest strategies; and
- a set of fishery specific considerations.

The key elements of a harvest strategy were outlined, including operational objectives, performance indicators, reference points, decision rules, a monitoring and assessment process, and statement defining the acceptable level of risk to achieving management objectives.

Non-definitive design principles and process steps are outlined in the national guidelines, together with guidance on how to incorporate fishery specific considerations.

Next steps – include application across jurisdictions, a range of case studies to test wider application of harvest strategies, development of techniques to test robustness of empirical strategies, and cost effective techniques to incorporate economic information into harvest strategies.

Take home messages - includes one size does not fit all, include stakeholders in development from beginning, harvest strategies don't need to be overly complex, consider the cost/benefit of alternative harvest strategy approaches, provides opportunities for improved co-management, can help build public confidence and trust, provides greater certainty for stakeholders and a capacity to improve business planning for the future and helps to build public confidence and social licence

Workshop Discussion points

- Harvest strategies and, in particular the application of decision rules, commonly raise the issue of the robustness of the data and science underpinning the harvest strategy. Stakeholders are increasingly questioning the quality of the data and science when hard decisions need to be taken to regulate fishing activity. Whilst harvest strategies should have built in review mechanisms, it is important that harvest strategy review processes do not simply react to challenges when hard decisions are triggered.
- In designing harvest strategies, it is necessary to agree and define the data to be used and the analysis that is applied to the data, not just management actions in response to defined changes in fishery performance. This helps to minimise uncertainty and stakeholder debate when the harvest strategy decision rules trigger difficult management decisions.
- Fisheries tend to evolve and what may be an efficient management regime can be transformed by circumstances outside a fishery; on example of this is the iconic Spencer Gulf fishery which is now facing major challenges due to costs and the impact of imported prawns on prices.

Preliminary Investigation of Responsible Fisheries Management (RFM) Certification.

Sevaly Sen (Principal Investigator FRDC project 2012/746)

The responsible Fisheries Management (RFM) certification project is an 18 month feasibility study focusing on small-scale NSW fisheries with an emphasis on social licence rather than market access. The project is assessing the feasibility of applying Conformance Criteria based on the FAO Code of Conduct as developed by the Global Trust, in the Australian context. The results of the research (and other research) will help inform the need for, and development of, an Australian fisheries management standard.

The project has benchmarked all fisheries jurisdictions against the FAO CRRF criteria and assessed two NSW fisheries against the same criteria. By the end of the project, a guidance document to support the interpretation of the criteria for Australian fisheries will have been completed. The project will culminate in a workshop to discuss next steps. The outcomes of this project and other initiatives (WA/MSC pre-assessments, HS guidelines, science standard etc.) will flow into a draft Fisheries management standard or equivalent.

The two NSW compatibility assessments will examine compatibly with the RFM scheme and the context of each fishery to determine if the criteria are suitable for small-scale, multi-species, multi-jurisdictional fisheries and, if the criteria are appropriate and whether the fishery management system is in conformity with the FAO CCRF-based Conformance criteria.

As certification is highly politicised and the compatibility assessments are not equivalent to a full audit, it is important that communications associated with the project are carefully managed such that any reputational risk is avoided. FRDC has recognised the need for a communications strategy and has agreed to provide additional funding to meet this requirement. The communications strategy will:

- Develop the communications plan
- Manage the content and delivery of all project communications
- Ensure that key messages about the project are consistent via Q&A documents and identified spokespersons
- Develop communication strategies which minimise misinterpretation of project aims and results to avoid statements such as “NSW Fisheries management is in non-conformance” or “the project is developing an ecolabel”.

A range of issues were identified including the emerging trend to demonstrate sources of responsibly managed /sustainable seafood. A number of markets no longer require consumer facing eco-labels and other trends, such as Buyer to Buyer and partnerships with ENGOs to undertake due diligence (Coles and Woolworths) are likely to continue. For countries with strong management frameworks and traceability, these alternative approaches may also be more cost effective than voluntary third party sustainability certification. This will be especially the case with small-scale fisheries that may currently be being penalised, as they need certification to ‘prove’ sustainability usually to maintain social licence, but lack the resources to pay for it.

Indigenous Fishing.

Robert (Bo) Carne (Manager, Indigenous Development Unit, Manager, Indigenous Development Unit, NT Fisheries)

There are very different interpretations of customary fishing and the customary rules that apply. One size does not fit all and it is important to determine the individual circumstances of the community in which the fishery to be managed is based. There are also hierarchies amongst aboriginal communities which are generally poorly understood. Traditional and commercial fishing may not be fully discrete as is the case of the traditional gathering and sale/trade of pearl shell, which has occurred for millennia.

The NT Fisheries Act has ‘hands off’ provisions in which nothing in the provisions of the Act can limit the rights of aboriginals who have traditionally used fisheries resources in a traditional manner.

The NT Indigenous Fishing Strategy has 11 principals and is clear and concise (two pages). It has been used to increase the engagement of the indigenous community in a range of development activities including clams and barramundi, and through the Sea Ranger programme. An aboriginal fishing corporation is now under active consideration.

Looking across Australia, there is no consistency across jurisdictions in how they approach indigenous fishing right/expectations. All jurisdictions except SA, Tasmania and the Commonwealth have developed indigenous fishing strategies, but a number of these are now dated.

Indigenous fishing strategies should not be considered as standalone activities. Consideration of indigenous fishing should be incorporated into mainstream management considerations, including management plans.

Case studies of small-scale fisheries – successes, failures and innovation

Cost Recovery & Best Practice Small-Scale Fisheries Management: Mutually Exclusive?

Megan Higson (Principle Policy Analyst, Victorian Department of Environment and Primary Industries)

Abstract

Properly designed and implemented cost recovery arrangements are a component of best practice fisheries management that can deliver equity and efficiency benefits to government, fishers and the broader community.

While the theoretical benefits of cost recovery may be clear (incentives for efficient service delivery, transparency and accountability) the reality of designing an effective regime that includes small-scale fisheries, and implementing a regime that results in increased levies, is more challenging.

Victoria has been recovering the cost of providing services to its commercial fisheries since 2004. The approach to cost recovery has recently undergone major reform to implement a forward-budgeting approach that addresses significant, historic under-recovery, better matches the actual costs of services to levies charged, and provides for greater transparency, accountability and consultation with fishers.

Implementing the reforms has led to a significant increase in levies for many entitlement holders due to the scale of under recovery in the old system. The size of levy increases has required consideration of how to recognise economic viability of small fisheries while maintaining a principled approach to cost recovery where levies are determined based on the cost of services provided. It has also required consideration of how to manage a fishery if the cost of services are significant relative to the value of the fishery.

This paper contains an outline of the steps Victoria has taken to reform its cost recovery arrangements with consideration of the impacts on small-scale fisheries, while also inviting discussion about ways to reduce the cost of fisheries management, research and compliance services in small fisheries.

Introduction

A principled approach to cost recovery can provide incentives for efficient provision of fishery services, greater dialogue with industry and a means to target service delivery to the scale of fisheries. In this way cost recovery can be a central component of better management of small-scale fisheries.

Victoria has recently reviewed and reformed its approach to cost recovery. Through the reform process Victoria faced a number of challenges and trade-offs such as how to consider the value of a fishery in a system where levies are determined based on the cost of services provided in line with a beneficiary (or risk exacerbator) pays principle. A further challenge was how to consider small-scale fisheries in such a system when the cost of services provided to such fisheries may be a significant proportion of the value of the fishery. Victoria's experience has been that the process of designing and implementing a revised system of cost recovery provided opportunities to consider how to get better practice small-scale fisheries management in what are generally data poor fisheries, with very constrained Departmental budgets.

Background – retrospective under recovery

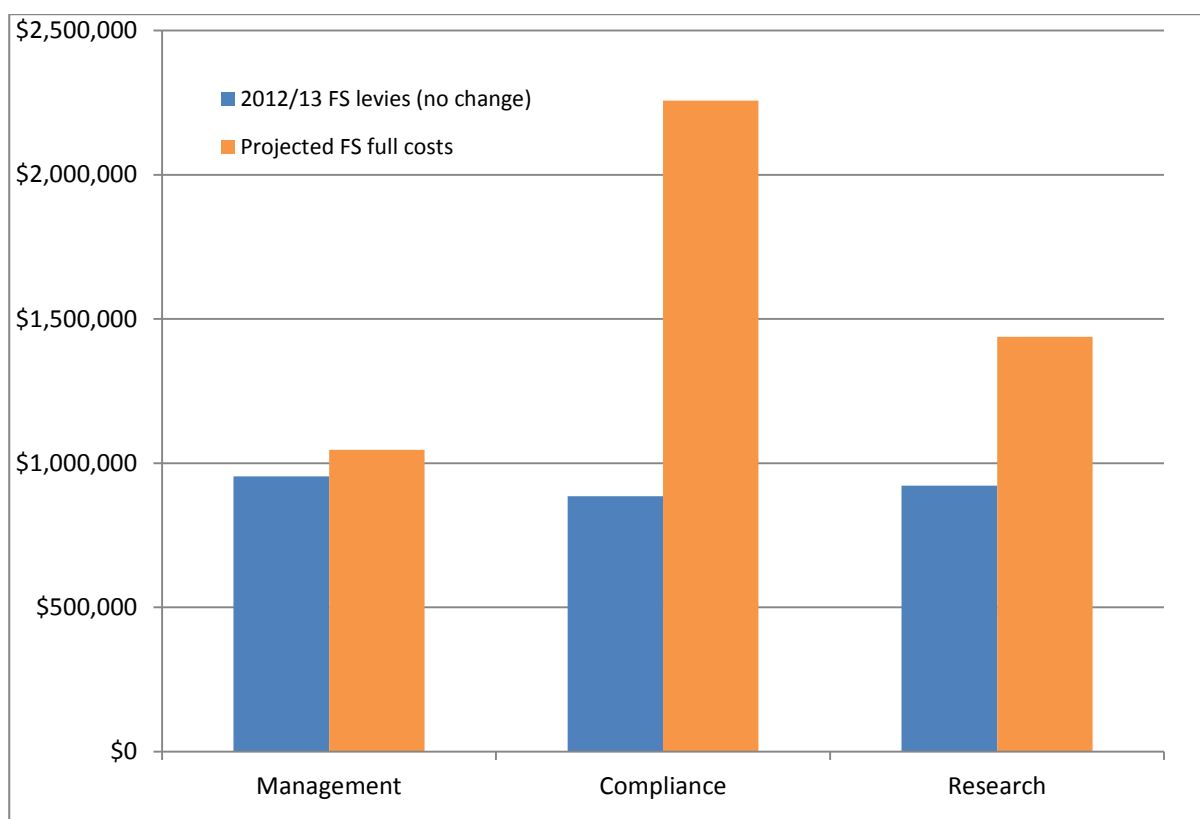
Victoria implemented a system of cost recovery in 2004 for the fisheries administration, management, compliance and research services provided by the Department of Environment and Primary Industries (DEPI) for the ongoing sustainable operation of Victoria's commercial fisheries (comprising wild-catch, aquaculture and fish receiver licences, and individual quota holders). Fisheries services levies are charged annually against licences and quota units in accordance with the *Fisheries Act 1995* and the *Fisheries (Fees, Royalties and Levies) Regulations 2008*.

A Ministerial advisory committee, the Fisheries Cost Recovery Standing Committee (FCRSC), consisting mainly of industry members, was established to provide advice on the implementation and operation of the cost recovery program. The system set annual levies retrospectively, i.e. based on the services delivered in the previous year using an activity costing model, the Fisheries Activity Costing System (FACS). Staff recorded time using FACS against 93 categories of cost recoverable activities (including compliance and fisheries management).

Over time the system developed a number of critical flaws. The FACS activity categories became a poor match for the actual activities undertaken by fisheries staff so that levies had minimal relation to the costs incurred. Lack of agreement about the basis to amend levies led to significant under recovery of the actual costs of activities. It was difficult to interrogate the system to understand and explain why levies varied between years, hampering transparency and accountability. Being retrospective, there were limited incentives to get more efficient or for services to be responsive to industry comment.

In 2008, the FCRSC expressed concern about the accuracy and reliability of FACS data and made the recommendation to roll over levies based on the Consumer Price Index (CPI). The 2008/09 licensing year levies were based on FACS data for the 2006/07 financial year (the first year of full recovery), which were subsequently rolled over (with an inflation adjustment) for the 2009/10, 2010/11, 2011/12 and 2012/13 licensing years. This increased the discrepancy between recoverable costs and those actually recovered (see Fig 1). In view of the need for significant adjustments to levy values, the FCRSC recommended moving to a simpler, more transparent, forward-budgeting cost recovery system.

Figure 1. Level of under-recovery by service



The original system of cost recovery had evolved into a system that government, industry and the FCRSC were unsatisfied with. After extensive consultation with the FCRSC, the DEPI Economics and Social Research Branch published a comprehensive review of the cost recovery process. The review also recommended a forward budgeting approach to encourage both industry and the Department to focus on improving the effectiveness and efficiency of services provided. In 2012, following the completion of the review, the Minister for Agriculture and Food Security asked the Department to implement, in consultation with the FCRSC, a new, simpler, more transparent, forward-budgeting approach to cost recovery for the licensing year beginning 1 April 2014.

New approach – prospective recovery

The new approach was developed over 18 months in consultation with the FCRSC and led to the adoption of 11 cost recovery principles, which aligned with the Department of Treasury and Finance's Cost Recovery Guidelines (see Table 1).

Table 1. Victoria's fisheries cost recovery principles

<u>FISHERIES COST RECOVERY - Principles relevant to the design of a cost recovery system</u> [Agreed at FCRSC 5 September 2012]	
i)	Cost recovery systems should be designed to promote: <ul style="list-style-type: none">a. economic efficiency; i.e. improve the allocation of resources in an economy by providing price signals for service provision that incorporate all of the relevant costs; andb. equity; i.e. those that benefit from a government service, or contribute to the need for a service, should pay for the associated costs. Where a number of groups benefit from a service, costs should be apportioned.
ii)	The cost recovery system should be administratively simple and minimise operating costs.
iii)	Operation of the system, including planning for the provision and delivery of services, should involve well designed, cost effective, consultation with those paying for the costs of services.
iv)	There should be transparency about the nature, extent, delivery and cost, of services for which there is cost recovery.
v)	Operation of the system should promote opportunities for efficiency improvements.
vi)	Cross subsidisation between fishers and fisheries should be minimised.
vii)	Fee for service should be used where possible to directly recover the costs of transactions/services.
viii)	Between year volatility should be minimised in order to smooth costs to better enable businesses to plan.
ix)	Where resources are diverted to non-recoverable services (e.g. emergency services) or are materially under-delivered, a corresponding adjustment to future levies or future services should be made.
x)	The implementation of the system should include monitoring and periodic review.
xi)	The design, nature and extent of services should take into account the risks posed to the fishery and the value of production generated by the fishery.

A central aspect of the new system is that it is based on the principle that the costs of fisheries services are recovered from those who benefit from the service or contribute to the need for that service, i.e. industry pay for the cost of services that are delivered to support the commercial fishing industry; for example, commercial inspections, operating quota management systems, a proportion of stock assessments.

Secondly, based on the recommendations of the FCRSC and the independent review, the system was designed to be forward-looking or prospective. This means that levies are set for each fishery annually based on the expected level of service to be provided to each fishery in the forthcoming licensing year. This is a critical part of the system as it requires the Department to estimate the level and cost of services to be provided, which provides transparency and the basis for discussion with industry about the services to be provided. It is the discussion with industry that provides incentives for industry and government to work together to become more efficient in how those services are delivered, and reduce costs including considering alternative ways to deliver services. The Department will report quarterly against the delivery of milestones and deliverables expressed for each service, thereby providing accountability.

Thirdly, at the core of the new cost recovery system is a set of schedules that specify the service, deliverables, milestones and costs for each of the cost recoverable services (management, science, compliance and administration) provided to Victoria's 43 commercial fisheries (see Table 2 for an example). The schedules capture the nature and level of service estimated to be delivered to each fishery, on average, over a forthcoming four year period based on a consideration of risk in the fishery. The services have been

expressed on average over a forthcoming four year period to minimise between year volatility and provide certainty to industry. The level of service is expressed in terms of Full Time Equivalent staff time and operating costs of providing that service, multiplied by the level of recoverability, which provides the total recoverable cost for that service. This cost is recovered from the entitlement holders in the fishery by way of levies. The service schedules are critical to providing transparency in the new system. Government will report quarterly against the milestones in each schedule and provide a waiver or reduction against levies in the subsequent year where less than 75% of the service has been delivered, thereby providing accountability.

Table 2. Example cost recovery schedule

Description of Cost Recoverable Fisheries Regulatory Services for the Corner Inlet Fishery							
RESEARCH SERVICES							
Function	Description	Deliverables / Milestones	FTEs	Operating Costs (\$)	Total (\$)*	Rec.% **	Tot. Rec. \$***
Data collection, monitoring and analysis for assessment of key target species.	Collection of age/length data from sampling of commercial catches of key species (e.g. KG whiting, rock flathead).	Summary of data collected for the fishery to be provided by 31 August each year. Assessment for KGW to be held at least every 3 years and rock flathead and species other than KGW every 5 years. Annual reporting of standardised catch and effort fishery data provided by 30 June 2015-2009. KGW Assessment report provided by 30 June 2015 and 2017. Garfish assessment report provided by 30 June 2016. Calamari assessment report provided by 30 June 2017. Rock flathead and non-KGW Assessment report provided by 30 June 2018.	.2	9,000	41,197	50	20,598

* **Total cost of FTEs and Operating**

** **Recoverability %**

*** **Total Recoverable Cost**

These schedules also provide the platform to have a constructive discussion with industry about the services provided to their fishery, to identify scope for efficiency improvements and reduce costs. For example, through examining services under the new cost recovery system, the abalone industry has been discussing with the Director of compliance how to further reduce costs. The Department has been able to advise that implementing VMS would reduce costs by up to 50%. This would be a win for the Department by providing better information and more efficient compliance, and a win for industry by lowering compliance levies.

Compromise – partial cost recovery

Due to the high level of historic under recovery, applying the new approach derived levies that were in many cases much higher than those previously charged. The increases varied by licence class, with the levies for some fisheries estimated to increase by greater than 1000%. As a result a system of partial rather than full cost recovery was designed and consulted upon. The partial system was based on a number of concessions to reduce the impact on industry, particularly smaller fisheries, while avoiding cross-subsidisation between fisheries.

The significant concession was to phase the increases in levies in over three years. This amounted in a saving to industry in the order of \$2 million. Further concessions included the:

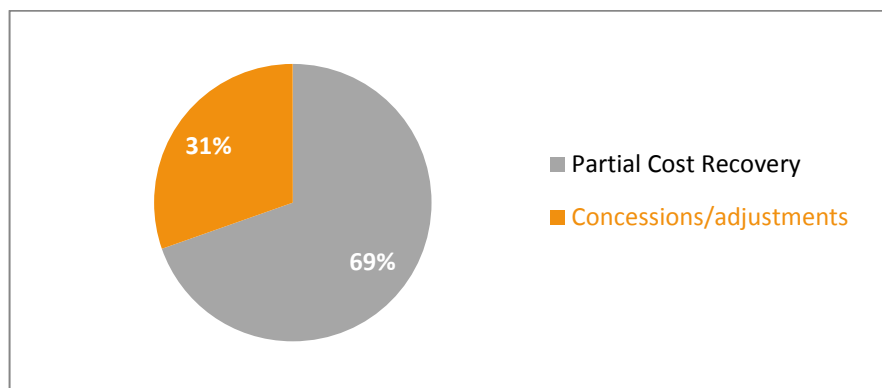
- exclusion of most compliance services from cost recovery (i.e. only recovering for commercial inspections not surveillance, investigations or intelligence);
- exclusion of the preparation of fishery management plans from cost recovery;
- adjusted recovery rates between commercial and recreational sectors for selected fin fish fisheries; and
- a small operator concession (Fishery Service levies capped at \$500 per licence for fisheries and aquaculture entities with average production less than 500kg per annum).

Despite these concessions the scale of levy increases for some fisheries still remained high. In response the Department went back and combed through each fishery, particularly the smaller ones, to see where services could be adjusted or removed while still achieving sustainable management objectives and considering the risk profile of the fishery. For example, based on discussions with industry the Department reviewed the approach to sampling and stock assessment in the Gippsland Lakes fishery. It was found that catch sampling could be tuned back and some parts of the stock assessments could be conducted bi-annually, both adjustments reducing costs without impacting on sustainability.

