

Practical implementation of social and economic elements in ecosystem based fisheries management and integrated fisheries management frameworks

Report of a Workshop, 24-25 March 2014



Gavin A. Begg, Kate J. Brooks, Robert L. Stephenson
and Sean R. Sloan

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Cover Photos: Seining herring from a weir in the Bay of Fundy (courtesy of Robert L Stephenson). Snapper, Western King Prawns and commercial prawn trawlers (courtesy of SARDI Aquatic Sciences).

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Abbreviations

AFMF – Australian Fisheries Management Forum

CPUE – Catch Per Unit Effort

EAF – Ecosystem Approach to Fisheries

EBFM – Ecosystem Based Fisheries Management

ESD – Ecologically Sustainable Development

FAO – Food and Agricultural Organisation

FGM – Fishery Gross Margin

FRDC – Fisheries Research and Development Corporation

GVP – Gross Value of Production

MEY – Maximum Economic Yield

PIRSA – Primary Industries and Regions South Australia

SARDI – South Australian Research and Development Institute

TAC – Total Allowable Catch

Executive Summary

There is a growing need to include social and economic objectives in fisheries management and to address public trust and confidence (i.e. to secure a ‘social licence’) in fisheries management processes. In the context of the health and sustainability of ecological systems having primacy as the basis of any fishing activity, a national workshop was convened to discuss the practical implementation of social and economic elements in ecosystem based and integrated fisheries management frameworks. The workshop, held on 24-25 March 2014, at the South Australian Research and Development Institute (SARDI), involved over 40 representatives from fisheries management jurisdictions from around Australia, the fishing industry and Indigenous sector, and researchers with both national and international perspectives.

The workshop reviewed what jurisdictions are currently doing to integrate social and economic dimensions into fisheries management decision making (including the Indigenous, commercial and recreational sectors) and reviewed experiences of recent years in the implementation of ecosystem based management frameworks, with a focus on social and economic objectives and initiatives that generate broader community benefits.

Key findings

There is a need to identify, and make explicit, social and economic objectives in fisheries decision making and broader ecosystem management, as the basis of achieving comprehensive and integrated fisheries management. All jurisdictions in the Australian fisheries management context have legislation that contains high level objectives to promote ‘ecologically sustainable development’ (ESD) of fisheries resources, which include varying degrees of recognition of the social and economic dimensions of fisheries management. Currently, social objectives exist in fisheries legislation across the different jurisdictions. In a number of jurisdictions, policies are in place to articulate how the overarching legislative objectives will be pursued, through instruments such as harvest strategies. Social objectives have also been used in a variety of long standing management arrangements in some jurisdictions, particularly at the State level, where stakeholder group interactions and tensions tend to be heightened. These are generally not recognised as explicit social objectives, but more as implicit directives or outcomes. For example, temporal netting closures are used in some jurisdictions over peak family holiday periods to reduce stakeholder tensions, ensure equitable access to resources by all stakeholders and maximise social acceptance of commercial fishing activities. Owner-operator policies are also used in some jurisdictions to enable ownership of fishing licences to be maintained in regional areas to support regional development activities.

In some jurisdictions, the social and economic dimensions are not well defined or articulated in fisheries management plans, policies or decision making processes. In this context, there is a need for overarching strategies to guide the management of fisheries resources/ecosystems, refine (or develop) explicit social and economic objectives, or at a minimum state how social and economic considerations of policies have been factored into management plans. Importantly, these strategies should identify mechanisms that mobilise the integration of these elements into current processes, recognising the primacy of ecological sustainability.

Gaining a ‘social licence’ to operate has consistently been identified as the crucial outcome of achieving trust in conducting and managing fishing activities in the various jurisdictions. The workshop highlighted, however, the continued confusion as to what this term means. The explicit inclusion of social and economic objectives that have relevance to the broader regional and Australian community, as well as fishers, and the active pursuit of their achievement, is one plank in the pursuit of achieving a social license for a fishery.

Each jurisdiction has its own unique social and economic characteristics, and within this each fishery is different; therefore, producers, recreational fishers, Indigenous fishers, retailers, communities, regions and other fishery stakeholders need greater input into the development of social and economic objectives of management. This will help set benchmarks for concerns that relate to obtaining and retaining a ‘social licence to operate’ (i.e. the umbrella under which a number of specific objectives are situated).

There is an underpinning need to discuss and identify the long-term vision for fisheries (balancing the opportunities and costs of alternate futures).

Comprehensive case studies of a range of fisheries where social and economic objectives are integrated and assessed in the context of a harvest strategy are needed. It would also be useful to have retrospective evaluations of case studies of fisheries that are doing well which have entailed the use – implicitly or explicitly – of social and economic objectives.

Methods are available that allow integration of social and economic aspects in fisheries management processes (e.g. Fletcher et al. 2002, <http://www.fisheries-esd.com/>). However, there is a perceived lack of policies, governance arrangements and, moreover, the necessary resources to make these operational. To address this there is a need to:

- Recognise that in the current Australian context, community expectations and scrutiny of fisheries management is increasing and that this is occurring against the backdrop of fisheries management and science resources becoming increasingly constrained;
- Develop or refine existing fisheries management strategies to create better integration of ecological sustainability with economic and social objectives;
- Undertake case studies (or demonstrations of ‘proof of concept’) that match method/approach with need and data in a variety of situations, in order to establish the extent of additional resources and processes required. The results of the recent ‘Social Objectives and Indicators’ report (FRDC 2010/040) should be applied/tested more broadly to provide a proof of concept. However, it should be noted that further research on the social objectives and indicators of Indigenous communities is required to undertake a proof of concept; and
- Investigate the need for any necessary changes in governance arrangements that are required to build increased participation and transparency into decision making processes to assure fisheries stakeholders and the wider community of the integrity of relationships and fisheries management systems.

Identification of the resources and the capacity (incorporating processes) to develop skill sets of managers, scientists and other participants are also required to implement integration and ensure credibility in regard to process robustness.

Successful integration of social and economic aspects into both the minds and practices of fisheries stakeholders will also require innovative communication strategies, once further development and road testing of integration methodologies has been completed. These strategies will, in the first instance, involve engagement, as well as communications targeted to management, commercial and recreational fishers and Indigenous people, and then communication and consultation plans developed specifically to inform and engage the broader Australian public with the stewardship goals of fisheries management.

The long term benefits of this workshop are envisaged to be a pathway to increasing the use of social and economic data in fisheries management that will assist in increasing public trust in the management of common property fisheries resources (and therefore supporting the generation of the industry’s social licence). To realise these benefits, there may need to be a realignment of purpose amongst fisheries management agencies.

This workshop was initiated through funding for the Visiting Expert Award from the FRDC People Development Program.

Keywords

Integration; social; economic; fisheries management; ecosystem based fisheries management.

Introduction

Fisheries face the challenges of developing domestic and international strategies for the move to full implementation of ‘ecosystem based’ and ‘integrated’ management approaches. This is driven by increasing market (and general public) pressure for certification and/or verification of social and economic, as well as ecological sustainability (which remains the primary responsibility of fisheries management in managing the use of common property resources). The evolving landscape of co-management demands increased participation of fishers (Indigenous, commercial and recreational) in management processes and shared stewardship responsibility, along with the need to adapt to changes in the ecosystem, while credibly and effectively engaging with public perceptions of sustainability.

In Australia, consensus was reached among all levels of government in the early 1990s to apply the principles of ecologically sustainable development (ESD). By the late 1990s this was reflected in provisions of the Commonwealth’s *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. A workshop in Geelong in March 2000 (Smith and Hodge 2001) identified a set of national projects to enable effective incorporation of ESD within the management of fisheries (<http://www.fisheries-esd.com/>). It was later recognised that ESD must extend beyond the individual fishery to cover all fishing activities within a region. This approach was termed ecosystem based fisheries management (EBFM). A second workshop (‘Geelong Revisited’, in May 2008, Millington and Fletcher 2008) reviewed jurisdictional programs to implement EBFM and the growing number of regional marine planning initiatives being undertaken by State/Territory and Commonwealth agencies. That workshop identified a number of drivers and actions for the implementation of EBFM. Looking forward, it identified the need for: effective stakeholder (Indigenous, commercial and recreational – community) involvement in policy development and research; development of collaborative processes; enhancement of ecological research with socio-economic studies; and the inclusion of social science and work on ‘the human behavioural element’ (Millington and Fletcher 2008).