The system of partial recovery was compared against the status quo and full recovery in a Regulatory Impact Statement process, and was identified as the preferred option. The analysis of options, and the underlying regulations for the preferred approach, were independently assessed by the Victorian Economic and Efficiency Commission and released for 60 days public consultation. Seventy-six submissions were received and analysed by the Department. A number of further amendments were made following the consultation period, which formed the basis of the amending regulations.

The consequent fishery-specific adjustments and concessions amounted to a reduction in levies in the order of \$1.44 million or a 31 per cent saving on an annual basis when compared to the original estimation of total recoverable costs through the RIS process (see fig 2).

Figure 2. Fishery Victoria’s recoverable costs and concessions



Implications

Small operators

One of the particular challenges of designing the new approach was the impact for small-scale fisheries in a system where levies were related to the cost of services. The small operator concession was an explicit consideration of the impact of cost recovery on small fisheries, specifically the costs of services in relation to the scale of fishery and value of production. This aligned with Principle 11:

‘The design, nature and extent of services should take into account the risks posed to the fishery and the value of production generated by the fishery’.

However, while a measure relating to the value of production appears simple it raises complex issues, including the issue of getting reliable production data and managing incentives to under or over report. In many cases the value of production is not related to the costs of managing a fishery; some costs are driven by the existence of the fishery regardless of scale, while others are driven by the number of fishers in that fishery. Additionally, applying levies at a fishery scale does not easily recognise variance in levels of

production across individual operators. Basing cost recovery levies on the value of production also masks the price signal or incentive effect of charging the actual cost of services provided, which can erode incentives for both government and industry to increase efficiency and reduce costs. This tension reveals the tension between two, equally valid and important cost recovery principles:

Principle I – *‘economic efficiency; i.e. improve the allocation of resources in an economy by providing price signals for service provision that incorporate all of the relevant costs;’*

versus

Principle II – *‘The design, nature and extent of services should take into account the risks posed to the fishery and the value of production generated by the fishery’.*

An argument could be made that there is a public benefit to having certain small-scale fisheries to maintain economic activity in regional areas. If so, does the small operators concession in some way recognise this? Alternatively, does a subsidy, introduced by applying a small operator’s concession, undermine the price signals and efficiency that can be delivered by the cost recovery framework and provide incentives to under-report, thereby putting a ceiling on development? The answer depends in part on the economic objective of fisheries management. Is it maximising the economic productivity of fisheries or are there socio-economic objectives relating to the contribution small-scale fisheries make to regional communities and the diversity of commercial fisheries.

This concession recognises the contribution small-scale fisheries make as well as the relative risk posed by these fisheries. Principle 11 refers to designing services to not only take into account the value of production generated by a fishery but, importantly, the risks posed by the fishery. Risk-based fisheries management provides an opportunity to more cost effectively manage Victoria’s fisheries, particularly those that are small-scale.

Risk-based management requires information to base decisions on. In Victoria the reality is that, across many of commercial fisheries, particularly the small-scale fisheries, there is a low level of information to base management decisions on. Combined with clunky and out-dated, often multi-species entitlement arrangements and the ever pervasive pressure on government resources, this provides a further barrier to effective management of small-scale fisheries. In the positive, cost recovery can provide an environment to have direct discussions with industry about the cost of providing services, how to prioritise and direct those limited services, and how to better manage the fishery. This includes discussion about more cost effective ways to get stock assessment and monitoring data, and the role of collecting and using more fishery dependent information. In this way cost recovery can provide incentives for better small-scale fisheries management that is more responsive and risk-based, at a lower cost to government and fishers.

Capacity

Through a commitment to holding annual forums with each fishery the new approach to cost recovery provides for expanded consultation with individual fisheries. This change represents increasing engagement about cost recovery from a low base to quite complex discussions about services and costs in a way that hasn’t been directly contemplated by industry, or government before; in this way requiring significant change and the need to develop the capacity of both industry and government; for instance, in interpreting the service schedules for each fishery.

The new approach to cost recovery has a fundamental impact on the way government provides fisheries services, creating the need to develop the capability of staff to operate under the new cost recovery framework and broader cultural change. Staff need to be prepared and able to explain the detail of the services delivered, having a clear justification for where resources are directed, particularly across small fisheries that are too small to have dedicated fisheries managers and scientists. This can require very direct, and sometimes uncomfortable, discussions about the science and management interface. Providing greater transparency and accountability can also raise difficult discussions when industry disagrees with the research method or approach. It will take time to build capacity in both industry and staff to reap the long-term benefits of the new approach.

Conclusions

So the way forward? Difficult questions remain and there are no easy solutions. There are ongoing tensions to manage between cost recovery principles to manage, e.g. simplicity versus a system to provide transparency, accountability and deliver efficiency. How much consideration is given to the price signal effects versus scale and the value of production? There are ongoing tensions between government and industry, as we work to understand the new system and define the nature and extent of services provided to each fishery.

In Victoria, the new system began implementation from 1 April 2014. The increases in levies are being phased in over three years and a number of concessions have been applied. The first two years of the system are transition years are adjustment years to provide for refinement in the definition and costing of services provided. This marks the start of the next chapter of cost recovery in Victoria and the next few years will be telling to see if the new approach will deliver the benefits, and incentives, it was designed to achieve. It will reveal whether industry have the time and capacity to work with government to get costs down and increase efficiency, and whether as an organisation government can change its culture to operate adequately under this system.

The difficult question for small-scale fisheries remains - what to do if costs cannot be lowered further and are significant relative to the value of the fishery? Initial signs are that the new approach to cost recovery holds the potential to lead to better small-scale fishery management and that the two do not need to be mutually exclusive.

Discussion points:

- Effort expended on developing cost recovery for marginal fisheries where excess capacity exists may be better spent focusing on means to reduce capacity to return a fishery to profitability and therefore better able to meet management costs.
- In the Victorian case, the Government made a policy commitment to introduce cost recovery and were not concerned with industry rationalisation or increased profitability.
- The issue of public vs. private benefit should be a major consideration in the design of cost recovery systems.

WA Temperate Demersal Gillnet & Demersal Longline Fisheries.

Jodie O'Malley (Fisheries Management Officer, WA Fisheries)

Abstract

The Temperate Demersal Gillnet and Demersal Longline Fisheries (TDGDLF) is comprised of the West Coast Demersal Gillnet and Demersal Longline Interim Managed Fishery (West Coast Fishery) and the Joint Authority Southern Demersal Gillnet and Demersal Longline Managed (South Coast Fishery) and extends from Shark Bay in the north of West Australia to the West Australian/South Australian border.

Operators primarily use demersal gillnets, with some use of demersal longline, to target sharks. Although operators are permitted to fish from shore out to the 200 nautical mile Exclusive Economic Zone (EEZ) boundary, almost all fishing takes place in coastal waters. While they operate out to approximately the 100 metre depth contour, at many times of the year the fishing takes place in nearshore waters with fishing operations being visible from the coast.

The TDGDLF has an average annual Gross Value of Production (GVP) of around \$3.5m. The fish taken by the TDGDLF are supplied to both domestic and international markets, with the shark flesh and scalefish largely consumed domestically (often supplying local fish and chip and fresh fish shops with affordable fish) while shark fins are generally exported.

Although the TDGDLF is an intensively managed fishery, it is the subject of considerable and ongoing community and political interest and is often criticised in relation to a range of matters. Although some of these criticisms may be real (such as interaction with marine pinnipeds and potential impact on scalefish stocks) many are based on perception and are emotionally driven (such as gillnets being seen as 'walls of death' that kill indiscriminately and perceived shark "finning" practices). The key issues facing the TDGDLF include:

- managing interactions with threatened, endangered and protected species (TEPs) particularly Australian sea lions (ASL);*
- the ongoing management objective to ensure catches are sustainable and ensure the recovery of certain target species;*
- longstanding and significant user conflict with the recreational fishing sector and the community, including localised resource sharing issues and concerns particularly with respect to the catch of demersal scalefish (which are the subject of a long term recovery strategy on WA's west coast);*
- general community concern regarding the use of gillnets and the view that gillnets fish indiscriminately;*
- widespread concern regarding the sale of shark fins and the perception that the shark fisheries undertake the practice of 'finning' rather than utilizing all of the shark caught; and*
- managing the TDGDLF within budgetary constraints noting the Department of Fisheries (Department) collects only a limited amount of revenue from the fishery in the form of access fees (being 5.75% of the GVP of the fishery).*

Clearly the TDGDLF faces many challenges. This paper examines these issues and challenges in the context of fishery/resource sustainability, community benefit and cost-benefit.

Introduction

There are two demersal gillnet and demersal longline fisheries operating in Western Australia's temperate waters, the West Coast Demersal Gillnet and Demersal Longline Interim Managed Fishery (West Coast Fishery) and the Joint Authority Southern Demersal Gillnet and Demersal Longline Managed (South Coast Fishery). The West Coast Fishery operates between Steep Point (near Shark Bay) and Cape Bouvard (near Mandurah) and the South Coast Fishery between Cape Bouvard and the West Australian/South Australian border.

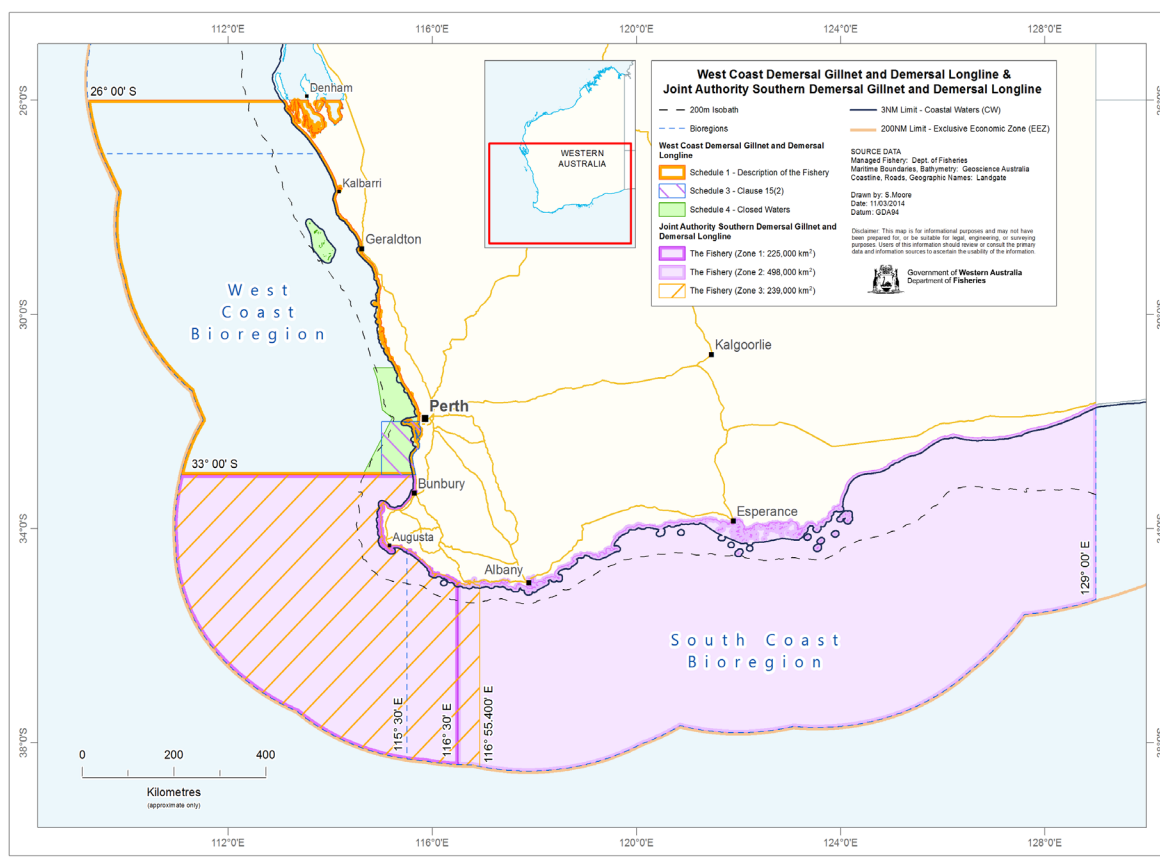


Figure 1. Management boundaries of the WA Temperate Demersal Gillnet and Demersal Longline Fisheries

These two fisheries are referred to and reported collectively as the Temperate Demersal Gillnet and Demersal Longline Fisheries (TDGDLF) due to extensive research demonstrating that they share key stocks.

The South Coast Fishery is managed under a joint authority arrangement with the Commonwealth Government, which under the Offshore Constitutional Settlement (OCS) delegates day to day management responsibility to the West Australian State Government. It consists of three management zones:

- Zone 1 extends southwards from Cape Bouvard (33°S) to Chatham Island near Walpole (116°30'S);
- Zone 2 extends from Chatham Island 116°30'S to the West Australian /South Australian border (129°E); and
- Zone 3 extends through Zone 1 (33°S) and eastwards just passed Chatham Island (116°55'40''E).

The West Coast Fishery is a state jurisdiction fishery and is not zoned.

Operators in both fisheries primarily use demersal gillnets and power hauled reels, with very limited use of demersal longline, and are permitted to fish from shore out to the 200 nautical mile Exclusive Economic Zone (EEZ) however almost all of the fishing takes place in coastal waters out to approximately the 100 metre depth contour.

The main shark species targeted in the TDGDLF are gummy shark (*Mustelus antarcticus*), dusky shark (*Carcharhinus obscurus*), whiskery shark (*Furgaleus macki*) and sandbar shark (*Carcharhinus plumbeus*). The key species within the West Coast Fishery are dusky and sandbar shark with the South Coast Fishery primarily targeting dusky and gummy shark while whiskery shark is an important component of both fisheries' catch. These four species have been selected as indicators for the status of the temperate shark suite as they account for approximately 80% of the TDGDLF catch and are representative of the range of life history strategies of the other shark species caught.

Scalefish is also a legitimate component of the TDGDLF catch. The 2011/12 catch information for the TDGDLF shows a combined total catch of 909 tonnes of sharks and rays. Of this, 723 tonnes were of the four indicator species (gummy 354 tonnes, dusky 233 tonnes, whiskery 102 tonnes and sandbar 34 tonnes). For the same period (2011/12) 150 tonnes of scalefish was taken, with 130 tonnes of this being demersal scalefish (50 tonnes in the West Coast Fishery and 79 tonnes in the South Coast Fishery).

The West Coast and South Coast Fisheries are regulated under separate although complementary management plans and are both managed through input controls and gear restrictions. Both fisheries' operate under individual transferable effort (ITE) arrangements where entitlement provides each authorisation holder with an amount of fishing time to utilise for the season (1 June until 31 May). The amount of gear operators choose to use determines the rate at which they consume their entitlement. Additional restrictions applying to mesh and hook sizes are designed to ensure juvenile sharks are targeted and to minimise the catch of demersal scalefish.

All boats operating in the TDGDLF are closely monitored by the Department of Fisheries' (Department) satellite-based vessel monitoring system (VMS). Operators must nominate to commence and cease fishing via an automatic communication locator (ALC). Nominations are used to calculate entitlement consumption. Fishers are also required to submit detailed daily trip catch and effort information to the Department.

The Challenges

Despite intensive management, the TDGDLF are the subject of considerable and ongoing community and political interest and are often criticised in relation to a number of matters, some 'real', some based on perception and emotionally driven.

Interactions with threatened, endangered and protected species

One of the key challenges is the interactions with threatened, endangered and protected species (TEPs) particularly Australian sea lions (ASL).

Under Part 13 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) it is an offence to interact with a protected species in Commonwealth waters unless fishers have a permit or the management arrangements for the fishery are accredited by the Commonwealth Minister for Environment. The Part 13 accreditation of the management plans for both the West Coast and South Coast Fisheries provides protection from prosecution for operators who may interact with TEPs.

Both fisheries undertake statutory TEPs interaction reporting under the EPBC Act and despite modelling indicating a very low interaction rate with ASL, the Department of the Environment (DotE) has expressed concerns that the TDGDLF do not have one hundred percent observer coverage to verify the interaction rate. In addition to this, DotE are under pressure from environmental non-government organisations (ENGOS) to impose similar management requirements to those recently imposed on the South Australian gillnet fishery (i.e. trigger limits and total area closures).

The Department has maintained that the TDGDLF operations are significantly different to the South Australian gillnet fishery, they operate over a much greater area, there is much lower fishing effort and the design and gear configuration of vessels used in the TDGDLF enables observation of ASL 'drop outs'. Despite this, and following lengthy negotiations between the Department and DotE, in August 2012 Part 13 accreditation conditions were placed on the TDGDLF. The conditions relate to:

- monitoring fishing effort around ASL colonies on an annual or per breeding cycle basis;
- investigating and implementing management measures to minimise fishery interactions with the species;
- independently monitoring and validating interaction rates with ASL when and where effort overlaps with foraging areas; and
- until such time as the population of ASL is reliably demonstrated consider areas that may require closures, or other measures, to safeguard small colonies (producing less than 4-5 pups per cycle) as well as those identified as having potential significant encounterability with fishing gear.

Although there is no timeline for addressing the Part 13 condition, it must be progressed to ensure the Commonwealth Minister is satisfied that active steps are being taken to address the issue.

In 2013 the Department established the ASL Working Group (the Working Group) to provide advice and guidance on the development of strategies to address the conditions. The Working Group has representatives from the Department (management and research), the Western Australian Fishing Industry Council (WAFIC) who are the peak representative body for the commercial fishing sector in Western Australia, industry (TDGDLF permit and licence holders), the Department of Parks and Wildlife (DPaW) (formerly the Department of Environment and Conservation) and an environmental non-government organisation which is currently the Conservation Council of WA. The Working Group is making progress in terms of addressing various aspects of the Part 13 condition and is currently assessing options, including on-board camera monitoring as a proxy for observers or closures around colonies.

Meeting management objectives

There is an ongoing challenge of meeting management objectives for the TDGDLF. Since 2006 a number of management changes have been introduced to ensure the sustainability of the TDGDLF and specifically to ease pressure on at-risk shark stocks particularly whikery, dusky and sandbar stocks that were at the time considered to be 'inadequate'. The changes include:

- reduced effort in both fisheries by approximately 40% (to 2001/02 levels) in line with shark sustainability targets;
- the introduction of a two month closure to protect pupping whikery sharks; and
- a maximum size limit (of 70 cm interdorsal fin length) for dusky sharks to protect their breeding stock.

Following implementation of these and a number of other measures not specific to the TDGDLF, the status of these indicator species has improved, the whikery shark stock is now deemed to be 'adequate' while dusky and sandbar shark stocks are considered to be 'recovering'.

Research currently underway in the TDGDLF includes a three year Fisheries Research and Development Corporation (FRDC) funded study into the four indicator species of the TDGDLF. This commenced in 2011 and upon completion will be used to inform further management of the TDGDLF. In addition to this, there is ongoing research and monitoring that involves the analysis of fishing returns and periodic sampling using fishery independent methods.

Community Standing

An ongoing challenge is resource sharing conflict with the recreational fishing sector, particularly with respect to the catch of demersal scalefish, and unease in the community generally, with gillnets widely viewed as 'walls of death', that fish indiscriminately and cause localised depletions of demersal scalefish.

The Department has consistently defended the TDGDLF as legitimate and sustainably managed fisheries. Despite this, individual TDGDLF operators have in the past, inflamed these views by deploying gillnets close to shore and key tourist and fishing locations and engaging in practices such as gutting fish close to swimming beaches. While TDGDLF operators are legally entitled to do this, this only adds 'fuel to the fire'.

On numerous occasions in the past local recreational fishing groups and coastal communities have mounted campaigns to remove gillnetting from areas adjacent to where they fish. In 2009, a community group known as 'Save Our Fish Stocks' (SOFS) began making a number of complaints regarding the operation of the South Coast Fishery, specifically in relation to its impact on the sustainability of demersal scalefish stock and localised depletion in areas adjacent to popular recreational fishing locations.

In response, the Department encouraged both WAFIC and Recfishwest, (WA's peak commercial and recreational sector bodies), to engage with relevant commercial and recreational fishers to consider the resource sharing issue and to mediate an agreed approach. The Department attended numerous community meetings to explain and answer questions regarding the nature and operation of the South Coast Fishery, however this seemed to do little to change the generally uninformed views of many recreational fishers that

the operators in the South Coast Fishery are not allowed to catch demersal scalefish and that the ‘gillnetters’ are responsible for the sustainability issues currently facing the demersal scalefish stock on the West Coast.

Despite there being no scientific evidence to support the group’s assertions, the SOFS campaign gathered steam. A petition with some 4000 signatures was presented to the Legislative Council, calling for a ban on commercial gillnet fishing in all ocean waters from Bunbury to Albany. WAFIC and Recfishwest failed to reach an agreed outcome between the two sectors and despite the fact that a prohibition of commercial gillnetting between Bunbury and Albany was not implemented, the SOFS campaign was a success in terms of harnessing that lack of community support for gillnetting.

Demersal scalefish sustainability

Demersal scalefish are a legitimate component of the TDGDLF catch. Successive stock assessments of the west coast demersal scalefish resource have shown that the stock has been subjected to overfishing and the levels of fishing effort and catch, by all sectors taking demersal scalefish in the West Coast Bioregion (WCB) (the region that runs from the Zuytdorp Cliffs, north of Kalbarri to Black Point, east of Augusta, refer to Figure 1) needed to be reduced by at least 50% (of the 05/06 catch) to allow the stock to recover. As a result of the 50% reduction an annual 40 tonne demersal scalefish target has been set for the West Coast Fishery and part of Zone 1 and 3 of the South Coast Fishery that operates in the WCB.

Although in recent years the catch of demersal scalefish by the demersal gillnet and longline fisheries in the WCB has reduced to just above the 40 tonne catch target, it is of concern to the Department that the catch reduction has largely been achieved by the low level of demersal gillnet and longline fishing on the west coast (only approximately 15% of entitlement was fished in the West Coast Fishery in 2011/12). Also of concern are the numerous reports received by the Department regarding the conversion of fishing effort to longline, with the intention of targeting demersal scalefish. The Department is closely monitoring these fisheries’ catch of demersal scalefish and have advised WAFIC and operators that should their demersal scalefish catch increase to levels significantly above the catch target (the allocated 40 tonne) management measures will be implemented to reduce this. It is expected that the Department will need to deal with this emerging concern in the near future.

Managing the perception around ‘finning’

The fish taken in the TDGDLF supply both domestic and international markets, with the shark flesh and scalefish largely consumed domestically while the shark fins are exported. However there is widespread concern regarding the sale of shark fins and the perception that the shark fisheries undertake the practice of ‘finning’ rather than utilizing all of the shark caught.

In order to export product these fisheries’ undergo Part 13A Wildlife Trade Operation (WTO) assessment under the EPBC Act. This assessment examines the fisheries’ operations to ensure they are sustainable (and specifically assesses bycatch and TEPs interactions). WTO approval was first applied for and obtained by the TDGDLF in February 2006. The TDGDLF has since been re-assessed twice and mostly recently re-accredited for WTO purposes in May 2012. The accreditation allows continued export of product from the TDGDLF for a period of 3 years. The current WTO expires on 28 August 2015.

Operators in both fisheries are required to land either whole sharks, or an equal number of shark trunks and sets of fins. There are penalties for illegally possessing sharks or rays (in the order of \$10,000) plus additional penalties of up to ten times the prescribed value of the fish that is the subject of the offence. Importantly, both the West Coast and the South Coast fisheries’ management plans specify port areas to ensure compliance efficiencies in the monitoring of product being landed. In addition to this, in November 2006 sharks and rays were listed as commercially protected fish which means their retention in most Western Australia’s non-target fisheries is prohibited.

Management of this issue is ad hoc. The Department responds to enquiries from members of the public or parliamentary questions and ensures the dissemination of the facts. Importantly, in the case of the former, the Department explains that these fisheries are effort managed fisheries which means the level of fishing effort is capped to achieve the desired catch outcome which relates to sustainability. Authorisation holders cannot fish more than the level of effort permitted under their current entitlement. Once individual entitlement has

been expended operators must cease fishing until the next fishing season and so irrespective of the market demand for fins, effort in the TDGDLF and therefore supply from the TDGDLF cannot increase.

Managing these challenges within budgetary constraints

The Department collects only a limited amount of revenue from the TDGDLF in the form of access fees being 5% of the Gross Value of Production (GVP) of the fishery (5.75% is collected however 0.5% goes to WAFIC and 0.25% to the FRDC). In most years the TDGDLF has a GVP of around \$3.5m, and hence annual revenue is approximately \$150,000. The TDGDLF are not cost recovered and resourcing of management, research and compliance staff, has been approximately \$300,000 annually.

Conclusions

Given the Department's limited resources and the many challenges of the TDGDLF faces, attempts to build social licence are seemingly futile. The advocacy role sits with WAFIC, who despite being well established and resourced are effectively silent on many of the issues and challenges the TDGDLF face. The reality is that the Department is fighting an ongoing battle with respect to many of the challenges, due largely to the fact that public opinion is difficult if not impossible to change with respect to emotive issues such as those presented by the TDGDLF.

Discussion points:

- If cameras used in the fishery they will be paid for by industry, but these and other costs are likely to be high relative to the value of the fishery,
- Fishers cannot transfer quota to cover increased scale fish catch.
- Outcomes from research carried out in the fishery has been slow to be translated into management action,

Managing controversial, small-scale fisheries in Queensland. Doing better than ‘business as usual’.

Anthony Roelofs (Department of Agriculture, Fisheries and Forestry (DAFF), Queensland)

Abstract

Two of Queensland’s small-scale fisheries face management challenges that could be considered greater than many other small and large scale fisheries in Australia. The Queensland Coral Fishery (about 30 operators) is based on the collection and export of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listed hard corals that are the basic building block that is the World Heritage listed Great Barrier Reef. The Queensland Sea Cucumber Fishery (two operators) relies on the collection and export of sea cucumbers, a species group that has a (very public) history of boom and bust fishing cycles around the world. Unsurprisingly, both fisheries continually have to prove their sustainability credentials against increasingly sophisticated lobbying from domestic and international conservation-minded stakeholders. These credentials are largely demonstrated through attaining Wildlife Trade Operation approval from the Commonwealth government under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and, in the case of the Coral Fishery, on successful non detriment findings for the targeted harvest of CITES listed corals. They provide two case studies for effectively managing small-scale fisheries with low management agency budgets and no cost recovery mechanisms.

Although there are differences in how DAFF achieved effective management of these fisheries, there are common themes for both. This paper provides examples under these themes that have helped put these small-scale fisheries on the front foot in a challenging operating and management environment.

Introduction

Two of Queensland’s small-scale fisheries stand out in terms of the challenges they provide fishery managers. The Queensland Coral Fishery (QCF), deals with the collection of protected, CITES listed hard corals while the Queensland Sea Cucumber (East Coast) Fishery (QSCF), derives its product from the poster boy for ‘boom and bust’ artisanal fisheries, sea cucumbers. Despite these public perception and sustainability challenges, both fisheries are considered well managed, sustainable and also relatively ‘high’ value. The QCF supports about 30 businesses and is worth about \$10 million in Gross Value of Production (GVP). The QSCF is one of Queensland’s oldest fisheries, currently supporting two businesses and is worth upward of \$5 million in GVP.

Although there are differences in how DAFF achieved effective management of these fisheries, there are common themes that have been followed with both. These are:

- A strong external driver for change
- Relationship building leading to strong multi-agency-industry partnerships
- An engaged, willing and transparent industry
- Innovative co-management approaches
- Building credibility and changing perceptions
- Garnering research support to grow fisheries beyond precautionary controls

This paper provides examples under these themes that have helped put these small-scale fisheries on the front foot in a challenging operating and management environment.

The driving force for change

Established fisheries generally don't undergo core management change unless faced with a strong driver. Over-harvesting of the target resource is often the reason for changing arrangements to cap effort or catch levels. This was not the case for the QCF and QSCF as unsustainable harvest was not a proven concern. However public perception that these mostly export fisheries were an unacceptable threat to the Great Barrier Reef provided sufficient 'evidence' for the Commonwealth to threaten closure of both fisheries. Rather than shy away and take a business as usual approach, industry participants from both fisheries engaged with management and demonstrated a willingness to adapt to ensure future viability.

Strong multi-agency-industry partnerships

Faced with closure, both the QCF and QSCF took similar approaches to reform their fisheries. Their motivation was clear—if they did not come together with a unified voice then they were unlikely to have a fishery at all. The first step was to create and/or solidify a peak representative group who were willing to work in partnership with the management agencies.

The QCF was historically managed through individual coral leases with most owners mainly interested in the viability and survival of their own patch, not the industry as a whole. There was low fisher participation and high latency of licence use. This fundamentally changed in the early 2000's after the implementation of the Commonwealth EPBC Act) when Federal Environment Minister Senator Robert Hill threatened to shut the fishery down by prohibiting the activity in the GBR. This provided the catalyst required to unite the industry, who within a short time galvanised their peak representative body, the Queensland Aquarium Supply Divers Association (now Provision Reef Inc.) and began working with DAFF and the Great Barrier Reef Marine Park Authority (GBRMPA) to come up with a precautionary and defensible management framework enabling the fishery to continue and grow. The fishery now has a strong representative voice which has been fundamental to its success.

Faced with a similar threat in 2003 to prohibit fishing for sea cucumbers in the GBR, operators formed the Queensland Sea Cucumber Industry Association and developed an innovative Rotational Harvest Strategy (RHS) to manage effort and mitigate local depletion risk. To strengthen the arrangement they embedded the details of the RHS within a Memorandum of Understanding (MOU) with GBRMPA and DAFF. The purpose of the MOU was to bind members to agreed actions, and broker co-management approaches to manage the fishery.

The two government agencies realised early on that there were potential benefits to the approach as the calls for shutting down the fisheries were not about actual sustainability issues, rather they were about perceptions. Both agencies are now happy to provide bi-partisan support of the fisheries in the face of constant threats for closure or restriction. The partnerships have proven very useful in successfully attaining WTO accreditations every three years for the last decade.

An engaged, willing and transparent industry

There is a keen desire by industry participants in both fisheries to do better. This is motivated by self-interest, securing future access and bigger returns, which is understandable, but there is also a desire to improve social acceptance ('social licence').

In the case of the QCF, this manifested in the development of a Stewardship Action Plan (SAP) for aquarium supply fisheries. As well as setting out a responsible code of conduct for collectors it also integrated into a multi-agency/industry response framework to tackle climate change impacts when they occur for the QCF. Not willing to rest on these responsible standards, the industry, through self-funding and grants, wanted to ensure the industry was doing the right thing when it came to ecological risk. Following the review of the Ecological Risk Assessment (ERA) in 2013, a new SAP was developed with standards aimed at mitigating newly identified risks. This was implemented within three months of the ERA workshop.

Without an engaged, willing and transparent industry, the MOU supporting the operation of the sea cucumber RHS would have struggled for traction. Recent exposure of the RHS to some bad press (and bad science) has motivated industry to work with DAFF to cement the voluntary arrangement under the MOU

into more formal management arrangements. This means non-compliance with the co-developed approaches will be a breach of their licence conditions.

Innovative co-management approaches

The spectrum of co-management approaches that can be applied to fisheries management is broad, ranging from low level agreements between managers and industry, to what is essentially a self-managed industry. The keys to success of any level of co-management are strong engagement and willing partnerships between managers and industry that are based on mutual trust and in some instances a flexible management framework (i.e. non-legislative). The QCF and QSCF provide examples of what can be achieved when the right ingredients are present.

Codes of conduct are neither new nor innovative approaches to demonstrating industry best practice. The Provision Reef-developed SAP commenced life as a code of conduct however it was quickly realised that this was not forward thinking enough in its approach. The industry understood there was a growing need to establish a 'social licence to operate' to deliver on community expectations for coral collectors to minimise their environmental footprint. The SAP was developed with the vision of improving environmental performance of the aquarium supply fisheries on the Great Barrier Reef. At its core, it enables both the operation of the fishery and the management that oversees it, to be flexible and to adapt to changing circumstances together. The recent review of the ERA for the fishery in 2013 provided the opportunity to test the adaptive ability of the SAP. Within three months, industry responded by developing practical, in-water actions for collectors to mitigate the newly identified risks.

The rotational approach to harvesting sea cucumber in the QSCF is an effort and harvest reduction strategy aimed at allowing repopulation after harvesting. The innovative component of the scheme is in the scale and the voluntary manner in which it has been applied. Dividing the fishery area into 156 zones based on reef and sea floor morphology is unique in the GBRMP and is proving its worth in terms of improved catch rates and reduced risk of localised depletion of the target species.

Building credibility and changing perceptions

The range of work undertaken by DAFF, the GBRMPA and the QCF and QSCF industries over recent years is helping build credibility and bust myths about the unsustainable nature of these types of fisheries. Both industries have been very mindful in what initiatives they support and participate in, knowing that their efforts will be scrutinised publicly. They understand that by raising awareness this will likely benefit the viability of the fishery in the longer term. Success in achieving these aims of changing perceptions can be measured in the reduction of the number of recommendations and conditions placed on these fisheries over consecutive EPBC Act assessments and by the decreasing number of negative media articles on the fisheries.

There remains much work to do to ensure the future viability of these fisheries. Environmental and sustainability benchmarks are continuously being raised and new challenges will ensue. The CITES listing process is a prime example of this state of flux as new listings are being considered annually and any member nation can challenge the sustainability credentials of those wishing to export CITES listed products. On-going export requires a non-detriment finding (NDF) for the species under scrutiny. In the case of collecting and exporting coral, DAFF and the industry are working closely with the Commonwealth to support the NDF and ensure the management arrangements are sufficient to mitigate risks and demonstrate resource stewardship. DAFF is also championing the development of national standards for the management of coral collection fisheries to ensure that exported corals from Australia, not just Queensland, are widely accepted by importing countries.

Garnering research support to grow fisheries beyond precautionary controls

Because the QCF and QSCF are considered small-scale, there is a tendency for them to be labelled as 'boutique' compared to traditional net, line and trawl fisheries. This has meant that finding funding to support research priorities for these fisheries has been difficult, although not impossible in the case of the QSCF. These are valuable fisheries, however, that need more research to increase social acceptance, answer identified knowledge gaps (or risk greater levels of conservative management), prove the validity of management approaches and to potentially grow the fisheries beyond the current conservative harvest levels.

It could be argued that the recent efforts of industry members, managers and scientists to raise the credibility and public acceptance of these fisheries has already resulted in some successes in the research funding arena. For example the FRDC-funded management strategy evaluation of the rotational harvesting strategy for the QSCF by the CSIRO has validated the approach in terms of mitigating risk to local populations of commercial sea cucumber species. The challenge now is turn this science into a model that can predict safe harvest levels beyond the current levels and grow the total allowable catch for the QCF.

Conclusion

It is easy to discount small-scale fisheries as ‘boutique’ and not legitimately in need of management and research support compared to bigger more traditional net, trawl and line fisheries. However it could be argued that small-scale and valuable fisheries provide great opportunities to develop successful management arrangements, mostly due to their small size. Small-scale means it is easier to engage at a meaningful level with the majority of the industry. In the case of the QCF and the QSCF this has resulted in greater levels of shared responsibility and understanding of what is required to ensure fishery viability. This has led to innovative co-management approaches which would have been difficult to achieve with large scale fisheries. The challenge for managers is to ensure that management frameworks at the legislation and policy level are flexible enough to support approaches such as those outlined in this paper.

Acknowledgements

I would like to acknowledge the following pioneers of change for these fisheries:

Queensland Sea Cucumber Industry Association – Rob Lowden, Grant Leeworthy, Chauncey Hammond

Provision Reef Inc. – Lyle Squire Jnr., Ryan Donnelly

DAFF – Brigid Kerrigan, Tara Smith, Megan Leslie

Great Barrier Reef Marine Park Authority – Margie Atkinson, Randal Owens

Commonwealth Scientific and Industrial Research Organisation – Tim Skewes, Eva Plaganyi

Minor Fisheries in Tasmania: a contrast in types.

Greg Ryan (Manager, Commercial dive, shellfish and marine plants, DPIPW)

Abstract

Minor fisheries are highly variable not only in the species and fishing methods but in the way they evolve. The point of inception where a new type of fishery is first identified and the first management steps introduced is critical to the efficiency and effectiveness of any fishery, having implications for decades.

For this reason, it is important that appropriate resources be allocated to any potential new fishery from the outset because once the commitment is made to formally manage a fishery it must satisfy legislative and environmental requirements.

This responsibility means that two key questions must be addressed before committing to the management of any new fishery:

- *Are the resources available to develop the fishery to an acceptable sustainable standard – for State, industry, species and environment?*
- *What are the benefits to the State?*

Introduction

The very nature of minor fisheries means that they have a very low priority in relation to **all** resources including funding, compliance, research, staffing and most importantly time. Development is often disjointed with “patches” applied from time to time over extended periods resulting in less than desirable outcomes, but what factors determine the evolutionary route of a fishery and what are the outcomes?

Good Management

The effectiveness and efficiency of management arrangements for fisheries cover the full spectrum from good to poor but what constitutes good management? There are probably a number of ways to respond to that question but generally good management strategies should cater for:

- maximising yield and efficiency;
- providing for a sustainable fishery;
- protecting the environment;
- creating a fair and transparent playing field for all stakeholders;
- considering the social licence; and
- providing clarity and consistency.

These components should all contribute to a managerial environment with minimal confusion and provide for good fisheries management but what are the key determining factors that allow these components to be incorporated into management?

Factors effecting development path

One of the most obvious factors dictating the development of a fishery is whether it is a major or minor fishery – how much money and how many participants are involved. Major fisheries are very much “in the face” of fisheries managers to make sure appropriate management arrangements are put in place quickly and effectively. They are highly political and heavily scrutinized ensuring they are given a high priority.

Minor fisheries on the other hand do not have the same capacity to place intense pressure on the Government to develop arrangements as quickly. Less money, fewer participants and less scrutiny allows the lower priority fisheries to have more flexibility in their development, opening the alternative path for managers to

concentrate more on the higher priority issues and put the minor fisheries on the “back burner”. This can set the development of minor fisheries on a very different evolutionary track.

This divergence in development can be further exacerbated by the high level of variability between the minor fisheries themselves with each having its own set of unique problems. The numerous combinations of variables which are specific to each fishery determine the level of complexity that needs to be managed but in the case of minor fisheries the available resources will remain at the same minimal level. Aspects such as:

- The number of species being managed - Is it single or multi species?
- Availability of target species - Are they seasonal or yearly, common or area specific?
- Existing knowledge base – How much is known and what research has been done?
- Are there similar fisheries elsewhere?
- What are the characteristics and behaviour of the species – are they fin fish, crustaceans, worms, molluscs, cephalopods etc.?
- Is there an overlap of jurisdictions?
- What is the habitat type - Cryptic or exposed? shallow or deep? inter tidal or sub tidal? rocks or sand? Seagrass? weed beds? estuarine? pelagic? demersal?
- Equipment - Is it selective or is there likely to be by-catch, is it destructive to the environment? is it efficient? is it expensive?
- How much interest will the fishery attract - from commercial fishers, other fisheries, recreational fishers, conservation groups, indigenous interests, local communities etc.

When these factors are combined with the fact that regardless of the level of complexity associated with a minor fishery, it will still rate as a low priority in relation to all resources including:

- Compliance - Compliance officers are generally concentrating efforts on the more high profile activities. It would be most unlikely for officers to be sidetracked from an abalone operation to look at some suspected illegal activity associated with periwinkles;
- Research - ways often need to be found to “piggy back” on research of the larger fisheries. This can make it difficult to set meaningful TACs, size limits or zoning arrangements so that the fishery needs to rely heavily on the precautionary principle.
- Data systems - must be kept as simple as possible with no bells and whistles. Much of the assessment of data must be done manually by the manager without electronic assistance that may be available to higher profile fisheries. Zoning and quota arrangements are generally kept to a minimum.
- Staff and administrative arrangements - Perhaps most importantly of all, in many cases little time or support can be allocated to the development of the fishery.

With the varying degrees of complexity across the full spectrum of fisheries and the marked difference in resource allocation between major and minor fisheries, it seems apparent that the evolution of fisheries management arrangements will differ markedly from one fishery to the next.

This lower priority associated with minor fisheries makes it very enticing for managers to adopt a “piecemeal” approach to minor fisheries but such an approach can have serious consequences for long term management. The temptation is to get the less pressing matters “off your plate” quickly so the higher profile tasks can be dealt with. However, the piecemeal approach can amount to slapping “quick fix patches” on problems as they arise with no consistent strategy or view of the long term bigger picture.

Problems resulting from quick and easy - the piecemeal approach to management

The piecemeal approach seriously jeopardizes the likelihood of achieving a number of the goals that contribute to good management. Maximising yield and efficiency for the entire fishery is unlikely when only focusing on small pockets or specific situations as they arise while largely ignoring other issues and areas and such an approach hardly provides for a fair and transparent playing field for all stakeholders and it certainly does not promote clarity and consistency within the fishery. In addition, each “patch” that is

applied only adds further to the overall complexity of the fishery, all of which reduces the prospects for the creation of a social licence.

This reactive management approach tends to lead to rushed decisions and in some cases, over arching or supplementary legislation can be inadvertently overlooked or applied incorrectly.