The need for inclusion of ecological, economic and social objectives is well established in Australian policy related to ESD. The National Strategy on Ecologically Sustainable Development (1992) had three key objectives:

- To enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations.
- To provide for equity within and between generations.
- To protect biological diversity and maintain essential ecological processes and life-support systems.

The Australian Fisheries Management Forum (AFMF) considers that EBFM (Fletcher 2012):

- Integrates social and economic outcomes in decision making to generate the best overall outcomes for the community.

All jurisdictions in the Australian fisheries management context have legislation that contains high level objectives to promote ESD of fisheries resources, which include recognition of the social and economic dimensions of fisheries management. Currently, there are many social objectives in fisheries legislation across the different jurisdictions (e.g. “the plan assists in the enjoyment of, and access to, the living marine resources by the community”¹ or “recreational fishing and commercial fishing

¹ Tasmanian “*Fishing Registration Act 2001*” Part 3 Fisheries Management, Section 110, Part (2) (c)

activities are to be fostered for the benefit of the whole community”²). In a number of jurisdictions, policies are in place to articulate how the overarching legislative objectives will be pursued, through policy instruments such as harvest strategies. Social objectives have also been used in a variety of long standing management arrangements in some jurisdictions, particularly at the State level, where stakeholder group interactions and tensions tend to be heightened. These are generally not recognised as explicit social objectives, but more as implicit directives or outcomes. For example, temporal netting closures are used in some jurisdictions over peak family holiday periods to reduce stakeholder tensions, ensure equitable access to resources by all stakeholders and maximise social acceptance of commercial fishing activities. Owner-operator policies are also used in some jurisdictions to enable ownership of fishing licences to be maintained in regional areas to promote regional development activities.

In some jurisdictions, however, the social and economic dimensions of ESD are not well defined and are not well articulated in fisheries management plans, policies or decision making processes.

The need to develop sound and workable methods of implementing ecosystem based approaches to fisheries has, as one of its outcomes, a benefit of generating reportable benchmarks of management performance. With clear communication, these can generate increased public trust in the management of common property resources, in the course of delivering ecological sustainability, and social and economic benefits from the resource use. There is a particular challenge around the inclusion of social and economic aspects. At this time there is need for a review of the approaches and priorities that have been developed around ecosystem based approaches to management, how easy and effective they are to implement, and how these can contribute to the generation of a ‘licence to manage’ for fisheries management agencies. The issue of generating public trust and confidence in the industry and management of fisheries (i.e. generating a ‘social licence’; Box 1) in a changing management landscape has been evolving rapidly, and is a particular challenge for industry and management agencies.

Box 1: Definition of social licence.

SOCIAL LICENCE - is the provision of the privilege to operate with minimal formalised restrictions, procured and maintained through generating public trust by doing what’s ‘right’. (The Centre for Food Integrity – Consumer Trust in The Food System Research 2012, <http://www.foodintegrity.org/research>)

The Social License has been defined as existing when a project or activity has the ongoing approval and/or broad social acceptance within the local community and other stakeholders. (<http://sociallicense.com/definition.html>)

The provision of a social licence or Social Licence to Operate (SLO) is one **outcome** of good Corporate Social Responsibility (CSR) practices. A commitment to, achievement of, and transparency about CSR entails developing policies and actions to ensure compliance with the spirit of the law (as well as the actual law) and ethical standards of the community, and often entails employing or developing (an industry’s) Social Capital (SC), with the effect of achieving the outcome of SLO.

It is not ‘bought’ or officially procured in any way, but is obtained through active and ongoing engagement with stakeholders that generates the required level of trust in the conduct of the activity (Brooks, pers. comm.).

² “South Australia Fisheries Management Act 2007”, Part 2 ‘Objectives of Act’ Part 7 (1)(e)

Due to the increasing impetus nationally and internationally to integrate social and economic aspects with ecological aspects in fisheries management frameworks, and building on the need identified by the Geelong Revisited Workshop of 2008, it was considered timely to identify the current barriers, priorities and activities to incorporate social and economic aspects into the biological aspects of marine/aquatic ecosystem management. This was envisaged to entail a review of the activities currently being undertaken in this context and how they are being addressed in co-management (i.e. are management, industry and research on the same page?) and in integration (i.e. what are we doing or what could we be doing?). In light of recent projects, it was considered appropriate to take stock of what tools are now available in Australia and look at some activities that are being undertaken internationally to address any 'gaps' in our capacity – specifically to compare the Australian and Canadian experiences, and consider how we might benefit from each other. This initiative was supported through funding from the FRDC People Development Program Visiting Expert Award.

Objectives

The overall objective of the workshop was to review implementation of ecosystem based management frameworks, with a focus on social objectives and initiatives that generate broader community benefits.

To deliver this objective a national stakeholder workshop was held involving the fisheries management, Indigenous, industry and research sectors. The aims of the workshop were the following:

- To review current Australian and international approaches to integrating the social and economic elements of fisheries management into ecosystem based/integrated fisheries management (EBFM/IM).
- To identify the most robust and implementable methods to integrate social and economic dimensions into fisheries management.

Specific outcomes sought included:

- What, if any, are the barriers to fully integrating social and economic objectives with biological ones in management?
- What work or research needs to be undertaken to maximise our effectiveness and efficiency in this integration?
- What might need to be done to facilitate adoption of integrated systems?
- Recommendations on the pathway(s) toward increasing use of social and economic information that will assist in increasing public trust.

The long-term benefits of the workshop were envisaged to include the increased use of social and economic data in transparent and integrated fisheries management that will assist in increasing public trust in the management of common property fisheries resources (and therefore supporting the generation of the government and industry's social licence to manage/operate).

Methods

A national stakeholder workshop involving the fisheries management, Indigenous, industry and research sectors was held on 24-25 March 2014, at SARDI, West Beach, South Australia (see Appendix 4 for the workshop agenda and list of participants).

The workshop was based around presentations and discussion of the following areas:

- Review of what jurisdictions are currently doing to integrate social and economic dimensions into fisheries management decision making, governance and reporting frameworks (including the Indigenous, commercial and recreational sectors);
- Current Australian research on the integration of social and economic dimensions into fisheries management decision making, governance and reporting frameworks;
- An Indigenous perspective; what's working and what's not;
- An industry reality check; discussion from an industry perspective of what's working and what's not;
- International perspective and overview of methods being used to integrate ecological, social and economic aspects;
- Barriers and keys to success in practical implementation of social and economic dimensions.

The workshop was facilitated by Dr Robert Stephenson (Canadian Fisheries Research Network) and Dr Kate Brooks (FRDC Social Sciences Research Coordination Program). Dr Stephenson's participation in the workshop was funded by the FRDC People Development Program Visiting Expert Award.

This report summarises key concepts, information and discussions held at the workshop, and provides recommendations as to potential steps forward for the practical implementation of social and economic dimensions into fisheries management decision making, governance and reporting frameworks.

Results³

Management

The first of the three groups that participated in the workshop were the State, Northern Territory and Commonwealth management jurisdictions, who were each asked to present the work that they were undertaking in relation to collecting and utilising social and economic data in their decision making. Management jurisdictions were asked if and how social and economic objectives were being developed and decided upon and, where this was the case, how these were being aligned with existing ecological priorities. They were also requested to focus their discussions on the barriers and/or keys to their successes in integrating social and economic dimensions into EBFM frameworks.

The resulting presentations identified that while a few of the jurisdictions are attempting to develop explicit economic and social dimensions in their fisheries management processes, these are in the minority and far from integrating these elements into a comprehensive EBFM approach. However, it was also identified that many of the jurisdictions already have economic, and at times social, objectives implicit in their fisheries management plans, despite a lack of consciousness of it on the part of either managers or fishers. This only became explicit through the workshop discussion. Many of the jurisdictions were not aware of the resources developed that would help the implementation of ESD and EBFM – including the work by the former FRDC ESD Subprogram (see <http://www.fisheries-esd.com/c/pubs/>).

Five of the six State and Territory jurisdictions (excluding ACT) presented information at the workshop. There were also presentations by the Australian Fisheries Management Authority and the Commonwealth Department of Agriculture. Tasmania provided input prior to the workshop which was included in this synthesis.

The key challenges (i.e. ‘what’s not working’) that emerged from the presentations by the management jurisdictions were:

- A lack of understanding as to how to begin identifying social and economic objectives and then how to implement assessment, integration and performance monitoring programs;
- The lack of resources (staff, skills, time and/or funds) to implement explicit social and economic objectives and the required data collection, assessment and monitoring programs to measure performance against these objectives;
- The lack of clarity and/or appreciation around the benefits of incorporating social and economic objectives into fisheries management planning for some jurisdictions. This was in regard to both direct fishery benefits and benefits from community/fishery interactions;
- The belief that ecological, social and economic objectives should receive the same ‘weight’ in decision making has been a barrier, and where this was understood not to be required there remains consternation regarding how to select the priorities and trade-offs between competing objectives;
- In some sectors/fisheries, it is difficult to move forward with any social objectives, until the issue of ‘rights’ to the resource (i.e. allocation of stocks to various sectors) are confirmed;

³ See Appendix 5 for the presentations given at the workshop.

- An acknowledgement that, while on review, many managers consider that a number of social objectives are often taken into account when developing management plans implicitly, but have not been made explicit due to a lack of awareness/resources/frameworks;
- The lack of explicit objectives makes it difficult to assess management plans against requirements of the various Act(s). Objectives need to be linked to policy;
- The need to broaden perspectives beyond the impacts of fisheries management plans on only commercial fishers, to incorporation of recreational fishers and charter operators, and to the effects of management plans on Indigenous customary fishing and communities associated with fishing activities.

Progress towards addressing these challenges varied across jurisdictions. This was reflected in the clear differences in the capacity and capability of agencies and individual fisheries to identify and implement assessment of economic and social objectives, and undertake the required monitoring and data collection programs to measure performance against these objectives. Those jurisdictions with robust cost recovery frameworks were better placed to address these challenges.

The inclination of some jurisdictions, in regard to incorporating economic and social objectives, is to use catch rate (i.e. CPUE) as a proxy indicator for economic objectives. Where economic data are collected in the form of gross value of production (GVP), there has been a tendency to use this as a proxy indicator for the achievement of any implicit social objectives.

The social dimension of fisheries management was manifested as the need to manage the impact of the push to reduce fishing effort in the context of ecological pressures (e.g. marine parks), as well as manage competition between commercial/Indigenous and recreational users. To this end, equitable access – or ‘rights’ – was seen as a key social issue of current concern. Where social and/or economic data are being collected by the jurisdictions this has, to date, largely either been in response to a specific issue, or is an emerging activity, that is yet to be integrated in harvest strategy and management plan development frameworks.

The governance context is important. Some States (South Australia, Western Australia and Victoria) were seeking to adopt greater co-management⁴ approaches where there is cohesion amongst operators. It was considered that such approaches would be better equipped to incorporate explicit social and economic objectives as they would be driven and ‘owned’ by industry, Indigenous and recreational fishers.

Western Australia completes a risk register for all fisheries, which incorporates social and economic, as well as biological risks and combines these to identify issues of potential concern. However, the challenges of interactions between economic and social risk mitigation measures were acknowledged with the example of the move from input controls to quota in the Western Rock Lobster Fishery. In this case, while reducing economic risks, the move inadvertently increased risks of social issues.

South Australia uses the national ESD risk assessment process established by Fletcher et al. (2012) to conduct ESD risk assessments to inform prioritisation of issues to be addressed in formal fishery management plans.

⁴ Fisheries co-management is an arrangement in which responsibilities and obligations for sustainable fisheries management are negotiated, shared and delegated between government, fishers, and other interest groups and stakeholders (Neville et al. 2008).

In the Northern Territory, in line with acknowledgement and legislative recognition of the rights of Indigenous peoples to their customary take and primacy (in relation to new and developing commercial operations), they are increasingly being acknowledged as co-managers of the resource, and their input is accessed through consultative committees. However, as with some other jurisdictions (Commonwealth, New South Wales and Victoria) the key focus of social implications are in relation to participants in the harvest and commercial aspects of fishing, and as yet, do not include consideration of recreational activities.

In a number of States, most notably Victoria and Queensland, the operating environments have either severely hampered focus on further development of integrated approaches, or have resulted in an absence of management plans. This is due to the changing provision of resources to develop and implement fisheries management plans, or a fluid political landscape which modifies the authority or previously agreed management objectives. In New South Wales, a current wide-ranging reform of the commercial sector may mean a more reduced capacity and incentive to tackle integration of social/economic aspects into management plans. As one of the primary drivers for the reforms is economic viability of the industry, it is hoped that useful economic information will emerge from this process.

Where economic objectives exist they are, as is the case for the Commonwealth, generally broad and along the lines of ‘to maximise the net economic returns to the Australian community’. Where economic objectives are further defined, the focus is on cost efficiency in the pursuit of profit – not catch – utilising Maximum Economic Yield (MEY) as the benchmark. Additional economic objectives may in some cases be the pursuit of maximum productivity in the most cost efficient and effective frameworks for both fishers and regulators.

In some jurisdictions, although formal Management Advisory Committees (MACs) or Regional Advisory Groups (RAGs) have been disbanded due to funding constraints or restructuring, there is still a reliance on these types of groups, formally or otherwise, to provide a level of social and economic context to proposed management arrangements. It was noted that in a number of cases this consultation is perceived to be essential for transparency. This arrangement, however, was noted not to have explicit visibility or assessment and performance measures within management plans and broader decision making.

It was apparent that where social and economic elements were considered (implicitly or explicitly) these were largely from the perspective of commercial fisher activities and were not applied to recreational fisher activities, or the effects on Indigenous customary use, or wellbeing of those communities associated with fisheries.

Indigenous⁵

It was acknowledged that Indigenous peoples, like all people, are seen as part of the ecosystem who have impacts on that ecosystem. However, the cultural and customary interactions of Indigenous people with the ecosystem are often poorly understood by other sectors. Also government commitment is required to adequately recognise Indigenous fishing rights in management plans and decisions and ensure these do not impede or impact on cultural or customary activities.

The lack of integration of Indigenous community objectives and perspectives into EBFM were considered to be due to the following:

⁵ Matt Osborne from PIRSA Rural Solutions presented on behalf of the FRDC Indigenous Reference Group (IRG).

- Insufficient understanding and acceptance of the primacy of Indigenous fisheries and the lack of acknowledgement of its' distinct nature in the contemporary governance and management of Australian fisheries;
- Not considered explicitly as a stakeholder – fisheries have been attributed in most cases to commercial users only – rather than considering all users, including the general public;
- Inconsistency in the legislative recognition of Indigenous rights;
- The use of 'MEY' and 'allocation' as proxies for economic and social objectives/benefits, whereas customary fishing is not for economic gain; and
- Cultural catch has significant social value that is not accounted for in the current economic evaluation of the resource.

It was also suggested, given recent developments in the issue of Indigenous rights to marine resources, that fisheries management jurisdictions need to more explicitly consider the social objectives of Indigenous communities in the development of management plans and harvest strategies.

It was raised that further work needs to be undertaken in the area of considering how data collected from Indigenous communities were to be used, and that collaborative approaches between managers and associated communities would be the optimal approach.

Industry

A range of industry groups presented and discussed their issues around social and economic dimensions of fisheries management at the workshop (see Appendix 4 for attendance list).