A further compounding issue of fixing parts now and then is that the drawn out development often promotes disjointed staff ownership with different people addressing issues in isolation. Staff members are eager to hand over the lower profile fisheries to new comers so they can move on to more “important fisheries”. This lack of ownership contributes to the difficulty in developing strategies to gather research funds from industry leaving few alternatives to promote any research as there is no industry money available as a “bargaining chip” to contribute to joint projects.

The drawn out development of formal management arrangements also results in loss of the reasoning behind earlier decisions and as staff continue to rotate, consistency in decision making continues to distort within management.

Further complicating matters, is that stakeholders tend to assume any management arrangements which they find beneficial, are there in perpetuity, even if the arrangements were introduced as a short term measure. Once a strategy has been implemented, it is near impossible to have it rescinded unless change is supported by industry.

The end result of the piecemeal approach is generally CONFUSION - for stakeholders, department compliance, interest groups, EVERYONE!

An illustration of differing evolutionary paths and the final outcome

The good and the bad management arrangements that can result from the differing evolutionary paths can best be demonstrated by comparing two minor fisheries with very different development strategies.

1. **The minor shellfish fishery** consisting of wild Pacific oysters, *Angasi* native oysters, *Katelaysia* cockles and *Venerupis* clams was identified early in the piece as a possible emerging fishery giving it the opportunity to develop through a rigorous trial and assessment permit period; and
2. **Marine plants/algae fishery** consisting of cast kelp, cast seagrass and other cast seaweed and *Undaria Pinnatifidia* which has stumbled along with ad hoc decisions being made over the past 40 years and once introduced, these arrangements have proved to be difficult or near impossible to retract.

Minor Shellfish Fishery – resourced development

The minor shellfish fishery was developed under a permit system over 15 years with adequate time and staff allocated to progress development. The permit system made it clear to participants that the fishery was on a trial basis and subject to changes by the Department. Over the trial, the Department was able to gather important data from participants which allowed meaningful TACs to be determined, size limits for the various species and an appropriate zoning system to be put in place. The versatility of permit arrangements and the staff dedicated to the purpose meant that data from industry could be requested as required and fishing pressures and practices adjusted through the temporary permit arrangements to best provide for good management.

Over the development period, the Department was also able to consult with interested parties and find consensus on issues such as survey strategies, licensing arrangements, reporting requirements and gear restrictions outside of the high pressure environment often promoted through piecemeal arrangements. The development strategy has allowed a formal management plan to be introduced in concert with all other relevant Rules and Regulations.

All stakeholders can feel they have been able to contribute to solutions and have been part of the process to help develop log books and acceptable fishing practices. Licensing arrangements have provided for full cost recovery and a viable, sustainable fishery.

The process followed in developing the fishery has resulted in clear and defined policy and legislation which has ticked all the boxes:

- maximised yield and efficiency; ✓
- provided for a sustainable fishery; ✓
- protected the environment; ✓
- created a fair and transparent playing field for all stakeholders; ✓
- considered the social licence; ✓ and
- provided clarity and consistency ✓

Marine plant/Algae Fishery – Piecemeal approach

The marine plant fishery has not operated under a permit arrangement but opted to issue licences to interested parties from the outset some 45 years ago. It has been evolving since then and over that time there have been dozens of staff members contributing to the strategies in place to date. Most of these staff were involved with managing higher profile fisheries and were only available to dedicate limited time to its management.

The results have been predictable in that issues have been addressed in isolation. The ad hoc solutions have lead to inconsistencies in the management approach and in some cases related fisheries legislation had, until recently, not been strictly applied.

Endorsements on licences have inconsistencies with some areas being managed through the harvesters and others through the processors.

In the past there were also some exclusivity arrangements put in place by various means, some of which were intended as a temporary approach. These have now been taken by beneficiaries to be permanent rights which have been further complicated by sales arrangements based on transferability of exclusivity arrangements. Existing arrangements such as these, have made it very difficult to introduce a formalised management plan with past attempts having been thwarted by stakeholders claiming the rights and undertakings made to them with previous arrangements were agreements they have with the Government which must be upheld.

The result of no formalised management plan is a fishery that has been virtually fully subsidised and in most State areas, has not been able to provide any meaningful data on fishing operations to help progress the fishery. There is considerable confusion in the fishery for processors, harvesters, compliance and the Government and this has helped to fuel instances of disorderly conduct amongst harvesters as processors who are wrangling for access to the resource. Overall, the score card for marine plant good management would not read well:

- maximising yield and efficiency; **X**
- providing for a sustainable fishery; (not applicable – cast weed only)
- protecting the environment; **X**
- creating a fair and transparent playing field for all stakeholders; **X**
- considering the social licence; **X** and
- providing clarity and consistency **X**

Minor Fisheries – a stigma or condescending attitude?

With the low prioritization for minor fisheries there appears to be a type of stigma or condescending attitude from various quarters. This is not a surprising response but to some extent should be expected. Money talks and people prefer to concentrate on the big ticket items often viewing the smaller enterprises as more of a distraction.

It is not uncommon when attending a meeting with representatives from both major and minor fisheries to observe the “class differentiation”. This becomes obvious when someone from one of the smaller fisheries attempts to put forward a view but in some cases is stopped in his/her tracks by a representative from a major

fishery who, more often than not, will start the interjection with “well with all due respect in relation to your fishery etc etc.....” . As always, such a beginning to a sentence preludes anything but a statement of respect and the major fisheries continue to steamroll over the top of the smaller players.

A similar approach can also be seen within Departments and agencies. Under circumstances where an urgent issue arises, the first meeting to be postponed will predictably be the minor fishery. A difference in staff attitude to fishery classes can also be apparent when reference to minor fisheries can be met with a degree of derision by some workers.

These attitudes and reactions are understandable and in some cases reasonable because as we all know money talks, so major fisheries need to take the highest priority but the other side of the coin also needs to be considered.

The other side of the coin

It must be recognised that once the Government commits to formally manage a minor fishery it has a legislative requirement to manage that fishery in just as an efficient and sustainable manner as any major fishery.

The importance of the minor fisheries to the stakeholders also requires the Government to take that commitment very seriously. The fishery still feeds families and represents a substantial investment into licences, equipment and lifestyle by all the fishers involved and the stakeholders, the environment and the target species are all entitled to the same level of management as the major fisheries.

Conclusion

All or nothing! It is important that “appropriate” resources be allocated to any potential new fishery from the outset (but is it always possible?).

Before a Commitment is made to formally manage a new fishery, managers must first answer two very important questions:

- 1. Can the Government make the commitment to a formal fishery? Are the resources available to develop the fishery to an acceptable managerial standard – for State, industry, species and environment?**
- 2. What are the benefits to the State?**

Discussion points:

- Many small-scale fisheries suffer from over capacity, which tends to erode profitability and create a range of management problems (erosion of rent/profitability, compliance, ability to meet costs of management etc). Experience in SA has shown that there are a number of means to address overcapacity which include: Government or industry funded buybacks, full cost recovery such that holders of latent effort sell out, and creation of tradable rights to enable adjustment through market mechanisms.
- Allocation of previously poorly defined rights and cost recovery are preferred mechanisms to deal with excess capacity.

Challenges and opportunities for the NSW charter fishing industry.

Geoff Barrett (Senior Fisheries Management Officer Charter Boats, NSW Fisheries)

Abstract

The NSW marine and estuarine recreational charter fishing sector provides a unique service and enhances the fishing opportunities of recreational fishers. Recreational charter fishing boat operators derive a profit from the use of fishery resources by providing fishing expertise and well-equipped boats to enable anglers to maximise their fishing success across a range of fishing types and species, and to access areas not normally available to them.

In November 2000 a licensing system was introduced with a view to enhancing viability and sustainability in the industry. Charter fishing boat licences were capped at 276 with estuarine fishing, nearshore bottom fishing and sportfishing, gamefishing and deep sea bottom fishing endorsement classes.

It is a requirement under the NSW Fisheries Management (General) Regulation 2010 that charter fishing businesses record all aspects related to the conduct of an endorsed activity. This presents the opportunity to not only collect information to monitor the status of the charter fishing sector but to collect data essential to the NSW fisheries resource assessment process. Currently this information is gathered exclusively via a self-reported 'logbook' system. Deficiencies and probable biases exist in the current system that requires creative solutions to overcome.

The interests of the industry are served by the Marine and Estuarine Recreational Charter Management Advisory Committee (MERCMAC).

Legislative changes to the NSW Fisheries Management Act 1994 (the Act) are in progress that will provide flexibility for charter fishing business arrangements in the future.

Introduction

Licensing was introduced in the year 2000 and in an attempt to ensure viability of the charter fishing industry and sustainability of the stocks and was capped at 276 businesses. 32 of these were issued as non transferable licences as they were considered to be part time operations based on demonstrated history. Many of these are now considered as latent effort (i.e. inactive businesses). A program to remove this and other latency is currently under consideration.

Up to four endorsement categories were allocated to each business, including estuarine fishing, nearshore bottom fishing and sportfishing, gamefishing and deep sea bottom fishing. These endorsements are described in the Act around a suit of species rather than by spatial or geographic terms.

Charter vessels are required to be 'in survey' based on Transport for NSW's Roads and Maritime Services regulations. The number paying fishers permitted on each vessel was allocated originally based on the survey safety requirement of the vessel at that time.

In terms of its position within the fisheries of NSW, the charter fishing industry sits somewhere between the commercial and recreational fishing sectors with regard to legislation and demands on the resource (Table 1).

The charter sector is a relatively small group of licenced professional operators compared to over 1000 commercial fishing businesses and an estimated 1 million recreational fishers in NSW. Participants in the commercial and charter fishing sectors operate as businesses, with both sectors formally licenced by the NSW Government. Recreational fishers pay a recreational fishing fee, but this is not recognised as a licence or right to fish in a formal sense.

All sectors are represented by advisory committees. The charter fishing industry is represented at the state level by the Marine and Estuarine Charter Management Advisory Committee (MERCMAC).

In terms of resource allocation, the commercial fishing sector is served partly by quota management and input controls, a system of licenced endorsements and regional zoning. The industry is strongly supported both at the state and federal level. Individual charter fishing businesses compete within the sector and between sectors. The commercial fishing industry has traditionally been eligible for monetary compensation as part of various industry reform initiatives. Recreational and charter fishing sectors have not been entitled to compensation for loss of access to the resource in the past.

Data collection is mandatory for both the commercial and charter fishing sectors via formal logbook programs. Commercial fishers provide catch records that are subject to verification at the port and/or market level. Recreational fishing data is generally obtained through on site creel surveys and periodic off site studies.

Table 1. NSW fishery sector comparison

Issue	Commercial	Recreational	Charter
Size of Sector	>1,000	~1,000,000	~270
Run as a business	Yes	No	Yes
Formally licenced by Fisheries NSW	Yes	No - Recreational Fishing Fee receipt required, unless exempt	Yes
Represented by formal government committees	Yes	Yes	Yes
Commercial vessels	Yes	No	Yes
Capped participants	Yes	No	Yes
Sell product	Yes	No	No – provide service
Resource allocation	Well understood and strongly supported. Compete with other commercial fishers and other sectors.	Not well understood and shared between recreational and charter fishing sectors	Not well understood and shared between recreational and charter fishing sectors Compete with other charter operators and other sectors.
Eligible for buy-outs	Yes	No	No
Mandatory data collection	Yes – catch records	No – survey data gathered	Yes – but issues with catch records
Recreational bag limits applicable	No	Yes	Yes
Needs from fishery	Kilograms of product and good price for product	Good quality fishing i.e. plenty of bites and good quality fish	Good quality fishing i.e. plenty of bites and good quality fish. Good client service delivery.
Demand	Fluctuates but highs and lows recognised by operators	Highs and lows part of fishing	Consistently high expectations from operators, but weather and seasons have an impact

Challenges for Charter Fishery Management

It is a legislated requirement that charter fishing operators report all catch and effort data to NSW DPI. At present, this is achieved via a logbook system. This system has seen numerous iterations that have ranged from a need to measure and record all fish retained, while also identifying species and providing an accurate count of released catch; to the simpler current system that requires only a count of retained catch along with the number of paying anglers and time spent fishing be recorded. This simplified logbook system collects basic catch and effort data and has reduced much of the reporting burden imposed on each business. Currently there is no requirement for the charter industry to provide fish lengths of retained catch and no coordinated system exists to verify data that is collected.

Any self-reporting system of this type suffers from inherent biases, ranging from recall bias to variation in fish identification skills. Presently, operators are issued with a comprehensive fish ID kit developed for recreational creel surveys. This has substantially improved the identification of the majority of species encountered by the charter sector, however does not use the nationally recognised coding and nomenclature system as used by the NSW commercial fishing sector. While not insurmountable, such inconsistencies present difficulties when attempting to amalgamate recreational and commercial catches for use in resource assessment.

The proposed a carrot and stick approach

“The Stick”

Close links have been established with our fisheries compliance branch and a dedicated charter fishery compliance officer has been appointed to assist with charter fishing sector issues. A “Cloud based” charter industry database has been established to allow real time access to up to date information for regional field officers via personal digital assistant or iPad.

A check list has been developed by the charter fishery compliance officer to promote a standardised approach by district officers to charter vessel inspections across the state, with an emphasis on logbook compliance. It is anticipated that logbook compliance rates will lift substantially as operators become aware of a sustained targeted campaign by our compliance branch.

“The Carrot”

NSW DPI has developed an online business services portal for the commercial fishing sector called “FishOnline”. This web portal is reducing layers of red tape by streamlining financial transactions and allowing mandatory reporting obligations to be met online either via personal computer, tablet or smart phone. DPI is currently adapting this system for use by the charter industry and preliminary trials of the smart phone application are expected to commence in the next few months. Early indications from the industry are very positive and wide acceptance is anticipated.

Legislative changes are currently being progressed to provide increased flexibility for individual businesses. As part of these industry reforms, a business will be able to operate from a different vessel on a regular basis to suit business needs, for example, to take advantage of the most appropriate vessel for a particular fishing type e.g. use of a small vessel for estuary fishing as opposed to ocean-based fishing activities onboard a larger boat. This flexibility will not allow vessels to operate simultaneously as separate charter fishing trips under a single business authority, as that would significantly inflate overall effort by the sector.

Further, the industry reforms propose to permit the trading of seat allocations between existing businesses, which will provide greater flexibility and add economies of scale to some charter fishing businesses.

Currently a series of face to face port meetings are underway to strengthen the working relationship between industry and government while informing operators of emerging priorities.

Conclusion

So why do we care?

Why bother putting so much effort into data collection from the NSW charter fishing industry? The NSW DPI Fisheries Resource Assessment Working Group has identified the need for long term, reliable catch and effort data from the recreational fishing sector. Accurate records of charter fishing activities in NSW will help provide this. Planning is underway to use a network of well trained professional port monitors to accurately identify charter boat catches to species level, and measure and record these catches at the completion of selected fishing trips. The opportunity presents itself to not only restore confidence in the reported charter logbook data but also to provide high quality length frequency data on recreationally important species.

This further presents the prospect of collecting biological samples from selected species of special interest. The proposed future use of electronic pre-trip reporting then becomes pivotal as it will enable the efficient allocation of research resources. Put simply, we will know in advance where charter fishing effort will occur and be able to direct resources accordingly.

High quality data collection from the charter fishing sector will be essential to quantify the impact of the industry on the resource. It will aid in estimation of recreational catch and effort across the state and provide a stable source of information upon which general resource management and resource allocation can be based. Ultimately, the primary goal is to ensure the long term viability of the recreational charter fishing industry in NSW, as well as the sustainability of the fisheries resources on which the sector depends.

The Port Phillip Bay Scallop Dive Fishery: Innovative Approaches To New Small-Scale Fisheries.

Kylie Wohlt and Mark Edwards (Fisheries Victoria, Department of Environment and Primary Industries)

Abstract

Victoria has established a new small-scale scallop dive fishery using a revised framework for developing fisheries. The framework encourages industry led development of the fishery, and introduces innovative management approach to ensure cost effective fisheries management.

The key characteristics of the framework are:

- *Government determines a conservative catch level and specifies baseline management standards to achieve sustainability and compliance objectives;*
- *the entitlement is immediately introduced into a quota management system and the licence and quota is allocated by auction to a single entity;*
- *the entitlement holder makes investment decisions on the further development of the fishery, consistent with the prescribed management standards; and*
- *Innovative management tools assist in keeping the costs of managing the fishery low.*

The scallop dive fishery was established following a period of public consultation. Because of the small-scale of the fishery, and the need for a coordinated approach to management, only a single licence was issued. It is hoped that this approach will enhance the stewardship of the resource and remove competition between entitlement holders with opposing business objectives. Consistent with national competition policy, entitlements were allocated by a competitive mechanism – a public auction.

Traditional approaches to developing a new small-scale fishery involve the authorisation by an early exploration permit, with an intention that the fishery will later be transitioned into a developed or licenced fishery over time. In contrast, Victoria has established the new scallop dive fishery within a quota management regime with the allocation of a licence and quota from the outset. This approach helps provide protection against overcapitalisation and overfishing and avoids contention over recognition of rights to early entrants if a development process using permits or other temporary authorisations is used.

This new fishery will be developed using a staged industry-led approach within the quota managed regime. Government has not invested in proving up the resource (e.g. through stock assessment), but has instead ensured sustainability and compliance objectives are achieved through prescribing conservative baseline arrangements. Beyond this, it is left to industry to take the initiative to grow the fishery beyond the baseline arrangements.

Introduction

Fisheries Victoria has been developing a new approach to allocating new commercial entitlements to develop small unutilised wild catch fisheries. The approach aims to ensure future access to Victoria's fisheries resources is provided in an efficient, effective, equitable and ecologically sustainable manner.

The opportunity to apply a new approach arose from a decision to allocate access to a new commercial scallop dive fishery in Port Phillip Bay. This paper describes the innovative combination of mechanisms which Fisheries Victoria applied to develop the fishery in a sustainable and economically rational manner which provides incentives for development, will allow the trial of new technology and will reduce transaction costs for the fishery.

Important characteristics of the scallop fishery in Port Phillip Bay

The decision to establish a Port Phillip Bay (PPB) scallop fishery provided the first opportunity to apply a new approach to establishing a new fishery. Scallop fishing in PPB is not new. A scallop dredge fishery began operating in PPB in 1963 and rapidly expanded before crashing in 1969. The fishery quickly

recovered but, as is typical of most scallop fisheries, catch rates were highly variable (mostly between 18–1655 tonnes meat weight per annum) and even dropped to levels where the fishery was closed between 1989–1990 (Coleman, Walker, and Peters 1997). In the final year of the fishery, 84 vessels were licenced to fish in Port Phillip Bay. Following a high level of concern regarding environmental degradation caused by dredging, PPB was closed to dredge fishing in 1998, and compensation paid.

We know therefore, that PPB can support a profitable, although variable, scallop fishery. Today, although the bay has likely changed considerably since the closure of the dredge fishery due in part to the introduction of exotic species, scallops are a commonly sought recreational species within the bay and good catches are reported. The fishery is proximal to the top-end restaurant markets who are keen to source local product and are prepared to pay a premium. Such restaurants can capitalise on the environmentally benign method of harvest.

Although the basis for a sustainable fishery is evident, although not empirically proven, there are a number of important factors that had to be taken into account when developing the regime.

- Port Phillip Bay is a high use area including aquaculture reserves, shipping channels and recreational boating and fishing.
- PPB supports an important recreational scallop fishery (although recreational catch is unknown);
- Establishing a new commercial fishery in PPB is potentially politically sensitive with ongoing lobbying by recreational fishers to remove commercial netting from PPB;
- PPB supported a scallop dredge fishery which was closed in 1998 for environmental reasons;
- The fishery has an unknown stock status; and
- There have been multiple parties making a claim for the fishery over many years because they were either a former dredge fisher, had previously applied for a permit to develop the fishery or have lobbied the government to establish the fishery.

Principles for allocating commercial rights to a new fishery

Many jurisdictions around the world grapple with how to best develop new fisheries. Resources are often focussed on managing existing fisheries, and fisheries may be left languishing in a developing stage, with few incentives for investment or development. Given this, Fisheries Victoria made the decision to apply a new approach the development of new fisheries. This approach incentivises investment by the fisher to develop the fishery within a more secure rights regime. To enable this, a set of principles were developed and applied to establish the scallop dive fishery in Victoria. It is hoped that these principles will guide the development of future new fisheries identified for development in Victoria.