The key issues identified by industry – 'what's not working' – included the following:

- The ambivalence or lack of 'political will' to engage with explicit social and economic dimensions of fisheries management;
- There is little to no explicit consideration of social and economic objectives in management plans and decision making, but this is not necessarily seen as a concern by the industry;
- Commercial fishers acknowledge that seafood is a community owned resource, but one which is often regarded as 'locally' owned by those communities geographically associated with particular fisheries or fishing activities, rather than the whole of Australian community. This creates a tension in identifying which 'community' fishers should be engaging with;
- Data generally used to account for economic and/or social concerns are only GVP;
- There is a need for clear decision rules that they can rely on;
- Total Allowable Catch (TAC) is currently seen by commercial fishers as a proxy for (implicit) social objectives in regard to the amount harvested and the time when they can fish to maximise price for catch;
- Clear and simple language and communication strategies are critical to engage fishers, in regard to the purpose and benefits of social and economic objectives and what these mean to them;

- Gaining and maintaining a ‘social license to operate’ is top of mind for the majority of commercial fishers, as it has an impact on management and public perception – they want to know the connection between social and economic objectives and indicators, and obtaining a ‘social license to operate’;
- There is a conflict between sectors (commercial, recreational and Indigenous) regarding their relative contributions toward management costs;
- Social and economic data were perceived to be relatively easy to collect; rather the challenge lies in the change required in the management culture to utilise and act upon these data.

The three headline issues for industry in regard to working on integrating social and economic elements into EBFM were:

1. The need to demonstrate the value of the Australian fishing industry to the Australian economy;
2. Identifying the benefits versus the potential additional costs to fishers of implementing social and economic objectives; and
3. Identifying and using language that can easily be understood.

Industry generally agreed that the majority of participants in commercial fisheries are concerned with making a profit, while improving resource access security for the longer term. In this context, as it was noted that the commercial fishing industry is under pressure and decreasing in numerous areas, it was unclear to them as to how social and economic elements integrated into EBFM would assist their survival in the Australian industry/community context. However, some fisheries (e.g. South Australian Pipi Fishery) could see social and economic benefits within the management arrangement they had and were continuing to pursue, and did not see this as an onerous task to make these explicit within management plans.

There was acknowledgement that the economic benefits generated by a fishery have to, in some way, have a demonstrable beneficial flow on or broader benefit to, at least local/regional, communities associated with the fishery. This was considered to have relevance to their ability to gain/maintain a social license to operate.

Research

A variety of presentations outlined the current Australian research involved in the integration of social and economic dimensions into fisheries management decision making, governance and reporting frameworks.

The FRDC has supported a series of recent studies related to the inclusion of social and economic dimensions in fisheries management, including the following (listed by FRDC report number⁶):

- 2012/513: Status of key Australian fish stocks reports and companion national fishery status reports - review of the 2012 reporting process and planning for future reports;
- 2013/233: Benchmarking Australia's national status reporting system;

⁶ Reports can be found at the FRDC website; <http://frdc.com.au/>

- 2014/008: Fishery status reports: health-check for Australian fisheries which provides criteria for reporting on fisheries' status along with a reporting template that is proven through case studies and linked with the national stock status reports;
- 2013/204: Meeting sustainability expectations: translating and aligning public and government objectives, and the reporting and evaluation processes for the performance of Australian fisheries across jurisdictions;
- 2013/023.20: Developing Code of Practice frameworks and assessing the need for an Australian Standard on Responsible Fishing Practices, undertaken through a review of international codes of practice and current Australian practices to develop recommendations in regard to an Australian Commercial Fishing Code of Practice;
- 2012/746: Seafood CRC: preliminary investigation of internationally recognised Responsible Fisheries Management (RFM) Certification through the review of the FAO Global Trust RFM Performance and identifying appropriate recommendations for the development of an Australian industry certification mark;
- 2012/301: Let's Talk Fish: Assisting industry to understand and inform conversations about the sustainability of wild catch fishing through the identification of the basis for public perceptions of commercial wild catch activities, and build industry capacity for more effective engagement with the public and other industry stakeholders, while also reviewing a benchmarks for industry social acceptability;
- 2013/024: Professionalising Industry - NSW Pilot aimed at gaining industry understanding and uptake of industry professionalism through education and training;
- 2010/061: National Guidelines to develop fishery harvest strategies – undertaken through the review of existing harvest strategies and the development of guidelines for consistent harvest strategies approaches;
- 2014/009: Development of guidelines for quality assurance of Australian fisheries research and science information;
- 2010/040: Developing and testing social objectives for fisheries management through the identification of nationally relevant social objectives and associated indicators and performance measures that are implemented in case studies to test applicability.

The FRDC suggested the need to harmonise the approaches and tools for social and economic assessment and reporting, based on existing nationally agreed policies for ESD and EBFM. The objectives of the FRDC to date have been to facilitate the harmonisation of jurisdictional approaches to harvest strategy implementation and further development of ecosystem assessment tools; avoid duplication; and ensuring that stocks that straddle multiple jurisdictions are managed consistently at the level of the fisheries stock management unit.

The FRDC ESD (<http://www.fisheries-esd.com/c/pubs/>) and FAO EAF (www.fao.org/fishery/eaf-net) websites describe a variety of approaches and tools spanning the evolution from ESD to more recent iterations of the Ecosystem Approach to Fisheries (EAF). Management may be thought of as regulating the use of common ecological assets to generate social and economic benefits for the community. In that case, social and economic dimensions may be considered outcomes of the use of ecological assets (Fig. 1).

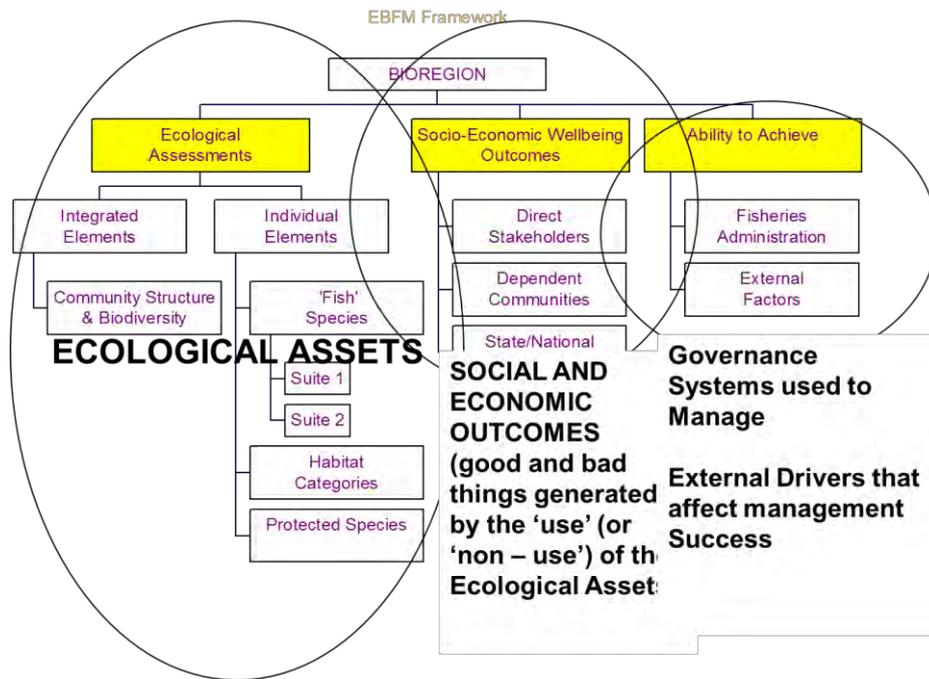


Figure 1. Conceptual figure of the consideration of social and economic outcomes in fisheries management (from Fletcher, see Appendix 5).

Within the FAO EAF planning framework, social and economic elements would be included in: scoping checklists; risk assessments; and harvest strategies (Fig. 2). It is important to identify social and economic objectives early in the process, as elements can only be integrated if articulated as objectives or as causing (major) issues in a fishery.

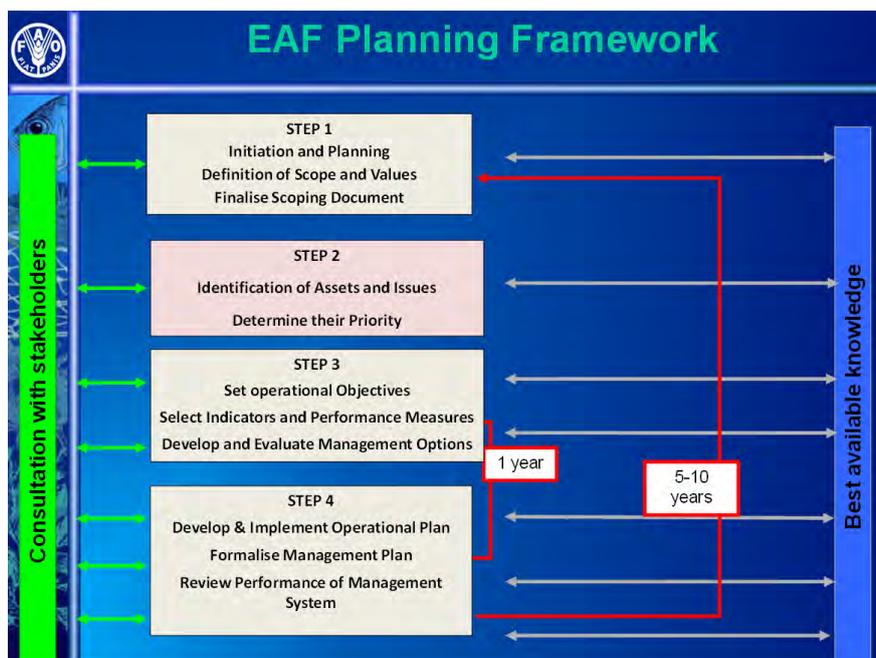


Figure 2. FAO EAF planning framework (from Fletcher, see Appendix 5).

The recent project on the development of national harvest strategy guidelines (FRDC Project 2010/061; Sloan et al. 2014) suggests that a harvest strategy offers a practical framework for the implementation of all relevant aspects of ESD, as it specifies pre-determined management actions in a fishery necessary to achieve the agreed ecological, economic and social management objectives. Harvest strategies are at the core of the fishery management model (Fig. 3). They require the development and implementation of objectives, indicators, reference points, risk assessment, monitoring, and assessment of performance and decision control rules.

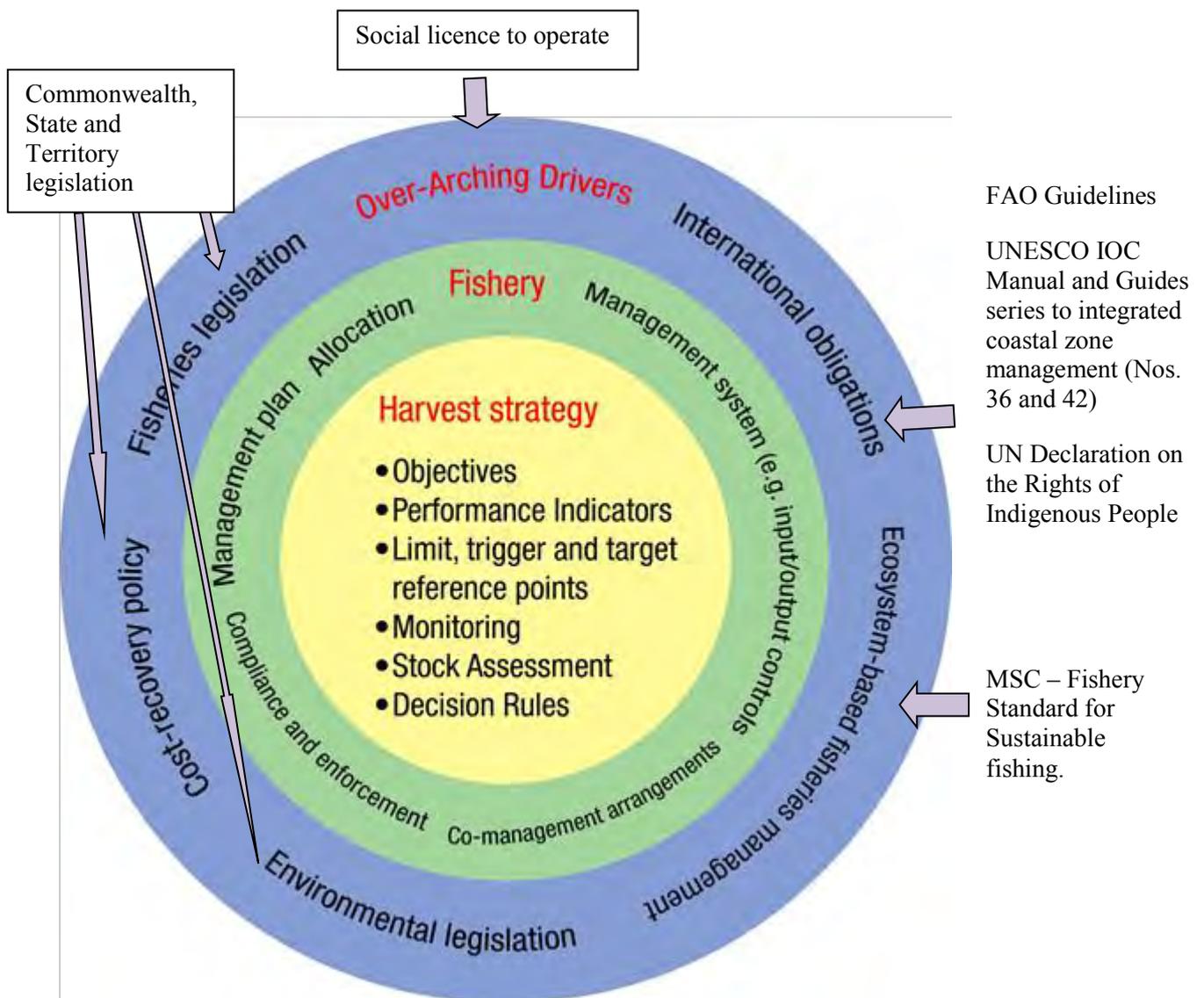


Figure 3. A schematic representation of how a harvest strategy fits within the overall fishery management framework (as a central component of the fisheries management process) (modified from Sloan et al. 2014).

Figures 2 and 3 demonstrate the necessity to identify the relative importance of economic and social issues so that they can be included appropriately in fisheries management. Aspects that are high or significant factors of risk must be addressed and included explicitly in a harvest strategy. If they are of a moderate level of risk at the fishery level then they should be made explicit in the management plan, despite mitigating measures potentially being only implemented in a change of circumstance.

Some Australian jurisdictions do not use social and economic objectives, and hence do not have indicators or decision rules associated with these. There is a need for the development of cost-effective methods to integrate economic and social information into harvest strategies, including development of proxies for MEY such as fishery gross margin (FGM). Harvest strategies provide opportunities for improved co-management, greater transparency and may help to build public confidence and social licence.

South Australia is uniquely placed in that it has been collecting routine economic data for some time (although these data have seen only limited use) and is planning to collect social data from its fisheries. Base data include license numbers, fees, new vessels, GVP, catch, effort, prices, auction (fish market) and import/export data. Additional surveys are undertaken for gross operating surplus, profit, license value, quota value, economic rent, return on capital, cost of management, and cost of license fees.

A recent report identifies social objectives, indicators and tools for fisheries management (FRDC 2010/040; Triantafillos et al. 2014). The report includes candidate objectives; associated indicators (based on an extensive literature review) (Fig. 4); a record of the experience of collection and interpretation of the data of these in case studies; data collection protocols and performance measures as a guide for future implementation. The objectives are not mandatory, but rather are candidate objectives and indicators to assist with selection and implementation.