- Protect the existing rights of recreational fishers and other resource users;
- Allocate access to the commercial fishery in a way that provides a secure entitlement;
- Access to new fisheries, with no history of commercial catch, will wherever possible, be allocated using a competitive allocation mechanism such as an auction;
- Enable a coordinated industry approach that facilitates shared investment in developing the fishery and collaborative efforts to operate the fishery in a productive and efficient way;
- Assign industry a significant role in managing and financing the development and operation of the commercial fishery in order to align the investment risks and create stronger incentives for innovation in the management of the resource;
- Focus government's role on specifying baseline management standards to protect the fish stock, appropriately share access to the resource and address substantive compliance risks; and
- Simplify the design of the fishery arrangements in line with the probable size of the fishery, including simplifying reporting arrangements.

Application to Port Phillip Bay Scallops

To address the challenges posed by the characteristics of PPB, and consistent with the guiding principles, a number of key reform elements were introduced to establish the scallop dive fishery.

Defining secure entitlements

Well-designed access regimes provide positive incentives to invest in the stewardship, management and development of a fishery. They establish clear accountabilities for entitlement holders and have a strong influence on the ability to deliver cost-effective management and economically efficient outcomes.

Based on experience with fisheries regimes around the world, it has been shown that management systems that regulate according to quantitative catch limits, for example using a quota management system (QMS), can most effectively constrain harvest and allow economically efficient use of resources.

The scallop dive fishery was therefore immediately placed within a quota management system with the specification of secure rights and the creation of fees and levies consistent with Victoria's new cost recovery regime. No permitting phase was authorised to develop the fishery hence avoiding contention over recognition of rights to early entrants if a temporary permit phase is issued. Additionally, this approach prevents a rush to create catch history under permits in the hope that catch may be recognised when/if a fishery is transitioned to a more secure entitlement.

All future development of the fishery will now occur within the secure rights regime of the QMS. Given this security of rights, the fishery licence holder will be more likely to invest in development activities such as growing markets, purchasing equipment and applying innovative techniques which is often difficult when operating under a temporary authorisation such as a permit.

Fair allocation

The mechanism to allocate a fishing entitlement should provide objectivity in the allocation in order to avoid the cost and potential challenges of processes that arise when there is discretion in decision making. The resource should also be allocated to the users who value it most. Tenders and auctions are the most widely used mechanisms to efficiently allocate entitlements in natural resource industries.

The scallop dive fishery had multiple parties interested in the fishery over many years. Because of this, and consistent with national competition policy, the entitlement was allocated by auction to allow all interested parties to have an opportunity to gain access. The auction assisted in the recovery of costs incurred in establishing the fishery and provided an opportunity to collect a resource rent.

Before holding the auction, an Expression of Interest process was run, inviting interested parties to submit an application to attend the auction. This was the administrative tool we used to identify interest parties and to coordinate fit and proper person assessments.

How many entitlements?

In determining the optimal number of entities to be involved in operating the fishery, a number of models were considered. The TACC could have been split into portions and an auction mechanism used to distribute the portions. However, a key feature of the scallop fishery, and potentially other small fisheries, was establishing a mechanism to ensure coordinated decision making across entitlement holders with varying aspirations for growing the fishery. In the case of the scallop fishery, given there were no incumbents in the fishery, it was decided that the benefits of a single ownership or sole ownership corporation, far outweighed the limitations (such as a restricted market for trade or leasing of quota) of such an arrangement.

New fisheries will generally be small in scale, therefore allocating to a single entity provides efficiencies for Government and the quota owner in the ongoing management of the fishery. The benefits of highly coordinated harvesting of sessile species, and the need for potentially expensive food safety authorisations and enhanced stewardship incentives mean that allocated to a single entity was the optimum arrangement for both the licence holder and government. Therefore, the entitlements to the fishery were auctioned to a single entity (individuals, cooperatives or single corporations could have participated).

In recognition of the high level of interest by multiple parties, to facilitate a collective approach, as part of the Expression of Interest process a contacts register was established where individuals could register their interest to receive information and, if they chose, agree to share their information with other interested

parties. This way, people had the option of forming cooperatives and pooling resources to bid for the fishery.

The single entity will have exclusive on going commercial access to the fishery and will be responsible for developing improved management arrangements. The fisher will directly reap the benefits of careful stewardship and investment.

Industry led development

Fisheries in Victoria are managed in a resource constrained environment. There is little discretionary funding to be applied to assessments or development work for fisheries with unknown potential. Addressing sustainability risks for new fisheries requires either the setting of a conservative initial catch level or setting a higher catch but undertaking a significant investment in data collection and assessment prior to the commencement of fishing. For this fishery it was decided to take an industry led approach whereby

1. Government sets a conservative catch level and specifies baseline management standards to achieve sustainability and compliance objectives
2. It will be up to the entitlement holder to take the initiative and make the investment decisions to grow the fishery beyond the conservative baseline management arrangements. Specifications for growing the fishery have been developed to guide this development to ensure sustainability and compliance objectives are achieved, whilst allowing for innovation and flexibility for the entitlement holder.

Given the multi-use nature of PPB and the strong opposition to the former dredge fishery in the bay, it was important that the fishery was set up to ensure the broad interests of the community were addressed and environmentally benign methods employed. This was achieved by authorising dive only methods of fishing and creating two Scallop Fishing Commercial exclusion zones to protect the interests of recreational fishers. There were no changes to the arrangements for the recreational harvest of scallops. To prevent serial depletion of the stocks, six zones were defined in the bay, and quota was allocated equally to each zone. A conservative initial catch level of 12 tonnes whole shell weight was set, with 2 tonnes allocated to each zone. It is anticipated that the incentives created by secure rights will see industry invest early in data collection to push the catch level up to meet the fishers development objectives whilst ensuring sustainability through the TACC setting process.

Innovative approach to compliance

For quota managed fisheries, the need to accurately record catch is critical. Additionally, real time reporting of fishing activities is important to ensuring integrity of the quota and to reduce the cost of compliance services. Various reporting regimes are used in Victoria, but adopting these regimes for new fisheries is expensive and not favoured by operators. The development of this fishery was used as an opportunity to introduce mobile reporting technology, with real time compliance monitoring and catch and effort reporting, mandated through the use of a smart phone application (app). This provides a simple and effective real time reporting tool for fishers, removes the need for paper logbooks and reduces compliance and enforcement efforts.

A real-time vessel monitoring system will be considered for all boats in new fisheries in order to ensure compliance activities are targeted, thus assisting in keeping compliance costs. Also, information collected by a vessel monitoring system will assist in stock assessments.

Cost recovery

Victoria's fisheries are subject to cost recovery; therefore there are incentives to adopt innovative technologies to reduce the cost of compliance and research associated with the fishery. This is particularly important in new, unproven small-scale fisheries.

The recently revised cost recovery approach in Victoria provides incentives for fishers to seek to minimise levies through negotiating on the services which will be delivered. It is expected that the initial costs of services for the scallop fishery will be modest given the two stage approach to development where a conservative initial catch level with baseline management standards are specified. These costs will likely

change as the entitlement holder makes decisions on developing the fishery beyond the initial baseline management arrangements.

Conclusions

The new scallop fishery provided an opportunity to implement a revised framework to the development of new fisheries. The new framework encourages industry led development of the fishery, and introduces innovative management tools to ensure cost effective fisheries management.

The key characteristics of the framework are:

- Government determines a conservative catch level and specifies baseline management standards to achieve sustainability and compliance objectives;
- the entitlement is immediately introduced into a quota management system and the licence and quota is allocated by auction to a single entity;
- the entitlement holder makes investment decisions on the further development of the fishery, consistent with the prescribed management standards; and
- Innovative management tools assist in keeping the costs of managing the fishery low.

It is still early days in the development of this new fishery. The licence holder is working to address food safety issues, and establish a way forward to developing the fishery beyond the conservative 12 tonne TACC. The incentives provided by a single entitlement developing within the quota managed system are evident in the approach the licence holder is taking to investing in surveys and establishing classified waters for the purposes of food safety. The licence holder will reap the long term benefits of this investment.

The success of this approach to date may be attributed to a number of key elements.

- A firm mandate from the Minister and the Executive to develop the fishery using the revised approach.
- An approach formulated on clear and defensible policy principles.
- Because of this strong foundation, the process was able to withstand some public opposition to the approach.
- Strong commitment to ensuring probity throughout the process.
- Consultation with all sectors to gain support for the approach.

It is expected that, depending on the characteristics of future new fisheries identified for development, this approach will again be applied to allocating new entitlements in unexploited fisheries.

Details about the process, and a copy of the documents produced to develop this fishery, may be accessed at <http://www.depi.vic.gov.au/fishing-and-hunting/commercial-fishing/> or by contacting Kylie Wohlt at kylie.wohlt@depi.vic.gov.au.

Collaboration to innovation: How to develop and implement a harvest strategy in a small-scale, community-based fishery.

Sean Sloan¹, Alice Fistr¹, Greg Ferguson², Roger Edwards³, Julian Morrison⁴ and Jonathan McPhail¹ (Primary Industries and Regions South Australia)

Abstract

The South Australian Piri fishery has expanded rapidly over the last 15 years in response to a growing human consumption market. During this period of increasing catch and effort, there were also declining catch rates. In response to concerns about the future sustainability of the fishery, a quota management system was introduced to the commercial fishery in 2007. The quota system provided a mechanism to restrain catch; however there were no clear guidelines to support the annual decision making process of setting a total allowable commercial catch (TACC) to promote recovery of the fishery. In 2011/12 a Piri harvest strategy was developed by PIRSA in collaboration with SARDI and the fishing industry. The harvest strategy uses biological performance indicators to assess the status of the fishery based on information from fishery-independent surveys. It also incorporates economic performance indicators and market price estimates to analyse economic returns over a range of sustainable TACC. Decision rules state that a specific response will be triggered in terms of TACC adjustment based on fishery performance, to ensure the resource is harvested within ecologically sustainable limits. In addition, the rules utilise estimates of maximum economic return to potentially further modify the TACC within those limits. Piri stocks have recovered to sustainable levels, which this harvest strategy has provides a framework to maintain and has also fostered more constructive and collaborative co-management arrangements between government and the industry.

Introduction

The Lakes and Coorong Fishery is located approximately 80 kilometers south of Adelaide in South Australia where the end of the largest freshwater catchment in Australia, the Murray Darling Basin river system, enters the southern ocean. The fishery operates within a highly modified environment where freshwater flows have been controlled, water has been extracted and an extensive barrage network has been constructed to stabilise water levels and prevent saltwater intrusion. The region has been recognised internationally as one of Australia's most significant wetlands and is listed under the Ramsar Convention. The area is afforded high conservation status as a national park and a Ramsar-listed wetland. It holds significant cultural and spiritual significance for the Aboriginal people of the region (the Ngarrindjeri) (Hemming *et al.*, 2002) and supports recreational and commercial fishing, eco-tourism operations and other leisure industries. The Lakes and Coorong Fishery has access to resources in freshwater, estuarine and adjacent marine habitats. The Lakes and Coorong Fishery is a small, community-based, multi-species, multi-method fishery that has been operating since the 1840s. It is a limited-entry commercial fishery with 36 owner-operated licences and in 2012/13 an annual GVP of \$7.1 million. The management arrangements for the Lakes and Coorong Fishery are complex due to the multi-species and multi-method nature of the fishery and are governed by regulations, licence conditions and other legal instruments pursuant to the *Fisheries Management Act 2007*. The fishery is largely managed through the use of input controls that aim to limit the total amount of effort that can be directed into the fishery to ensure the sustainability of the aquatic resources on which the fishery is based. A management plan has also been in operation since 2005. The Lakes and Coorong Fishery has two distinct components: the net fishery and Piri fishery. The regulations for the Lakes and Regulatory arrangements for the LCF are contained within the *Fisheries Management (Lakes and Coorong Fishery) Regulations 2009* and the *Fisheries Management (General) Regulations 2007*. Through these regulatory arrangements the net fishery has access to species provided through a permitted species list and are have gear endorsements on

1 Primary Industries and Regions South Australia

2 Goolwa Piri Harvesters Association

3 EconSearch

4 South Australian Research and Development Institute Aquatic Sciences

fishery licences. The net fishery is based on the capture and retention of six main target species of native fish and one non-native species. Pipi is the other component, which has developed rapidly over the last 15 years.

Biology of Pipi

Populations of Pipi occur along the south coast of Australia from Eyre Peninsula to Kingston in South Australia, through Tasmania to south-eastern Queensland. Pipi on Sir Richard and Youngusband Peninsulas likely represent the largest population of this species in Australia. The Coorong population of Pipi is managed as a self-recruiting population distinct from other stocks distributed throughout other South Australian ocean beaches. Pipi are a fast growing, short-lived, highly fecund species and can grow to 6 cm in 3 to 3.5 years.

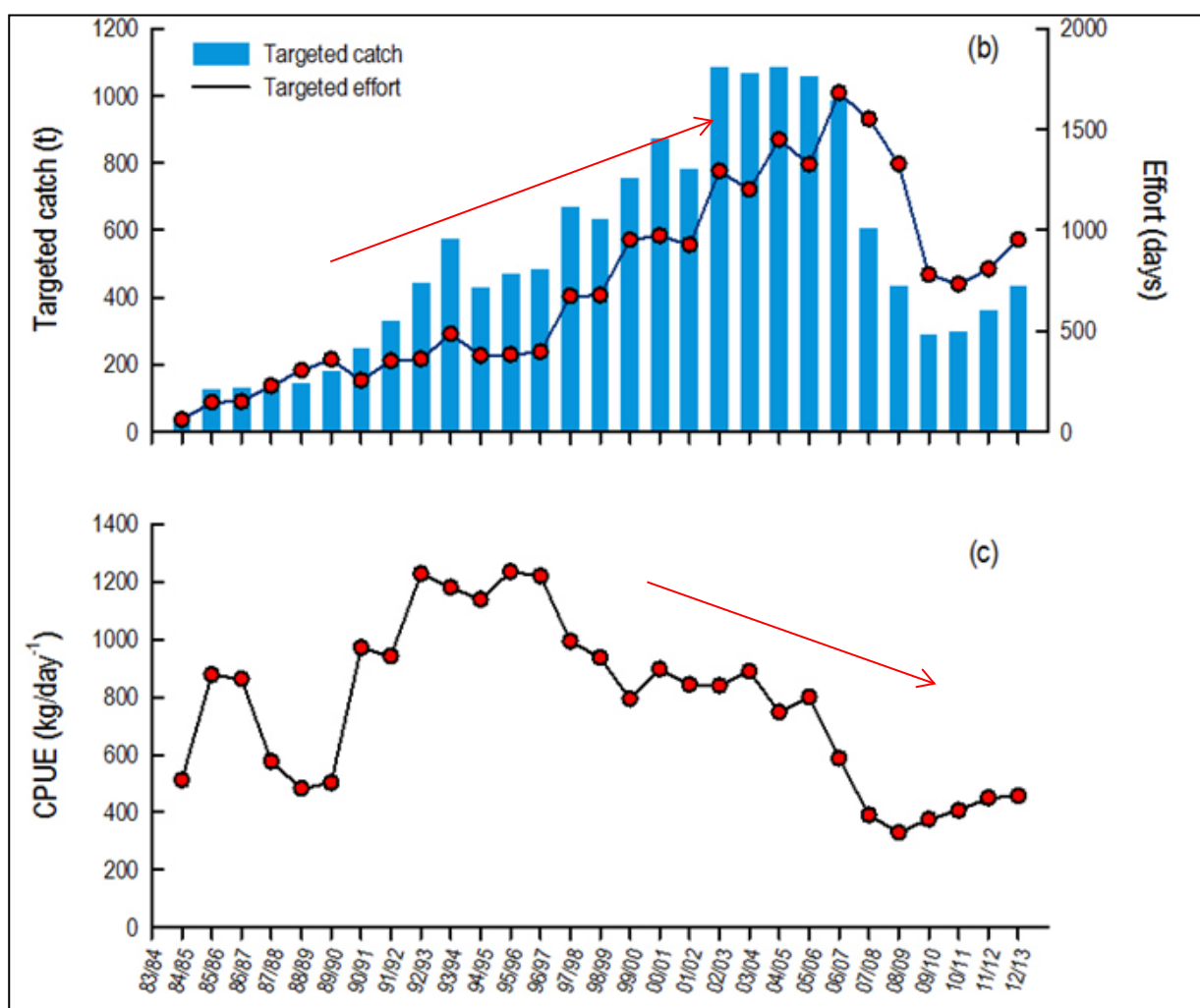
Commercial, Recreational and Traditional Pipi Fishery

The main commercial fishery for Pipi in South Australia operates on the ocean beach of the Youngusband Peninsula, adjacent to the Coorong. As of June 2014, there are 23 licence holders with Pipi quota entitlements; 18 are currently active. The commercial Pipi fishery manually harvest Pipi's using cockle rakes, which consist of a pole and frame with a net attached. A substantial proportion of the Pipi harvest is sold for human consumption with the remaining Pipi sold to the bait market. Pipi have become the most important species in the Lakes and Coorong Fishery with a gross value of production of \$3.1 million and 450 tonnes harvested in 2012/13. The Pipi fishery is also an important recreational fishery. Recreational fishers also harvest Pipi manually using a Pipi rake, shovel or by hands. The lower Murray Lakes and Coorong region has been important to Aboriginal people throughout the entire period of their habitation of Australia. The Aboriginal (Ngarrindjeri) history associated with the Lakes and Coorong region extends over at least 45,000 years. Archaeological evidence to support this is provided by middens containing cockle shells and the remains of fish and terrestrial animals, traditional camp sites, meeting places, rock formations and burial sites (Leubbers, 1981). These sites are found throughout the Lakes and Coorong region in a greater frequency than other locations throughout Australia (Leubbers, 1981).

History of Pipi

The Lakes and Coorong Fishery has had access to resources in freshwater, estuarine and adjacent marine habitats in the lower Murray River system in South Australia since 1846 (Olsen and Evans 1991). During this early period of development, the fishery was characterised by artisanal and subsistence operations, with most fishers operating on a seasonal basis. A number of unique methods have been developed over time by commercial fishers and since 1984/85 commercial fishers have been required to provide daily catch and effort data to the South Australian Research and Development Institute (SARDI) on a monthly basis. Pipi catch and effort has been collected from industry through log books since 1984/85 with SARDI providing the collation of this information to PIRSA in either stock status reports or stock assessments. The Pipi fishery has rapidly expanded as a response to a growing human consumption market since the early 1990's (see Figure 1). The Pipi total catch reached a peak of 1,251 tonnes (t) in 2000/01, then declined rapidly after 2006/07. The Pipi catch was constrained by a 300 t TACC in 2009/10. During this period, catch per unit effort (CPUE) peaked in 1995/96 at 1,235 kg.day⁻¹ and decreased to 746 kg.day⁻¹ in 2004/05; these trends were particularly concerning given the high levels of latent effort in the fishery at the time. In July 2006, the Pipi stock assessment report suggested that the Pipi resource was in its weakest position for several years and highlighted the need to develop an ongoing fishery-independent monitoring program, appropriate to the scale of the fishery, given uncertainties around CPUE.

Figure 1. Targeted catch, effort and CPUE of Pippi from 1984/85 to 2012/13.



Source: SARDI 2013

Development of quota management system

Given these trends reported in the stock status and stock assessment reports, PIRSA advised industry in 2005 that a review of management arrangements was required to directly address the concerns about the future sustainability of the Pippi stock. In December 2006, PIRSA convened a two-day workshop that was independently chaired to develop future management options for the fishery, in particular the option of implementing a quota management system. At the workshop PIRSA and industry agreed that further consultation on management arrangements of the quota management system was required and that an independent allocation advisory panel process would be formed to make recommendations to the Minister of Agriculture, Food and Fisheries concerning allocation of harvesting rights. In January 2007, an investment warning was sent to all licence holders. In July 2007, after receiving a report from the independent allocation advisory panel the Minister implemented the quota management system. The Minister received numerous submissions from industry appealing the implementation of the quota system. Given this, all Lakes and Coorong Fishery licence holders and local Parliamentary members were invited to meet with the then Minister at Parliament House on 24 October 2007 to further consult and agree on the quota management system. In November 2007, an exceptional circumstance panel was formed to address the exceptional circumstances cases raised by industry members. In December 2007, regulations establishing the quota management system were first introduced and these were subsequently disallowed by the Legislative Council in June 2008, due to further submissions from industry. Following a select committee inquiry, the quota management regulations were reinstated in October 2009.

Research to support the Pipi Fishery

Collaborative research conducted by South Australian Research and Development Institute (SARDI) and industry has significantly supported the Pipi fishery. In 2009, there were concerns raised by SARDI, PIRSA and industry about the uncertainty that existed around commercial CPUE as an estimate of relative abundance of the Pipi fishery and how this informed the Total Allowable Commercial Catch set by the Minister. Given these concerns, PIRSA funded SARDI to undertake the research project *Effectiveness of Fishery-Independent Surveys for Monitoring Stock Status of Pipi on the Younghusband Peninsula, South Australia*. The outcome of this project was that a fishery independent measure of relative abundance was developed. A key feature of this fishery independent estimate of relative abundance was the strong engagement with industry who undertook structured fishing surveys in conjunction with scientific observers.