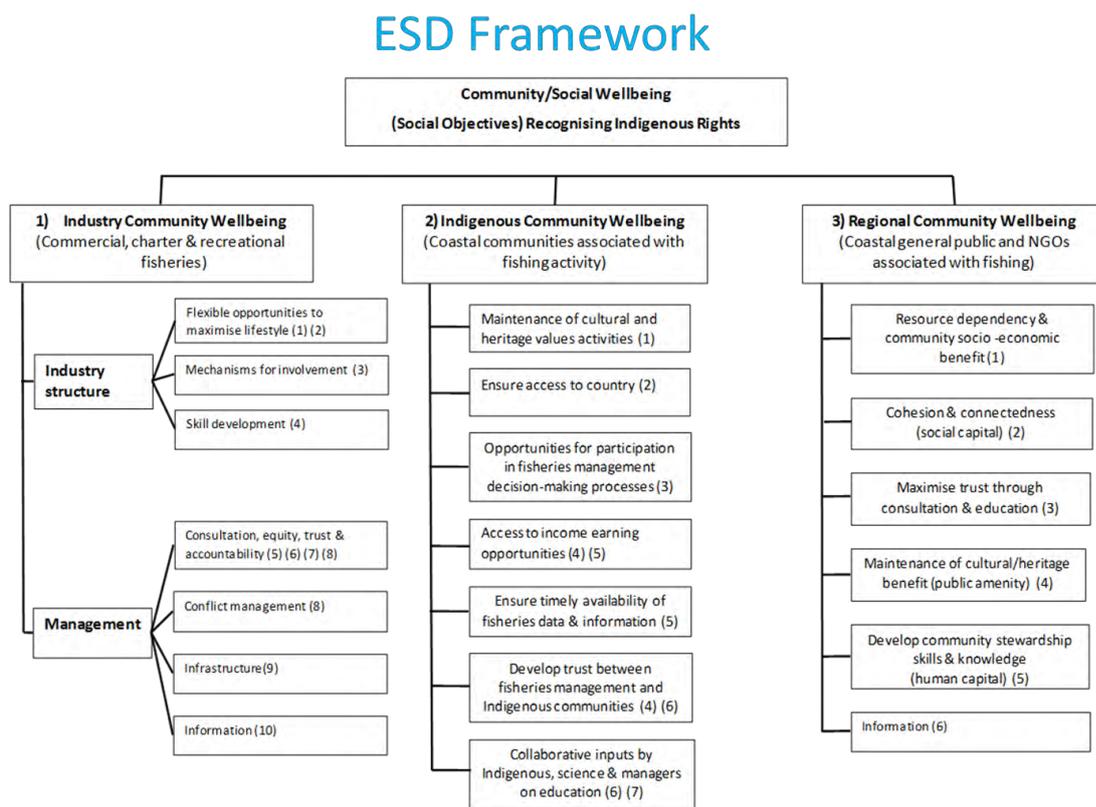


Figure 4. Candidate social objectives for fisheries management (Triantafillos et al. 2014).

The Canadian Fisheries Research Network has undertaken research aimed at including social, economic and institutional aspects with ecological aspects on fisheries and integrated management. A series of candidate social, economic and institutional objectives (together with performance measures)

have been identified and are being tested in case studies. Objectives include sustainable communities, health and wellbeing, ethical fisheries, economic/financial viability, distribution of access and benefits, regional development, and good governance.

There is a diverse spectrum of potential methods for the integration of social and economic aspects in fisheries evaluation and management. These include both qualitative and quantitative methods. They range from sequential consideration of ecological, economic and social elements (using different methods at different stages in the decision-making process), through simultaneous considerations using different methods, to integrated models that attempt to include ecological, economic and social aspects together (e.g. Atlantis).

Figure 5 outlines a process for identification of social aspects, and their translation into explicit objectives, which can integrate with the recommended harvest strategy guidelines to developing management plans. In this way, objectives can be monitored and evaluated (being a further development on the process described in Figure 2 – the FAO EAF planning framework) in the context of both the harvest strategy and also the overall management plan. There were some concerns expressed about expectations that all elements of the social and any following economic objectives and indicators had to be implemented in every fishery: only those elements that have relevance to the fishery being reviewed, and are identified as a potential risk to the circumstances of the fishery, should be implemented.

Integration with overall fisheries management

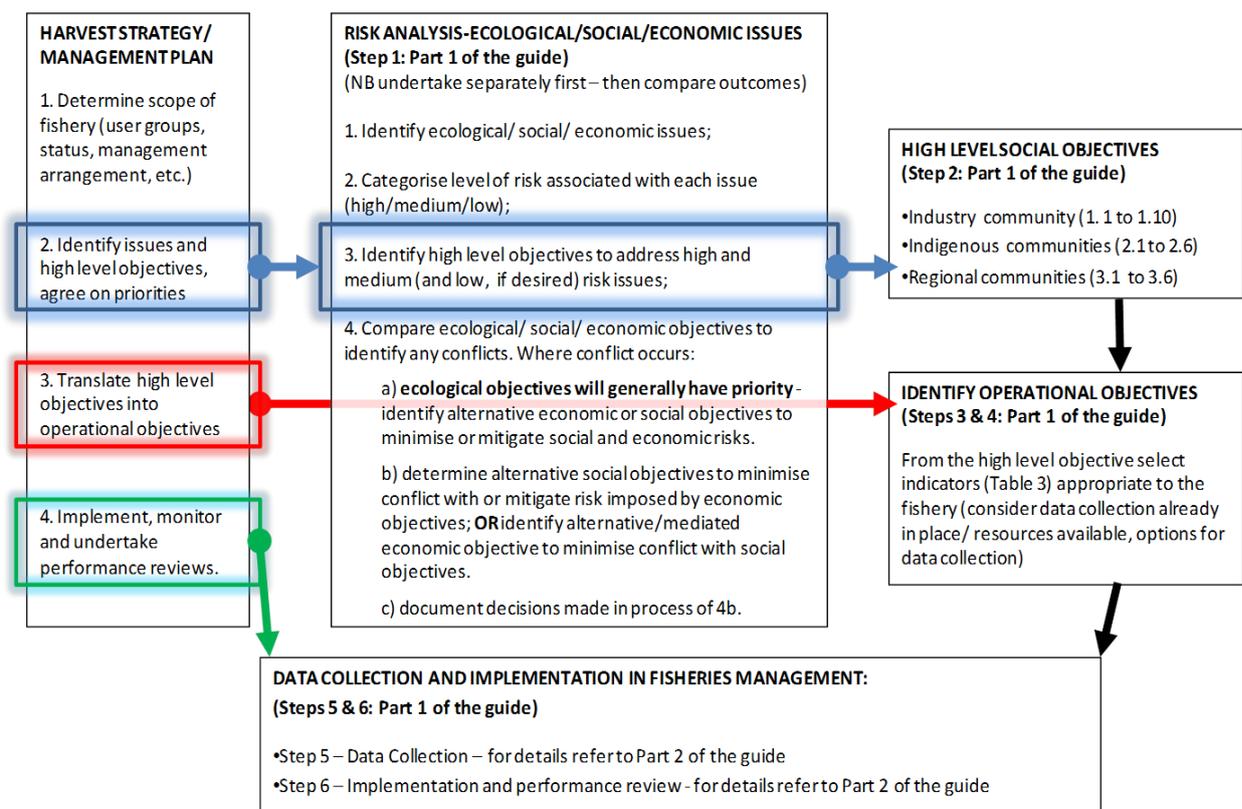


Figure 5. A schematic representation of the practical identification of social objectives for inclusion in fisheries management (Triantafillos et al. 2014).

Another recent initiative is the Social and Economic Long Term Monitoring Program (SELTMP) for the Great Barrier Reef. This initiative⁷ has surveyed stakeholders for their views on several aspects including social and economic issues related to the Great Barrier Reef. The social and economic emphasis was on patterns of use, level of dependency and well-being. The data generated from this program are now available and will be provided as a longitudinal data set (subject to ongoing funding) for agencies and industries to use in identifying and integrating social and economic issues and objectives into resource management.