The FRDC project *Support for Harvest Strategy development for South Australia's Lakes and Coorong Fishery for Pipi (Donax Deltooides)* (FRDC 2008/008) conducted by SARDI has supported the development of the performance indicators for the harvest strategy and addressed key knowledge gaps around, reproduction and intra-annual trends in relative biomass of Pipi. The other components of the project initiated by industry was a *Coorong Pipi Marketing Study (Ruello and Associates Pty Ltd)*, which identified key market requirements that had the potential to maximise economic return from the fishery, and the *Coorong Pipi Industry Development Options (Ridge Partners)*, which aimed to develop a framework of modified atmosphere packaging to improve marketing of Pipi via a cooperative group. The outcomes of this research have supported industry to maximise economic return by improving the timing of placement of Pipi on the market to coincide with periods of highest market demand. The potential for harvesting and marketing Pipi during the historical winter fishery closure was investigated over two years and at two levels of catch, which led to the trial of a twelve month Pipi fishing season compared to the previous seven month season. Other research projects have also contributed to the success of the Pipi fishery, such as the FRDC project *National Guidelines to Develop Fishery Harvest Strategies* and the development of the Pipi fishery gross margin economic indicator by Econsearch and industry.

Development of Pipi Harvest Strategy

Given the implementation of a quota management system, availability of information on relative biomass from independent surveys, industry value-adding and marketing strategies and previous drawn out processes with industry, there was a need to develop a structured framework for decision making for the Pipi fishery that pursued the ecological sustainable development objectives of the *Fisheries Management Act 2007*. In December 2011, PIRSA formed a Pipi Harvest Strategy Working Group to develop a harvest strategy for Pipi within the Lakes and Coorong Fishery. The working group comprised an independent chair and representatives from SARDI, PIRSA Fisheries and Aquaculture, Goolwa Pipi Harvesters' Association and Southern Fishermen's Association. The working group developed the Pipi harvest strategy at a series of workshops during 2011/12. These workshops included developing objectives for the Pipi fishery, agreeing on biological performance indicators with target, limit and trigger reference points, developing an innovative economic indicator known as the Fisheries Gross Margin and designing decision rules to provide clear guidance to the TACC setting process. To develop the biological performance indicator the working group were presented several potential biological performance indicators for the harvest strategy from the PIRSA and FRDC funded research project conducted by SARDI inform 2007 to 2011. The working group agreed with the following:

Primary Biological Performance Indicator :

- Independent relative biomass of legal-sized Pipi (kilograms per 4.5 m²)

Secondary Biological Performance Indicator:

- Population size structure based on size frequencies

Additional performance measures

- Four additional biological performance measures would be used to assess the status of the fishery:
 1. Catch vs TACC
 2. CPUE (fishery dependent)
 3. Pre-recruit relative biomass index (to be developed)
 4. Seasonality and spatial abundance

By agreeing on performance indicators the working group used the same information to agree on reference points for the primary biological performance indicator, which is fishery-independent relative biomass of legal-sized Piri. These reference points provide a benchmark against which the performance of the fishery can be assessed. A modified 'traffic light' method was developed to inform the current status of the fishery relative to a target relative biomass reference range, where 'blue' is above the target range, 'green' is within the target range and 'red' is below the target range.

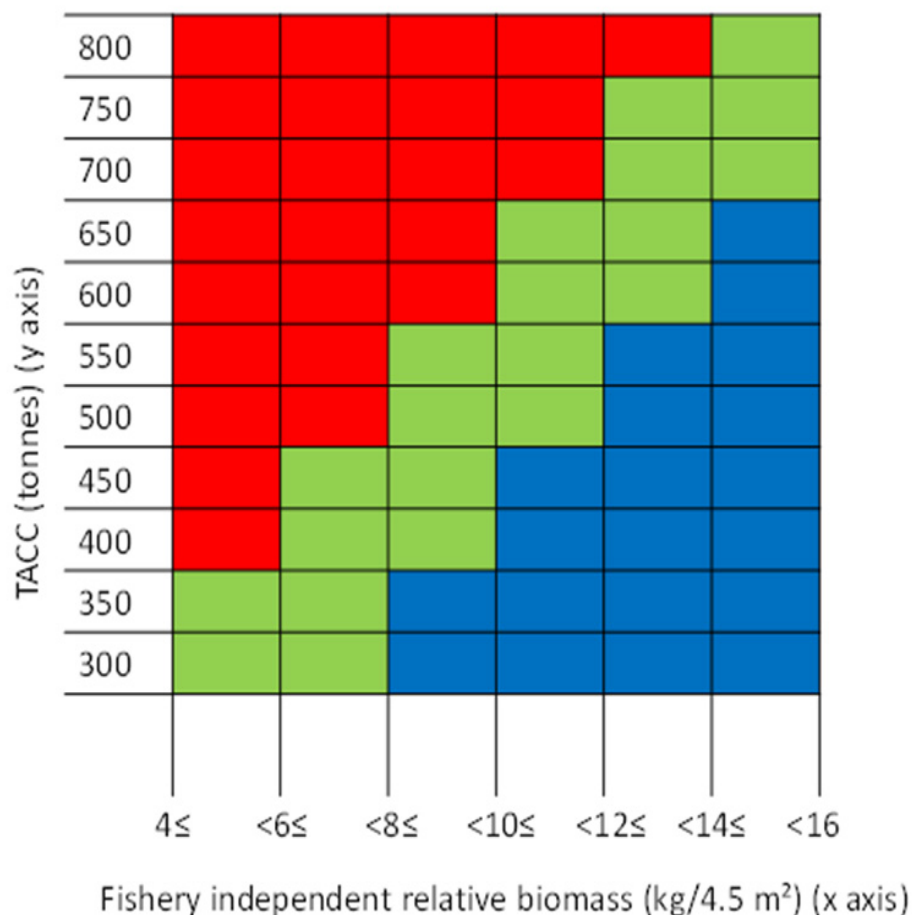
Traffic Light Method

Limit reference points: Relative biomass of legal-sized Piri is $<4 \text{ kg/4.5 m}^2$

Target reference point: Mean relative biomass of legal-sized Piri is $\geq 10 \text{ kg/4.5 m}^2$

Trigger reference point: Pre-recruits represent at least 30% of the overall length frequency

Figure 2. Fishery independent relative biomass of legal-sized Piri from previous season (x-axis) determines the following season's maximum total allowable commercial catch (TACC) (y-axis) for the Piri fishery with incorporated economic information. The 'green' range indicates the target level of TACC given the estimate of fishery independent relative biomass. The 'blue' range indicates that the TACC is below the target level, while the 'red' range indicates that the TACC is above the target level, given the estimate of fishery independent relative biomass. Note: the TACC figure on the y-axis represents the maximum TACC that could be set in a given year.



Innovation – Fishery Gross Margin

The fishery gross margin (FGM) modelling framework provided a key innovation within the harvest strategy. The FGM model was first developed by the GPHA executive officer, Mr Roger Edwards and reviewed by Econsearch in 2012. Econsearch provide estimates of FGM each year. A FGM model was first used in 2012 to aid the harvest strategy in the Lakes and Coorong Piri fishery. It is an alternative to more complex bio-economic models that enable calculation of maximum economic yield (MEY). Considering the economic limitations (capacity to pay) to the Lakes and Coorong Piri Fishery that enables the calculation of the MEY, using FGM provides a suitable alternative to maximising fishery profit as measured by MEY. The

economic performance indicator, FGM is calculated as total fishery income less total variable costs, where variable costs are proportionate to fishing effort. Advantages of using FGM include:

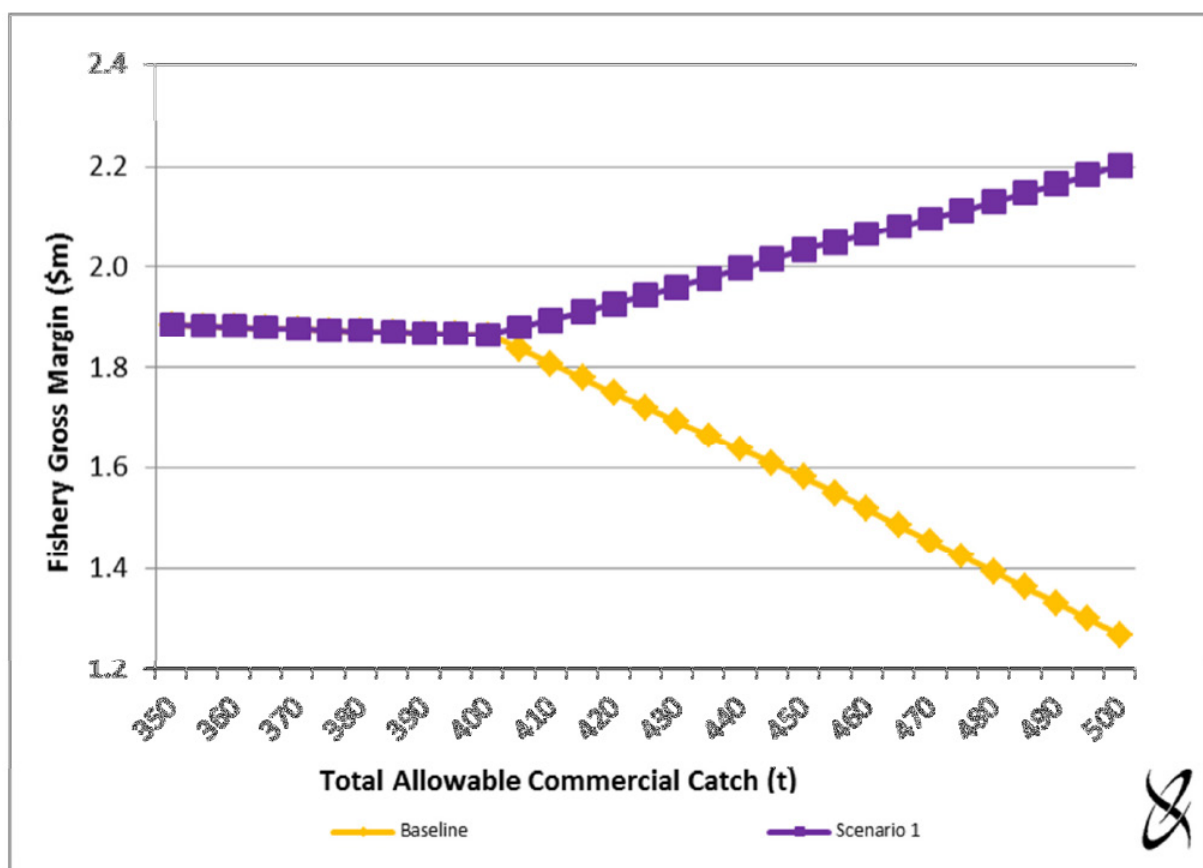
- Only data requirements are price, price elasticity of demand and variable costs (as well as TACC)
- Can be easily calculated and tracked over time to evaluate fishery management targets
- TACC can be set at a level below maximum sustainable yield (MSY) to ensure stock is maintained (i.e. conservative TACC) and short run industry profits are likely to be higher than those generated from a TACC set at MSY

Development of the model specified above required discussions and data collection with a number of Pipi quota holders in the fishery, as described in EconSearch (2012). Data sought from licence holders included:

- A breakdown of variable costs (including an estimate of unpaid labour)
- Total sales, average price, days fished and market segmentation
- Catch and average price by market under three different TACC scenarios

In 2012/13, the FGM model was used for the first time to support the Pipi harvest strategy. As shown in Figure 3 the data sought from industry indicated that the FGM would increase above \$1.8 million at 400 tonne if industry added value to their product (ie new packaging, finding new markets). If the industry did not add this value the FGM would decrease.

Figure 3. Fisheries Gross Margin for two scenarios for 2013/14. Baseline would occur if Pipi fishers do not invest in any adding value to the Pipi product. Scenario 1 would occur if Pipi fishers invest in adding value to Pipi.



Decision rules for the harvest strategy

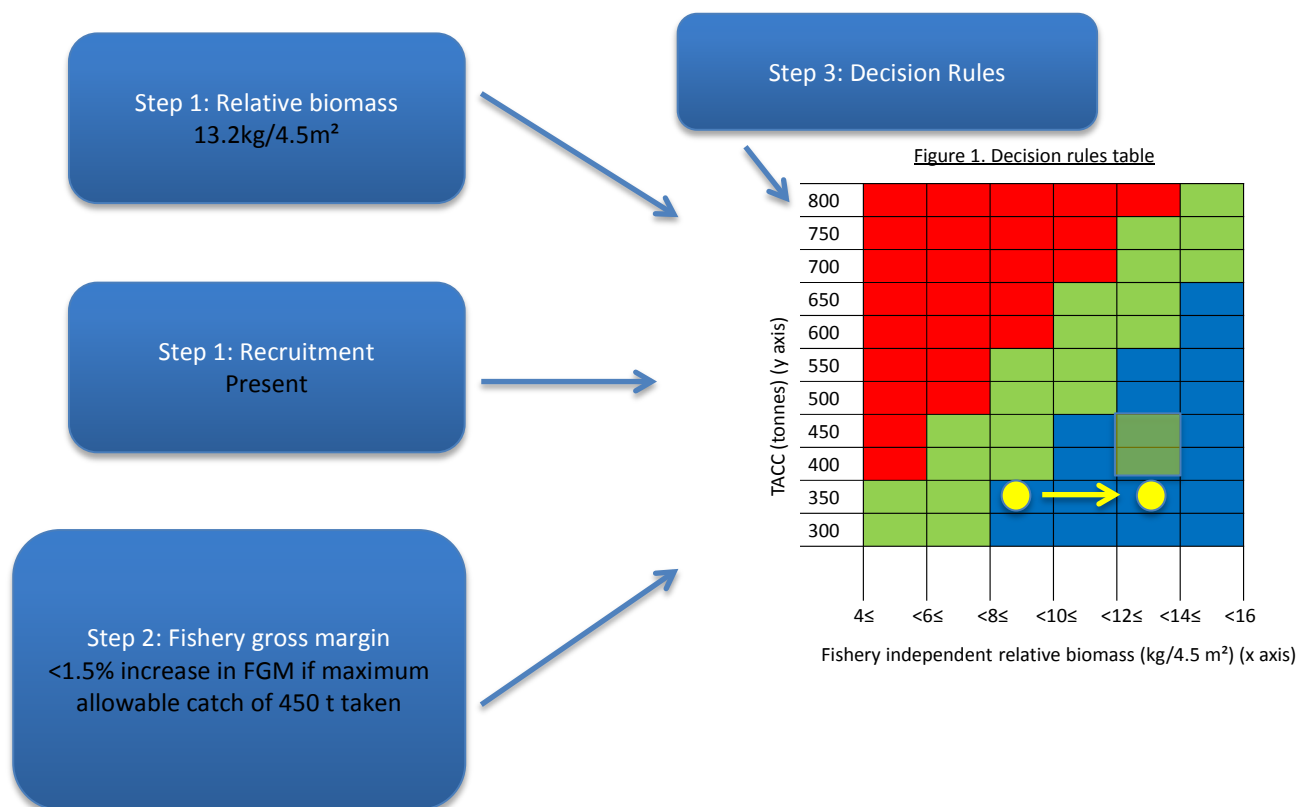
The working group designed a number of decision rules to provide clear guidance to the TACC setting process by defining how estimates of the primary biological performance indicators of fishery independent relative biomass of legal-sized pipi, presence/absence of pre-recruits and economic performance indicator FGM for pipi should be interpreted when adjusting the TACC.

The Pippi Harvest Strategy

The Pippi harvest strategy was formally used to set the annual TACC from the 2012/13 Pippi fishing season. The decision making framework involves three main steps and is undertaken each year prior to the start of the new fishing season. Step 1 uses biological performance indicators to assess the current status of the Pippi fishery. Step 2 uses fishery economic performance indicators and market price estimates to analyse economic returns over a range of sustainable TACC levels and includes an opportunity for industry to provide structured and direct input on the impacts of external factors on expected future prices over a range of TACCs. Step 3 uses reference points and decision rules to guide the TACC setting process to ensure the Pippi resource is harvested within ecologically sustainable limits and also to maximise economic returns from the fishery within those limits. As shown in Figure 3, the harvest strategy was used to set the TACC in 2012/13. Given the relative biomass was 13.2kg, a presence of recruits and input from industry and FGM is greater than 1.5% the TACC was increased to 450 tonnes. The Pippi harvest strategy decisions rules can also decrease a TACC if relative biomass has decreased to a point that impacts sustainability of the resource or the FGM indicates less than 1.5%.

Figure 4. The decision making steps and outcome for the 2012/13 fishing season.

Step 1: information from independent survey is provided on relative biomass (for 2012/13 this was 13.2kg/4.5m² up from 9.7kg/4.5m² in 2011/12) and recruitment was present. FGM model predicted a 1.5% increase in FGM if maximum allowable catch of 450 t taken. Step 3: uses the decision rules. Given the relative biomass increased by two blocks on the x axis and the range is still in the blue, the decision rules indicated that the TACC could increase by 100t to 450 t.



Conclusion

Over the last 15 years the Pippi fishery has taken significant steps in transforming from an input-controlled fishery with little research or constructive co-management, to a fishery with a fishery-independent research program, a management process that seeks collaboration at every step, and a structured, transparent framework for decision-making that pursues the ecologically sustainable development objectives of the *Fisheries Management Act 2007*. Fisheries management requires the protection and sustainable management of community-owned natural resources and essentially requires difficult decisions to be made. Those decisions are best supported by transparent and collaborative co-management processes with stakeholders, industry, researchers and government. The processes highlighted in this paper have strengthened

relationships between PIRSA, SARDI and industry and have provided opportunities for innovation that add value to the fishery. In September 2013, industry and PIRSA were advised by SARDI that the status of Pipi is sustainable.

Evolution of co-management in the Tasmanian scallop fisheries – successes and challenges.

David Jarvis (Manager Scalefish and Scallops, DPIPWE)

Abstract/Introduction

The commercial scallop fishery in Tasmania is significantly smaller than its peak back in the early 80's where in 1982 over 14,000 tonnes of scallops were landed by over 190 vessels. The emergence of the modern fishery has seen the fishery reduced to a handful of operators landing under 1,300 tonnes in 2013 that now, via a co-management framework, self-manage many of the day to day operational requirements of the fishery.

The Department has worked closely with industry that has allowed industries voice to be actively included in the management decision making process. This has been possible due to an industry funded Association that employs the services of an Executive Officer who has gained the respect of industry operators and is able to advocate industries interests in a positive and proactive manner.

While there are still challenges to overcome, it is recognised that management costs have been able to be kept down with the Department prepared and encouraging the Association to take onboard many of the day to day operational requirements of the fishery that would otherwise require more direct involvement from Government - with corresponding associated management fees.

Brief History/Overview

The Tasmanian commercial scallop fishery has had a long history of past over-exploitation and resultant over capitalisation;

- Prior to 1986 the fishery was managed under an open access regime with upwards of 190 vessels involved, and experienced a number of cycles of boom and bust, considered typical for scallop fisheries. The Tasmanian Scallop Fishermen's Association (TSFA)¹ was formed to represent the best interests of scallop industry members
- After 1986 the fishery moved to one of limited entry, where fishers had to demonstrate past involvement in the fishery to qualify for future access.
- Since 1987 there have been no new licence packages and from 1987 to 1991 each licence (117) was issued a fixed number of scallop units based on vessel size with any transfer of a licence package with a scallop entitlement, caused the loss of the scallop entitlement.
- In 2000 scallop units became transferable with policy development including spatial management of the fishery.
- In 2005/06 there were approximately 90 scallop licences with only 20-25 active vessels in the fishery.
- In last year's (2013) season, there were only 73 licences remaining with 13 active vessels.

The modern fishery is managed under a variable ITQ system and a number of input controls (limited entry; transfer restrictions; seasonal closures; legal minimum sizes and; area closures).

The fishery has adopted a closed area spatial management regime, which differs from the majority of other fisheries in that all areas are closed to fishing, and only discrete areas are opened as minimum opening criteria are met with this approach aiming to;

¹ The TSFA has recently changed its name to the Scallop Fishermen's Association of Tasmania (SFAT)

- maximise stock rebuilding in unfished areas;
- protect stock in other areas for future access;
- limit fishing impacts on newly settled spat and under size scallops; and
- limit fishing impacts on the broader marine environment.