The Atlantis ecosystem model has been extended to include economic aspects of industry components and aspects related to human behaviour. This recognises that social and economic aspects dictate decisions made by human participants. While this model is a key strategic tool that has been used to explore strategies and scenarios involving ecological and social information, it has not been used directly to inform management plans and other management decisions.

A new project (FRDC 2014/008; Hobday et al.) is in the process of investigating the criteria for reporting on biological, economic, social and institutional status of Australian fisheries. A proactive presentation of the status of Australian fisheries against a holistic set of criteria is seen as strategically advantageous in getting national and international support for Australian seafood.

In terms of practical implementation of ecological, social and economic objectives in integrated management, one option would be a nested arrangement whereby individual management plans sit within a higher-level regional plan that influences the objectives of all activities (Fig. 6).

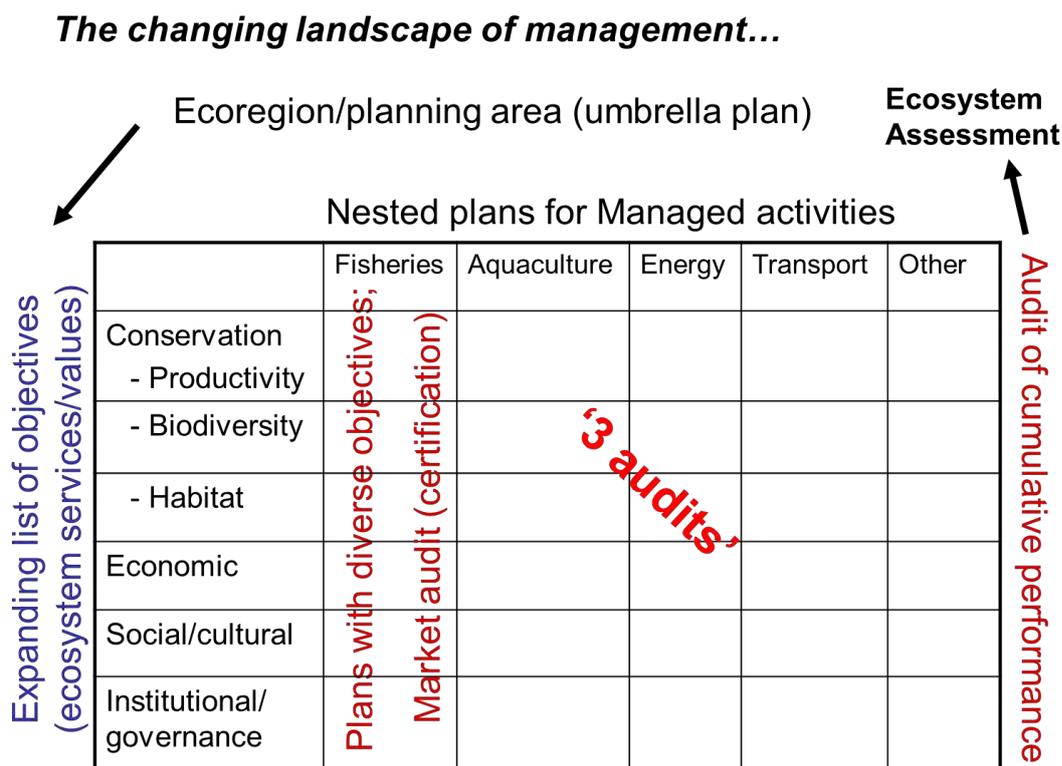


Figure 6. Overview of the inclusion of social and economic objectives in practical integrated management (from Stephenson, see Appendix 5).

⁷ <http://www.nerptropical.edu.au/project/seltmp>

Discussion

The ecological health of ecosystems and populations/stocks has primacy with respect to fisheries management of common property natural resources, where there is a growing need to include social and economic objectives in decision making in line with ESD policy. However, in spite of the prevalence of reference to social and economic considerations in legislation, these are, at present, identified by workshop discussions as usually only aspirational statements. Social and economic aspects are included in decision making, either implicitly or explicitly. In some jurisdictions there may be the lack of political will to address these aspects of fisheries management.

There has been recent evolution in the consideration of social and economic aspects. In the past, catch rate (i.e. CPUE) was often used as a metric for economic aspects. More recently economic aspects have been used as a proxy for social aspects. We are now moving to explicit social and economic objectives, indicators, reference points and data (e.g. the reports from Australia and Canada presented at this meeting; objectives articulated by the FAO (3.6.2); Marine Stewardship Council Principle 3).

Previously, social and economic aspects have been included as *ad hoc* management issues, often in a political context and using partial (available) information. There is now a need to make aspects that have previously been implicit, explicit, and to include these aspects in the standard operating procedures for fisheries. This progression will be pressed by the need to include diverse aspects required for EBFM and the future development of integrated oceans management, as is currently occurring in New South Wales.

As evidenced by the review of research information there has been progress in terms of the ‘tool kit’ of methodologies available to inform economic and social perspectives. However, the move to integrating these separate sets of information into one set that addresses all aspects of fisheries management in a coherent and structured manner that demonstrates a level of equity (not equal weight; as ecological objectives will retain primacy) between each of the elements – economic and social – remains elusive in its implementation.

The applicability of a particular method will depend on whether it is being used for strategic analysis of the fishery management regime or for tactical decision making, and consequently the consideration given to the steps in the EAF process (i.e. planning, identifying priorities, practical management decisions, monitoring; Fig. 2) will be different. Scale is also important as the potential types of issues vary from those that affect an individual fisher or fishery (including lifestyle and economic viability) to those relevant between sectors (e.g. allocation), to a region (e.g. community viability), State-wide or nationally (including wider social license).

When considering social and economic aspects, there are several perspectives. There may be a fundamental difference in perspectives of the fishery vs. the community in which the fishery takes place. There are also the perspectives of industry (commercial, recreational and charter), Indigenous and regional community sectors. These all complicate the fact that not only are three sets of data to be integrated but also the priorities and values of up to six sets of stakeholders need to be considered, of which many need to be evaluated and weighted.

While the research presentations demonstrated that we now have a number of methodologies and tools available to collect and organise data within the three ‘streams’ of information, we are still lacking effective governance arrangements and credible tools to integrate these data into practical decision-making.

There is a gradient of potential issues hampering full incorporation of social and economic aspects:

1. Methodological shortfall (we don’t know what to do or don’t have the tools);
2. Governance shortfall (we know what to do but lack policies/governance to allow it);

3. Lack of will/incentive (we have 1 and 2 but won't undertake implementation);
4. Lack of capacity, including training of management staff (we have 1, 2 and 3 but don't have the resources).

This workshop indicated that we are not limited by a methodological shortfall, but rather by appropriate governance frameworks and resources that will encourage inclusion of these aspects. It may be that we lack the will in some circumstances due to a lack of understanding, though in the main it was indicated that it was a lack of capacity to collect the information required to fully implement EBFM/EAF that was perceived to be a barrier. However, the greatest limitation identified at present is the lack of strategies and governance to include and act upon specific social and economic objectives.

The need to integrate social and economic aspects of management has been apparent from early attempts to implement EBFM (or EAF) and broader oceans management. Much of the progress identified in this workshop has been on the individual objectives and indicators in specific situations/case studies. There remains the need to move these individual, specific objectives into the broader ecosystem through integrated approaches of implementation. This goes beyond fisheries to the integrated management of multiple activities in the marine environment (and therefore, multiple stakeholders), and should also be able to be applied to all aquatic environments.

Key findings

Specifying social and economic objectives

Although social and economic aspects are included in most Commonwealth and State/Territory fisheries-related legislation, these are usually 'implicit' or referred to in general 'aspirational' terms, rather than as specific objectives. Where economic and social information is collected it is not generally integrated into fisheries decision making, primarily because objectives are not defined. **There is a need to identify (make explicit) economic and social objectives.**

The balance between ecological, economic and social objectives

The balance and weighting of ecological, economic and social objectives remains the decision of the relevant fisheries agencies and their respective governments; albeit ecological objectives retain primacy. Ideally, this is arrived at through some public process. **There is a need for strategies that guide the management of fisheries resources/ecosystems and how that relates to social and economic objectives.** There is a need to identify those things that are immutable and those that need to be flexible. Each fishery is different; therefore, the relevant producers, retailers, communities, regions and stakeholders should have more input into the social and economic objectives of management for those specific fisheries. This will help set benchmarks for concerns that relate to social licence to operate (as the umbrella under which a number of specific issues are situated) which is currently open to personal interpretation and context.