There is additionally a range of management measures for the whole of fishery (recreational and commercial) including size limits, spatial and gear restrictions and seasons.

Tasmanian 'licence package' guidelines prevent the ability to solely hold a scallop licence. A scallop licence has to form part of a licence package whereby the owner is not solely dependent (i.e. financially) on their scallop licence.

Vessels are usually between 10-20metres in length as they are also used in another fishery -typically the rock lobster fishery, as historically with this fishery, fishers would fish for rock lobster during the warmer months and then switch to scallop fishing when scallops were generally in their best condition during the colder months.

Co-management between Government and Industry

Now being a relatively small fishery with a well-supported Association, the Department has been able to work closely with industry via the TSFA and the ScFAC process to bring about the co-management arrangements in place today.

TSFA: The Department on behalf of industry imposes a levy across all licence holders that funds the TSFA activities - primarily the EO (approximately \$65,000 p.a.).

ScFAC: The ScFAC is the Ministerial appointed Ministers' advisory body, on which the TSFA have representation of a minimum of 2 members plus the EO as an Observer. This approach has allowed industry to be actively involved in the decision making processes and consequently to take more control over the day to day operation of their fishery.

This control has slowly evolved over time, with a number of examples (provided below) showing how industries co-management in their fishery has developed.

Scallop Landings: The new scallop rules no longer have the ability to restrict vessel landings (as was previously often required to help prevent over supply and consequent spoilage), with landings now generally dictated by the skippers relationship with their processor.

Surveys: Scallop surveys are now all undertaken using industry vessels. Previously, surveys were conducted via an industry funded research vessel (TAFI now IMAS, RV Challenger).

This then evolved to the Department undertaking an Expression of Interest (EoI) process where an appropriate 'incentive' would be offered (financial, research quota, retain catch or a combination of all), to then select a suitable industry vessel. While the incentive is still offered, in many cases now the Department approaches the TSFA to nominate a suitable vessel, removing the need for the Department to go through an EoI process.

Surveys initially stipulated the need to carry an observer/scientific personal onboard to help direct the skipper on survey coverage and help document potential candidate areas to open. As these survey requirements have become better understood by skippers, in many instances, industry are now experienced enough to undertake this sampling without the need to carry an observer/ scientific personal.

In addition to undertaking structured surveys, industry vessels are encouraged to search for scallops outside of the known areas (under permit issued at no cost), recording relevant data to assist in any potential future targeted survey and scallop harvesting.

Season Openings and Access: Seasons are opened legislatively, with this traditionally seeing the commencement of fishing from the opening date. Industry more recently have, on various occasions, taken the pro-active step of then voluntarily delaying the commencement of fishing until such time as scallop condition has improved so as not to ‘drag down’ beach price due to initial poor scallop condition, thereby helping to maximise economic yield. Scallop beach price is often slow to recover if the price is initially reduced due to poor quality scallops being put on the market.

Industry makes the decision to delay fishing based on an ‘Industry Committee’ headed by the TSFA EO (who acts as the conduit for receiving and disseminating information) and generally the active fishers at that time.

Additionally, via the same industry process, industry may voluntarily decide to stagger access to various parts of the open area. This approach was successfully demonstrated in 2006 with the White Rock fishery.

The fishery was opened with an area around 20 km long and 3-4 km wide. The EO met with the President and Vice President of the TSFA (both active skippers) and established 8 zones within the open area. This area was then surveyed by industry without government input, and it was determined by those involved which zone should be harvested first and second etc using voluntary closures. Areas were prioritised based predominately on meat quality and catch rates.

Testing: Industry coordinates all scallop testing, again via the TSFA EO who organises sample collection and delivery to the appropriate laboratory for testing for human health requirements.

During the 2013 White Rock season, industry imposed a voluntary stop fishing closure until PST results were confirmed to have remained below a pre-determined threshold.

Why it Works

- Sufficient licence holders in the industry to allow for the collection of a levy of a sufficient amount to fund the Association – primarily the EO position
- The Association has an EO who is well versed in the complexities of the fishery and has the respect of the fishers
- There is only a small pool of active fishers who over the long history of the fishery have learnt to work together (usually) in a proactive environment, generally for the betterment of the whole industry – all of the ‘cowboys’ have generally moved on
- Scallop licences are an adjunct to other fishing licences – fishers cannot have a scallop licence by itself – it must form part of a licence package
- Sufficient maturity and respect (just) within the industry to enable any voluntary industry imposed conditions to be abided by
- The Department is looking to save costs and has a good relationship with the TSFA, and while industry can continue to demonstrate a level of maturity and desire to continue down a co-management framework, it is expected to continue.

Challenges still to Overcome

There are still a number of challenges to overcome with these primarily arising from the differing standard of survey data collected from some vessels. Different skippers have a better understanding of the survey requirements and the science behind the interpretation of survey data and the resulting seasonal recommendations that are drawn from the survey data. Challenges include;

- Ongoing skipper survey training to highlight the requirement of establishing the bed distribution as opposed to continually sampling the densest part of the bed

- Skippers second guessing survey outcomes and sampling where they think is best and will generate the best outcomes
- Ensuring deckhands measure a random portion of the sampling tray – and not try to skew the data in an effort to meet the discard criteria
- General acceptance of the science used to derive a TAC, and applying different management arrangements derived from recent scientific studies.
- Continuity of seasons for ensuring on-going markets and processing capacity – industry have firmed in their belief that they need to take the scallops as soon as they meet the Harvest Strategy (otherwise they will die) as opposed to trying to spread the resource out over a couple of years.
- Aligning the differing attitudes/approaches between the Victorian based skippers and the Tasmanian based skippers
- Different levels of reliance on the fishery, where some licence holders have a higher dependence on a scallop season from year to year even with another fishery ‘to fall back on’

Conclusion

The current co-management between Government and the scallop industry is viewed by both as being an effective means of assisting in minimising increasing management costs while also giving a high degree of ownership of the resource back to industry.

Without an adequately funded Association and a willingness amongst industry to undertake a greater responsibility in the management of their fishery and being sufficiently unified to abide by any voluntary industry arrangements put in place, co-management may not have evolved to its current position.

With an increasing understanding by industry of the requirement to make informed scientific based recommendations to the Minister, it can be expected that the current co-management framework may continue to evolve.

Challenges facing small-scale fisheries in Australia – Working Group Discussions.

Session 1 Working Group discussions

The workshop divided into 4 small working groups, each of which tackled two of the following major questions. The outcomes of the working groups, incorporating questions and clarifications from the workshop, are summarised below:

Session 2 Workshop outcomes and group discussion

Group 1:

Issue 1: Matching capacity to resource availability

Step 1: Define the problem

- ***Latent effort*** arising from an excess of licences/vessels in many small-scale fisheries.
- ***Effective controls on catch***, most small-scale fisheries are managed by input controls; these controls may not be effective in controlling catch if latent effort is activated, resulting in potential sustainability issues.
- ***Economic efficiency is constrained*** as excess effort erodes the benefits intermittent productive seasons, leading to low profitability and limited opportunities to find individual efficiencies.
- ***Lack of certainty*** in future fisheries management measures – i.e. fishers know something needs to be done, but are unsure how, when and what may occur.
- ***Poorly defined property rights*** leading to little incentive to display stewardship.
- ***Assumed rights*** as some fishers see their ‘investment’ through participation in small-scale fisheries as a form of superannuation.

Step 2: Obtain the information prior to addressing the problems.

- ***Fisheries assessments*** - determining the size and productivity of the resource which, relative to the scale of the fishery may be difficult (and expensive) to determine. May require use of proxies.
- ***Legal rights*** – Understand the rights of fishers and the degree to which they can they be amended.
- ***Resource sharing*** – Determine the current users of the resource and how access can be shared equitably.
- ***Values of the users*** – Not always an easy to determine as can include both a financial values and ‘lifestyle’ values.
- ***Status quo (non-)option*** – while change comes at a cost and some risk, it is important to balance this with estimates of the risks associated with doing nothing—resulting in the fishery declining slowly.
- ***Authorising environment*** – determining the degree of community and political support for change

Step 3: Determine the objectives of management change and strategies to achieve it.

- ***Varied objectives*** – Objectives will vary with and within the user group and will include economic viability, economic efficiencies, social objectives (of industry, community and government), and security of access.
- ***Develop process*** – a stepwise change process, including an engagement strategy, should be developed.
- Work out the enablers and incentives to achieve what stakeholders want from the fishery.
- Design a system of rights.

SA Pipi example – here it was important to determine what stakeholders wanted, which was maximum profitability rather than maximum production. Wherever possible it is best to use a ‘blank slate’ approach when designing objectives, working closely with industry. This gives ownership to industry and improves buy on to resulting management measures/harvest strategies.

Step 4: Review and select from available tools to reduce/manage capacity

- Creating incentives to change – what tools are available
 - Show cause for latent/unused access rights (use or lose it).
 - Buy outs and exit grants (noting decision required on who pays – government or industry – i.e. self funded).
 - Implementation of cost recovery to prevent cross subsidy and to encourage those holding unused access rights to sell.
 - ‘Grandfathering’ i.e. make rights non-transferable and rely on natural attrition over time.
 - Autonomous market adjustments, which may be difficult in fisheries where excess capacity is large.
 - Rationalise controls.

Other considerations

- Be aware that there may be ‘rules’ about limiting efficiency (e.g. anti-competition legislation in NT)
- The timeframe to achieve change can be critical—too long and it might never happen, too short and politics may kill the intended action.
- Vital to develop a platform of trust between fishers and the management agency and provide some ownership to industry—top down approaches are unlikely to be effective.
- Manage expectations of stakeholders from the start.
- Determine the political will to reform a fishery and reduce capacity—linked to the authorising environment.
- Need to identify the benefits of reform there so that it can be demonstrated that the ‘pain will be worth the gain’ for key players.

Issue 2: Cost Effective Monitoring/Data Analysis/Assessment

- **Risk/cost/benefit (catch) analysis** on existing fishery information will be needed to determine if change is required. Cheaper options may increase risk, reduce allowable catch/effort and reduce revenue—or vice versa. Principles of risk/cost/catch trade-offs (Sainsbury approach) apply strongly for small-scale fisheries. These trade-offs will require discussion and refinement with industry.
- **Management needs to be clear** about what the data requirements are, what sort of information is needed, and how often to collect it (species and fishery dependent)—some of which will be driven by external requirements such as the EPBC Act.
- **Acceptable risk** - Instruments such as relevant legislation, DoE approval processes and the level of risk that the community is prepared to accept will be influential in deciding on an appropriate level of monitoring and assessment.
- **Funding options**
 - including straight cost recovery for government, scientific and other services versus provision of detailed data/direct purchase of research by industry;
 - consider synergies or integration with other providers (other agencies—especially in the case of shared stocks, Universities etc);
 - seek grants from funding sources for innovative data collection, research etc (FRDC, Government etc); and

- consider an information collection platform that collects and analyses data for multiple purposes (for use by govt, industry, researchers etc).
- **Different views** will be held by different sectors on the data required to be collected—e.g, recreational verses commercial catch
- **Risk-based approaches.** Data collection/monitoring/assessment strategies should address risk, noting that holding an access right comes with responsibilities to fund the management of that risk.

In summary, managers should acknowledge that we currently implement biological data collection and reporting mechanisms better than those that measure economic and social performance and that these areas may require greater investment.

Group 2:

Issue 1: Social Licence communications

- A very broad topic, but it is clear that effective and potentially sophisticated **communication strategies** may be required to secure social licence to operate in some fisheries. When implemented, it is important to measure effectiveness of communications strategies and adapt the strategies to improve message delivery. Effective communication strategies will help place fisheries managers on the front foot in delivering information to inform public debate.
- Use of **communications experts** important; most fisheries managers are not communications specialists and are dealing with an increasingly sophisticated and complex field of social media.
- Acknowledged potential benefit in engaging with stakeholders via social media such as **Facebook** but this is proving challenging in the current climate and structure of most fisheries administrations. Once involved in debate on social media (e.g. to address misinformation) it can be difficult to disengage.
- **Ensure messages:**
 - **are consistent** in their content to avoid confusion and ‘divide and conquer’ tactics, this should sought across jurisdictions, species etc.
 - **are adaptive** and do not rely of the provision static information regardless of a potentially changing environment.
 - **do not rely solely on presenting the facts** with an expectation that the target audience will support management strategies based on those facts
 - **are delivered at a level that are digestible by all audience members** this will remove any preconceptions held by stakeholders that fisheries managers are looking to hide facts in complex presentations
 - **are targeted** to, and address, the values of audience and their concerns i.e. determine what they want/expect from management of the resource and marine environment and then design messages that speak to those expectations
- Gaining **community confidence** in science and research is important. This can be achieved in a number of ways including independent peer reviews of assessments and the engagement of community champions.
- Strategies to gain a better **understanding of community values and concerns** (i.e. social research/surveys) essential. This knowledge can then be fed into improved management strategies and communication/extension programmes.
- Investing in establishing or improving **productive relationships** with all relevant sectors of the community may prove valuable. Managers should consider if there are sectors of the community/resource management environment that are not being reached by current communications.
- Use of **third party accreditation schemes** in fisheries is increasing; to get adequate consideration and informed decisions it is necessary to identify and disseminate information on available accreditation schemes to industry

- Consider **mutually beneficial linkages** with community programmes such as fish care/ education.
- Use of examples of **good news stories** with similarities to the issue you are dealing with to encourage stakeholder confidence and recognition that a positive outcome is possible.
- **Knowing the fishery** and an having an on-ground presence will build relationships/legitimacy.
- **Defending the process** by which management decisions are arrived at rather than the decision/outcome is generally a better way to establish social licence.

Issue 2: Recognising indigenous interests in small-scale fisheries

- Generally speaking, there is a need for **increased engagement** of Indigenous representatives in fisheries management.
- Important to develop an understanding of the **needs/aspirations/structure of local indigenous communities** -ensuring that strategies to address indigenous fishing acknowledge the inherent differences between communities (e.g. sea country plans)

Northern Territory example

NT has established a programme to establish small localised commercial fisheries/co-operatives to provide benefits for communities (starting with an appropriate governance structure)/ This has proved applicable to remote areas or where new and developing fisheries possible.

- **National strategy:**
 - Need to consider carefully if a national strategy is required/is the best mechanism to advocate better outcomes, given the **differences between and within jurisdictions**.
 - **Acknowledge the need for specialised communications to better engagement with indigenous fishers**
 - Developing a national strategy would be a challenge since it would need to recognise the importance of local level management and the **specific needs and aspirations of local communities**
 - Ensure the outcomes of fisheries management are applicable to indigenous fishers and reflect input they have had to the process (where applicable)
 - A consistent definition endorsed by key stakeholders as to the full meaning of capacity building for indigenous fishers and identification of avenues for involvement of mentors, elders and rangers.
 - An **alternative** to a national strategy could be a 'how to' guide to incorporating indigenous aspects into mainstream fisheries management processes
- Importance of **cultural awareness** during consultation and communication (utilising appropriate expertise and reputable people)
- There is a need to understand the **distinction between customary fishing and commercial fishing** and how that might vary between communities.
- Where improving indigenous engagement / increasing Indigenous development is designated as an area of expansion, **increased resourcing** may be required. Resources may be sourced from outside fisheries departments, including those with interests/responsibilities in aboriginal affairs, building on political opportunities to achieve 'wins-win' outcomes. Conversely, using current resources, shifting the way we consider aboriginal fishing and incorporating it into day-to-day management considerations can lead to significant results. This is generally considered to be a useful and realistic approach, given the increasing financial constraints facing fisheries departments.

Group 3:

Issue 1: Cost Recovery

- There is currently significant variation in the cost recovery systems employed by Australian fisheries jurisdictions. These variations include application of a flat % of GVP (WA), little or no link between costs and cost recovery (Queensland and Tasmania), up-front discussion of costs and services with partial cost recovery (Commonwealth and now being implemented in Victoria) and full cost recovery (SA).
- General consensus was that small-scale fisheries should be paying some **management costs** within an agreed framework that has a degree of consistency with larger fisheries. The adoption of largely consistent fee structure was seen as a means of circumventing any perceptions of 'favouritism' that may arise if differing approaches are adopted.
- Transparency and the provision of opportunities for discussion between industry and management are seen as key attribute of effective **cost recovery models**. Such an approach allows for greater understanding of the costs of providing the services associated with managing a commercial fishery (e.g. compliance, licencing, maintenance of Wildlife Trade Operation approvals etc.).
- It is questionable as to whether all fisheries, regardless of size should be self-sufficient and **fully cost recovered**. This position is in recognition of the fact that some small-scale fisheries may provide a broader public good, particularly in regional communities. In such cases, it may be appropriate governments to subsidise the cost of managing small-scale fisheries to some degree.
- **Subsidies**
 - All fisheries have costs associated with their management and that being the case Governments need to be very clear as to why certain small-scale fisheries may be treated as a **special case** and subsidised to some degree while other fisheries are not.
 - The inability to fund the costs of management due to **low profitability and/or acknowledgment of social/community benefits** may provide sufficient justification for Government to subsidise small-scale fisheries that cannot meet management costs via cost recovery.
 - Before considering whether the costs of managing a small-scale fishery should be subsidised, the costs of management should be determined **in a transparent fashion**. Once the costs of management have been determined discussions as to which management costs government is prepared to meet/share and on what basis can be undertaken.
 - It should be considered whether a **policy on subsidy** is required. In some cases it may be appropriate to share some of the costs associated with the management of certain stocks with the recreational and tourism sectors.
 - There was a view that the commercial sector is currently **cross-subsidising** the recreational sector in some jurisdictions by the application of cost recovery to the costs of monitoring and assessing of shared stocks.
 - If fisheries are **deemed economically unviable** and commercial fishing ceases, pressure to fish illegally will increase (demand for seafood will remain) and costs of compliance may exceed that of a subsidy.
 - The general view of the group was that it is appropriate to subsidise some costs under a cost recovery regime for some small-scale fisheries.
- **Process for cost recovery**
 - Undertaking an **ESD Risk assessment** is considered useful approach in determining the management needs and costs for small-scale fisheries(i.e. applying risk/cost/catch principles: high risk = higher costs, low risk = lower costs).
 - The costs of all elements of a fishery's management should be determined (research, compliance, policy) to **increase transparency** and generate meaningful discussion.

- Use **cost risk benefit approach** where appropriate (e.g. research costs, compliance costs)
- Clarify the **public good** rationale behind the concessions provided.
- **Standardisation of management arrangements** across fisheries and **centralised** management services where possible may help to reduce the costs of management in small-scale fisheries.

Issue 2: Objectives for small-scale fisheries

- Developing clear and measurable objectives for small-scale fisheries is a **complex task**. Any one rule or a ‘one size fits all’ approach is unlikely to be successful and there may well be competing or conflicting objectives between fisheries or between sectors (i.e. commercial and recreational fishing sectors and conservationists).
- In the case of small-scale fisheries, the process of setting objectives is likely to be heavily influenced by the level and emphasis placed on **social outcomes** from fishery management.
- **Measurement/monitoring of the social aspects of a fishery** will help to identify issues that can be addressed before these have unacceptable impacts. In the Canadian example a lack of monitoring of vessel size and ownership in the herring fishery failed to identify the aggregation of quota to small number of people and corporates, which subsequently led to the closure of processing plants in regional areas.
- It is important to note that the objectives of a fishery’s management regime and whether a framework is viewed as a success or a failure depends largely values of the community and how that community is defined (i.e. local, regional, global). For example, fishery targeting sharks may be a major employer in an isolated community and as such, the continuation of the fishery would be viewed locally as a success. Conversely, the same fishery when viewed from a broader perspective and with consideration of the pressures facing sharks stocks globally may be viewed as placing additional pressures on an already heavily fished resource.
- The **evaluation of prospective objectives** and strategies to achieve them should be an open and comprehensive process. Managers may wish to consider some scaling of the objectives from most effected to least effected to constrain/define the scope of the task.

Group 4:

Issue 1: Addressing Resource sharing/intersectoral conflict

Step 1: Questions that need to be resolved

- **Why is there conflict?** Resource sharing and the associated issues, including different value systems, is a major cause of conflict.
- **Who are the stakeholders?** Important to identify the full range of stakeholders including the community, many of who are neither commercial nor recreational fishers.
- **What are the issues?** These will vary widely between fisheries and are not always evident. This may need further review before continuing.
- **Is allocation/reallocation required?** These are controversial, expensive and time-consuming processes, especially in the resource-constrained environment facing most fisheries departments. Before commencing such processes, ensure they are necessary.

Step 2: Suggested actions

- Secure **policy mandate** from decision makers; this will be essential to maintain support for management change as controversy and naysayers exert political influence to change processes and decisions.
- Consider all scales that the proposed resource sharing will cover, i.e. take account of **overarching, regional, local processes**.
- Look at the **available tools** that will be necessary to effect successful resource sharing and address conflict, such as the legislative framework, policy platform etc. These tools should be identified at

the beginning of the process and then applied consistently. If the required tools are not available further discussions with managers/decision makers is necessary.

- **Engage all stakeholders** including supporters of change and protagonists.
- **Ensure effective panel/committee structure;** set Terms of Reference, consider using an independent chair, define agreed principles and explore commonalities before focusing on difficulties.
- **Define agreed need and objectives** i.e. determine what the stakeholders, including the community, want to achieve from the process (social, economic or environmental objectives). Characterise these and clearly articulate them up front in the process.
- **Inform the stakeholders** using ‘Fisheries management 101’ principles to combat misinformation, anecdote and hearsay concerning resource management.
- **Use a proactive, transparent approach** to deal with emerging issues rather than delay and have the issues become entrenched and more difficult to resolve.
- **A sector-led process** has a better chance of achieving agreement and acceptance.
- **Spatial (and possibly temporal) access** is an issue that needs to be explicitly addressed in any resource sharing process.
- Consider if **autonomous methods of adjustment** between sectors and the innovative use of **spatial buffers** are tools that may be of some use.

Issue 2: Stakeholder capacity building

Step 1: Questions that need to be resolved

- How do we **effectively engage** with stakeholders in small-scale fisheries? Participants in these fisheries are often not conversant with the internet and modern means of communication. English may be a second language and distrust of government entrenched.
- Who are the **right people** to be engaging with? May be possible to identify industry/community leaders. In many cases wives are important players in small fishing businesses.
- Do the stakeholders have the **capability and capacity** to engage effectively? To engage in fisheries management processes effectively there is a need for time, knowledge, skills and resources. Where effective fishers organisations exist, they can provide the necessary resources for effective engagement.

Step 2: Suggested actions

- **Identify the right people** affected by issues and to whom capacity building should be targeted.
- **Recognise existing skills/ experiences** and build on these to get messages across.
- **Recognise existing peak bodies** and their present and future capacities.
- Identify areas where the **government can assist**, including through various existing funded programmes such as Farm Biz and the range of FRDC funded capacity building projects.
- **Create awareness** of training/leadership courses/education.
- **Cover costs** to attend meetings; government representatives to meetings are covered by salaries – fishers and other stakeholders generally have to forego income to attend and funding expenses is at least an acknowledgment that input is valued.
- **Be flexible** when deciding on locations and timings for consultative and capacity building forms (e.g. setting meetings at night).
- **Provide adequate and understandable information** on the issues and encourage meaningful discussion and participation.
- **Be cognisant of differences** of language and attitude and adapt processes to suit.

Additional suggested actions:

- Promote co-management approaches (e.g. Tasmanian scallop surveys)
- Build relationships, trust and respect with and between stakeholders and government.
- Use transparent processes.
- Be accountable for the decisions that are made.

Group 4 supports the motion for Australian Professional Fisheries Management Society (and a better acronym) to be developed and any other capacity building for fisheries managers.



Conclusion.

Summary of key issues in the management of small-scale fisheries.

This section provides a brief summary of the key issues raised and discussed in the workshop. Note that while a number of these issues are generic fisheries management issues and are not specific to small-scale fisheries, the challenges tend to be heightened in the small-scale fishery context.

The human element. Even more so than in other fisheries, given the coastal and estuarine context, small-scale fisheries management is as much about managing people and their needs and aspirations as it is about managing fish stocks for sustainability. These include commercial fishers more concerned with lifestyle than profit, keen recreational fishers, traditional Aboriginal fishers and conservation groups, all with differing values and views. More and more, community values are driving fisheries management activities and decision making processes.

Politics and the authorising environment. Social licence is hard to obtain and easy to lose, as was demonstrated in the Supertrawler debate. Gaining or keeping a social licence is more often about community perceptions and the strength of lobby groups and political pressure as it is about scientific evidence and fact. Stakeholder pressure can influence necessary but unpopular (with industry) fisheries management decisions. Accordingly, there is value in engaging and involving key stakeholders in formal consultative processes to inform any significant proposed change to minimise political or community intervention, outside of established fisheries management processes. Various means are now being employed to establish social licence, including third party accreditation schemes, greater transparency in fishery decision making processes through formal harvest strategy frameworks and through robust stock status reports.

Role of scientific evidence. The challenge is to keep evidence-based decision-making front and centre. Obtaining and analysing data from small-scale fisheries can be expensive relative to the value of the fishery, especially data on recreational catch and relative economic and other values of commercial, recreational and traditional Aboriginal fishing. Innovative ways are needed to ensure the necessary scientific information is available for decision making, which will undoubtedly require strengthened partnerships between fishing groups, government agencies and in some cases community groups.

Objectives. Setting clear and measurable objectives for management is critical for all fisheries management processes. However, given the multi-user aspects that characterise inshore small-scale fisheries there is a heightened importance to define and prioritise management objectives, ensuring there are adequate indicators and monitoring processes to assess whether or not the objectives are being met. Many jurisdictions are now moving to introduce specific actions to address economic considerations. While some jurisdictions use social objectives, most are more implicit than explicit. The recent work undertaken by Triantafillos *et al.*¹ is expected to facilitate fisheries management agencies to more explicitly consider and explore the use of social objectives in fisheries management processes.

Communication. Effective communication with all stakeholders is vital, particularly in dealing with social values in an increasingly political and conflicted environment. In general, scientists and, to a lesser extent, fisheries managers, are not good communicators. Consequently there is an increasing need for professional assistance in this field, for capacity building of fishery managers and for well-designed communication strategies. In communicating with the public, messages relying just on the facts are not sufficient. The impacts of management decisions on stakeholder groups, and the process by which decisions were arrived at, are as important as the decisions themselves and the factual basis for them. Greater emphasis needs to be placed on building the capacity of fishery managers to communicate the complex issues they are dealing with, into more easily understandable and digestible information for fishers, fishery stakeholders and the wider community.

Rise of social media. The impact of social media on fisheries management has been profound in some instances. Get Up! campaigns, Face Book, website chat rooms are now all mainstream communication

¹ Triantafillos L, Brooks KJ, Schirmer J, Pascoe S, Cannard T, Dichmont C, Thebaud O and Jebreen E (2014). Developing and testing social objectives for fisheries management. FRDC Report – Project 2010/040. Primary Industries and Regions, South Australia, Adelaide, 807 pp. March. CC BY 3.0

channels, many of which are used to generate fear, doubt and anxiety about fishing activity and fisheries management. Scientists and managers, bound by fact, protocol and bureaucracy are currently ill-equipped to deal with media storms and are frequently found wanting in this area. There is a need to become more proactive and engage effectively, while noting that once involved, keeping up with the pace and volume of information flow and operating in a manner consistent with agency communication policies, particularly in relation to media clearance processes, can be difficult. This is an area of fisheries management requiring strategic focus and investment in resources to bridge the gap.

Resourcing. Small-scale fisheries can be complex and relatively expensive to manage, particularly when they occur in the coastal environment where stakeholder interactions and tensions tend to be greatest. Considerable financial and other resources are needed to meet the goals and expectations of participants and interested parties. This is now particularly evident as increased responsibilities fall on fisheries managers and industry, including certification, environmental requirements, incorporation of explicit social and economic objectives and an increased recognition of the need to accommodate indigenous interests. These resource demands come in the face of shrinking departmental budgets, other government funding priorities and on-going calls for reductions in licence fees from what are frequently marginally-profitable fisheries.

Management costs. Given the preceding issue, it is important to ensure that management and associated costs match the scale and capacity of a fishery to pay for the attributed costs associated with management. Challenges exist, to varying degrees across different jurisdictions, in relation to whether or not to apply concessions (i.e. subsidies) to these fisheries in particular, in recognition of public good and community social benefits and, if so, how and on what basis. To optimise costs, it is considered that use risk analysis and risk/catch/cost trade-off approaches should be adopted to determine appropriate levels of science, management and compliance services.

Collaboration. Greater cross-jurisdictional engagement is necessary to reduce duplication, increase harmonisation and consistency, and to optimise the use of increasingly scarce resources. The Canadian example of industry/government /academia cooperation in developing integrated approaches to fisheries management offers a useful model worth further consideration in the Australian context.

Indigenous issues. There is now a greater awareness and incorporation of indigenous objectives in fisheries management. National approaches should be explored but need to be mindful of the important differences between and within indigenous communities. Indigenous fishing strategies should not be considered as stand-alone activities and indigenous fishing should be incorporated into mainstream management strategies, including management plans. This approach may just require a change in thinking to be effective rather than a substantial increase in cost and resources.

Source of fresh seafood. An increasingly important stakeholder in the small-scale fishery debate is the seafood consumer. While many anti-commercial fishing lobby groups purport to represent the wider community, they more often than not do not represent the non-fishing public, which has a right to purchase sustainable fresh local seafood. Giving a voice to and improving communication with seafood consumers can help to give some support and protection to the fishing industry in a climate of increasing competition for resources. There are some innovative approaches used to foster community support and ownership of small-scale fisheries in other parts of the world (e.g. consumer organisations in Monterey Bay) that should be investigated for application in Australian small-scale fisheries.

Overcapacity. Most small-scale fisheries suffer from excess capacity and an assortment of, at times, inefficient and ineffective input controls. There is a need to explore ways to strip off the unnecessary regulatory burden that has built up in some of these fisheries. Effort expended on developing cost recovery for marginal fisheries where excess capacity exists may be better spent focusing on means to reduce capacity to return a fishery to profitability and therefore better able to meet management costs.

Capacity building. Improving capacity in all sectors, including equipping industry with the ability to deal with an increasingly complex and demanding business and regulatory environment, is an essential task. Fishery managers used to have a range of training options and attended workshops such as this one. As demands on fisheries managers have increased both in terms of workload and complexity, overall resourcing and the opportunities for staff development have diminished. A strategic approach is needed to address capacity building issues in Australian fisheries management.

Reputational risks. There is a need to address the public perception of governments and governmental processes. Getting acceptance that Australian fisheries, including small-scale fisheries are well managed and

sustainable is the key to gaining the social licence discussed above. This links strongly with the communication issue highlighted earlier, which is key to addressing the reputational issues.

Resource sharing and security of access. While many of the intrasectoral allocation issues within commercial fisheries are largely settled, allocation issues between sectors remain a source of friction in most jurisdictions and inter-sectoral resource sharing debates are on-going. The nature of these debates, and the processes proposed to resolve them, can be more or less explicit, i.e. by allocating catch shares between commercial, recreational and indigenous sectors (explicit) or the creation of marine parks or recreational fishing-only areas (implicit). Identifying and engaging all stakeholders, understanding their various values and then seeking agreement and building support for resource sharing options is the preferred approach.

Environmental awareness and certification. The bar for environmental standards is being continuously raised, with associated cost implications. This and the need to (re)gain public confidence in fisheries management is leading fisheries towards various forms of certification to meet the emerging trend in the marketplace to demonstrate sources of responsibly managed /sustainable seafood. While some markets are using 'consumer-facing' labels such as the MSC logo to proclaim sustainably-sourced products, other trends, such as Buyer to Buyer and partnering with ENGOs to demonstrate due diligence across the product range of a business are likely to emerge. Fisheries Improvement Plans are being seen as a cost effective step toward certification. For countries with strong management frameworks and traceability these alternative approaches may also be more cost effective than sustainability certification of the kind offered by MSC. This will be especially the case with small-scale fisheries that are currently being penalised as they need certification to 'prove' sustainability, but often lack the resources to pay for it.

Harvest strategies. Harvest strategies are increasingly being considered and used in small-scale fisheries. Harvest strategies do not need to be overly complex and can be developed cost effectively for small-scale fisheries (e.g. the South Australian pipi example). Harvest strategies provide opportunities for improved co-management and deliver greater certainty for all stakeholders – including industry, and help to build public confidence and social licence

Professional Association. At the end of the workshop participants discussed the need for establishment of a professional association of fishery managers. The aim would be to create a professional network that could provide a platform gain better recognition of fisheries management as a profession that can be trusted by the community to deliver reliable outcomes for community owned fisheries resources. It would also provide a means of connecting fisheries managers together providing opportunities for development, capacity building, networking. It could be used as a reliable reference point for community groups and media when fisheries management debates are running and a reliable independent perspective is needed. It could be used as the vehicle for regular workshops such as this one and could develop partnerships with the Australian Society of Fisheries Biologists (ASFB).

Further Development

Where to from here – Outputs of the Workshop.

1. Proceedings of workshop to be drafted and distributed.
2. Contact list of participants to be distributed.
3. Participants supported the development of a project proposal seeking funds to develop a tool for managers – Guidelines for small-scale fisheries.
4. Participants supported the convening of a subsequent Fisheries Managers Workshop in 12-24 months.
5. Potential communications project suggested. Developing communications resources/guides/toolkits for fisheries managers in Australia to allow technical experts to operate effectively in a public discussion environment. How to communicate fisheries issues in community value terms.

Formation of an Australian Professional Fisheries Management Society.

Participants supported the formulation of a steering committee to formulate an Association or Society of Fisheries Managers.

Recommendations

The following recommendations to develop and disseminate the outcomes of the workshop were identified:

- Publish the proceedings
- Progress the formation of a National Association of Fisheries Managers
- Maintain a ‘live’ register of Fisheries Managers’ contact details to facilitate communication between managers.
- Hold another workshop in 12-24 months’ time

Extension and Adoption

Fisheries managers will be empowered with new skills/knowledge that they can use as appropriate on fisheries management issues in their jurisdictions.

Fisheries Management Sub- Committee will use the ideas generated in the workshop in developing and 'road-testing' proposals on 'Developing cost effective and efficient management for small-scale fisheries' to assist it in finalising its response to AFMF on this matter.

Project Coverage

The Workshop was the subject of an article in FRDC's 'Fish' magazine Vol. 22(2) June 2014.

http://frdc.com.au/knowledge/publications/fish/Pages/22-2_articles/19_Small-scale-fisheries.aspx

Project Materials Developed

This workshop report.

Appendix 1: Fisheries Managers Workshop Attendance

WA

Name	E-Mail	Contact Number	Additional information
Lindsay Joll	Lindsay.Joll@fish.wa.gov.au	08-9482 7319	Director, Aquatic Management
Martin Holtz	Martin.Holtz@fish.wa.gov.au	08-9482 7332	Principal Management Officer
Jodie O'Malley	Jodie.OMalley@fish.wa.gov.au	08-9482 7373	Fisheries Management Officer
Rhiannon Jones	Rhiannon.Jones@fish.wa.gov.au	08-9482 7223	Fisheries Management Officer

NT

Name	E-Mail	Contact Number	Additional information
Ian Curnow	Ian.Curnow@nt.gov.au	08-8999 2027	Chair, Australian Fisheries Management Forum; Executive Director NT Department of Primary Industry and Fisheries.
Bryan McDonald	Bryan.Mcdonald@nt.gov.au	08-8391 1451	Director, Aquatic Resources
Bo Carne	Robert.Carne@nt.gov.au	08-8999 2164	Manager, Indigenous Development Unit
Dave McKey	David.McKey@nt.gov.au	08-8999 2268	Senior Fishery Manager (all fisheries)
James Woodhams	James.Woodhams@nt.gov.au	08-8999 2093	Fishery Manager, Coastal Line Fishery and Small Pelagic Fishery
Blake Taylor	Blake.Taylor@nt.gov.au	08-8999 2119	Fishery Manager, Aquarium Fishery

QLD

Name	E-Mail	Contact Number	Additional information
Tony Ham	Tony.Ham@daff.qld.gov.au	07-3087 8073	Manager, Regulatory Reform and Consultation (Commercial Inshore net and line fisheries, recreational fishing)
Michelle Winning	Michelle.Winning@daff.qld.gov.au	07-3087 8034	Principal Policy Officer, Fisheries Assessment (Strategic assessments and sustainability reporting)
Anthony Roelofs	Anthony.Roelofs@daff.qld.gov.au	07-3087 8063	Senior Fisheries Biologist, Fisheries Assessment (Harvest fisheries, strategic assessments and sustainability reporting)
Ben Westlake	Ben.Westlake@daff.qld.gov.au	07-3087 8050	Senior Policy Officer, Regulatory Reform and Consultation (Crab fisheries, regulatory reform and policy development)

NSW

Name	E-Mail	Contact Number	Additional information
Andrew Goulstone	Andrew.goulstone@dpi.nsw.gov.au	02-6691 9680	Director Commercial Fisheries
Darren Reynolds	Darren.reynolds@dpi.nsw.gov.au	02-6691 9682	Senior Fisheries Manager Reform/Estuary General
Nicholas Giles	Nicholas.giles@dpi.nsw.gov.au	02-6652 3977	Fisheries Manager Lobster, Inland, SUTS
Phillip Bolton	Phil.bolton@dpi.nsw.gov.au	02-4424 7411	Fisheries Manager Recreational Fisheries
Geoffrey Barrett	Geoff.barrett@dpi.nsw.gov.au	02-4424 7414	Senior Fisheries Management Officer Charter Boats

VIC

Name	E-Mail	Contact Number	Additional information
Mark Edwards	Mark.edwards@depi.vic.gov.au	03-9658 4378	Director, Fisheries Policy & Licensing
Megan Higson	Megan.higson@depi.vic.gov.au	03-9658 4344	Principal Policy Analyst
Kylie Wohlt	Kylie.wohlt@depi.vic.gov.au	03-9658 4866	Principal Policy Analyst
Scott Lawrence	Scott.lawrence@depi.vic.gov.au	03-9658 4357	Manager, Fisheries Policy
Peter Lawson	Peter.lawson@depi.vic.gov.au	03-5258 0205	Snr Fisheries Management Officer

TAS

Name	E-Mail	Contact Number	Additional information
Greg Ryan	Greg.Ryan@dpipwe.tas.gov.au	03-6165 3028	Manager, Commercial dive, shellfish and marine plants
Frances Seaborn	Frances.seaborn@dpipwe.tas.gov.au	03-6165 3044	Manager, Scalefish, octopus and small pelagic species
James Parkinson	James.parkinson@dpipwe.tas.gov.au	03-6165 3045	Manager, Lobster and giant crab
Dave Jarvis	David.jarvis@dpipwe.tas.gov.au	03-6165 3040	Manager, Scalefish and scallops

SA

Name	E-Mail	Contact Number	Additional information
Sean Sloan	Sean.Sloan@sa.gov.au	08-822 62326	Director, Fisheries and Aquaculture Policy
Alice Fistr	Alice.Fistr@sa.gov.au	08-822 62369	Manager, Fisheries Policy and Management Unit
Lianos Triantafillos	Lianos.Triantafillos@sa.gov.au	08-822 62961	A/Manager, Strategic Policy
Annabel Jones	Annabel.Jones@sa.gov.au	08-823 62962	Program Leader, Commercial Fisheries (Rock Lobster, Giant Crab)

Keith Rowling	Keith.Rowling@sa.gov.au	08-8226 1745	Program Leader, Community Based Fisheries (Blue Crab, Recreational, Miscellaneous)
Jonathan McPhail	Jonathan.McPhail@sa.gov.au	08-8463 4418	Fisheries Management Officer (Lakes and Coorong, Charter, Inland)
Michelle Besley	Michelle.Besley@sa.gov.au	08-820 49986	Fisheries Manager (Marine Scalefish)
Brad Milic	Brad.Milic@sa.gov.au	08-820 49987	Fisheries Manager (Sardine, Prawns)
Matt Hoare	Matthew.Hoare@sa.gov.au	08-822 60228	A/Fisheries Manager (Abalone, Mud Cockle, Exploratory)

AFMA

Name	E-Mail	Contact Number	Additional information
Diarmid Mather	Diarmid.Mather@afma.gov.au	02-6225 5464	Australian Fisheries Management Authority
Shane Fava	Shane.Fava@afma.gov.au	07-4069 1990	Australian Fisheries Management Authority

DAFF

Name	E-Mail	Contact Number	Additional information
Tim Karlov	Tim.Karlov@daff.gov.au	02-6272 3933	Department of Agriculture, Fisheries and Forestry

FRDC

Name	E-Mail	Contact Number	Additional information
Patrick Hone	Patrick.Hone@frdc.com.au	0419 628 400	Executive Director FRDC

Other

Name	E-Mail	Contact Number	Additional information
Robert Stephenson	Robert.Stephenson@dfo-mpo.gc.ca		
Richard Stevens	r.p.stevens@bigpond.com		

Workshop Facilitator

Name	E-Mail	Contact Number	Additional information
Ian Cartwright	thalassa@bigpond.com		Thalassa Consulting