Identifying and articulating social and economic benefits

There is a lack of understanding of the relevance/benefit and importance of the social and economic aspects of fisheries in various sectors of industry/management and the community. **There is a need to clearly articulate the economic and social benefits, and costs, of fisheries.** This needs to be done for diverse audiences. The issue is complicated by diverse commercial, recreational, Indigenous and associated community perspectives connected to specific fisheries and marine ecosystems more broadly. The seafood business needs to define clearly the "community and public good component", as well as both the industry and management requirements to establish the cost benefit of the time

required to integrate these aspects. **There is an underpinning need to discuss and identify the long-term vision for fisheries, including clear and specific economic and social objectives.**

Proof of concept – case studies

While comprehensive case studies of a range of fisheries where social and economic objectives are integrated and assessed in the context of a harvest strategy, aligned fisheries management plan are needed. It would also be useful to have retrospective evaluation of case studies of fisheries that have turned around and are doing well (i.e. what were the roles of government/industry/communities?) to understand the relevance/benefit of clear economic and social objectives and how these may have inherently been assessed within existing governance frameworks.

Methods and data

There are a range of methods that should allow integration of social and economic aspects. However, there is a lack of policies, governance arrangements and resources that make this operational. **As such, there is a need to get on with case studies/demonstration of proof of concept that match method/approach with need and data in a variety of situations, and which demonstrate useable outcomes and benefits.**

Application of the new Social Objectives and Indicators Guide

There is a recent report on developing and testing of social objectives for fisheries management (Triantafillos et al. 2014). These methods allow consideration of a fisheries' social and economic objectives and, where appropriate their evaluation, across fisheries (commercial, recreational and charter), Indigenous, and associated community groups, to form a basis for proof of concept/case studies, as mentioned above. To date they have been applied in a limited number of case studies. **The results of the recent Social Objectives and Indicators Guide should be applied/tested more broadly to provide a proof of concept. Further work is also required from this research into the applicability of social objectives/indicators and performance measures for the integration of Indigenous issues into fisheries management.**

Capacity development

Full incorporation of social and economic objectives requires new (interdisciplinary) methods, and modifications to governance arrangements. These processes will assist in refining what, if any, new information may be required. Development of the intellectual capacity for implementation will be the largest challenge. **There is a need to identify the resources and skill sets that are needed for implementation.**

Strategies for implementation

There is a need to build increased transparency into management processes to assure stakeholders of the integrity of relationships and systems of fisheries management; particularly for cost recovered fisheries.

Communication for implementation

Communication is critical, yet there is a challenge posed by diverse participants and interdisciplinary subject matter. **Successful integration of social and economic aspects will require innovative communication plans and development and proof of integration methodologies through case studies.**

Recommendations

Table 1 lists a set of ideas and possibilities for potential actions and research to implement and integrate economic and social elements into fisheries decision making.

Table 1. Summary of recommendations by responsibility and priority.

	Government & Management	Commercial industry, recreational, Indigenous & associated communities	Research	Priority & Feasibility
1	Clarifying and articulating the relative benefits of economic and social objectives (for industry, and associated Indigenous and regional communities) (Agency and whole of government, research and communication experts)			High & Easy
2	Development of strategies for fisheries management to mobilise social and economic aspects of fisheries legislation (ref. pp. 99-146, Triantafillos et al. 2014)			High & Mod.
3	Developing an ‘everyday persons’ guide to defining ‘social license to operate’, along with the benefits that social and economic objectives can add to generating a social license to operate from the Australian community for fisheries activities; this should use existing data and research on factors affecting the acceptability of industry and seafood production (Government, with input from fisheries managers, industry, community and communication experts)			High & Easy
4			Using previous FRDC research on the criteria for well managed fisheries, integrate this with research on governance structures to incorporate multidisciplinary advice,	High & Easy

			and identify modifications required in Australian fisheries management frameworks to achieve EBFM	
5			Using previous FRDC research on ESD and more recent objectives work, promote greater understanding of the methodologies available to assess the economic and social elements of ESD, as well as ecological	High & Easy
6	Identify current (implicit) economic and social objectives in fisheries management, noting which are flexible and which are immutable in the various governance structures (Agencies)	Identify current (implicit) economic and social objectives in current fisheries management plans as they are reviewed/developed (commercial, recreational, charter and Indigenous)		High & Mod.
7			Articulate economic objectives, indicators, assessment criteria and performance measures and undertake case studies to test and demonstrate implementation	High & Mod.
8			Further research to be undertaken into how data collected from Indigenous communities is and can be used in collaborative approaches between managers and associated communities, to achieve recognition of indigenous social objectives	High & Mod.
9	Identifying necessary resources to apply the Social Objectives and Indicators (SO&I) Guide (FRDC		Test application of SO&I in fishery management plans and harvest	High & Mod.

	Report 2010/040) to State fisheries (Agencies) Apply SO&I Guide at State fishery level in case studies – developing a set of objectives for each fishery across commercial, charter and recreational fishers, Indigenous and broader communities, including benefits and consequences of activities (Fisheries managers with input of industry, and Indigenous and regional communities)		strategies	
10			Evaluating a variety of fisheries for fit to the harvest strategy framework (Fig. 2) across jurisdictions to explore how useable all the existing tools are (considering Alistair Hobday’s current ‘Healthcheck’ work FRDC 2014/008)	High & Mod.
11			Use CFRN’s framework to test Australian fisheries as case studies	High & Mod.
12	Simplifying the communication of decisions (Government) Improved communications around the implementation of social and economic objectives to the broader Australian public (Government and industry with assistance from communication specialists)			High & Mod.
13			Using Australian and international work to identify the most appropriate methods for the integration of multidisciplinary advice to	High & Difficult

			Australian fisheries management	
14	Capacity development amongst fisheries managers and agencies to receive and utilise information (Government)			Mod. & Mod.

Conclusion

- What, if any, are the barriers to fully integrating the social and economic dimensions with biological dimensions for fisheries management?
 - Specific strategic policy directions in the jurisdictions that identify the methods of integration economic and social objectives with ecological sustainability.
 - Specific social and economic objectives analogous to ecological objectives.
 - Expertise in comprehensive disciplinary integration.
 - A culture of integration in fisheries management, and lack of governance that allows integration.
 - Resources to collect the different types of data to be integrated.
- What research needs to be undertaken to maximise our effectiveness and efficiency in integration?
 - Articulation of the benefits of including social and economic objectives, appropriate to multiple audiences.
 - Completion of several fisheries management plans (and broader decision making) with the integration of explicit social and economic objectives, with appropriate review and performance measures in place.
 - Development of a comprehensive integration methodology not only for the integration of disciplines but perspectives and values of different fishery stakeholder groups.
 - Further research into the development of Indigenous social objectives and indicators that would be applicable across multiple types of communities and regions associated with fishing activities.
- What might need to be done to facilitate adoption of integrated systems?
 - Development of the capacity to comprehend and undertake data collection to inform an integration methodology.
 - Language modification to engage with industry, and Indigenous and community stakeholders about the benefits and methods of integrating economic and social data.
- Recommendations on the pathway(s) toward increasing use of social and economic information that will assist in increasing public trust
 - See Table 1 under 'Recommendations'.
 - See Figure 7 for recommended steps needed for the development of strategies towards EBFM integration.



Figure 7. Recommended steps for the development of strategies towards EBFM integration.

Implications

The long term benefits of this workshop are envisaged to be a pathway to increasing the use of social and economic data in fisheries management objectives that will assist in increasing public trust in the management of common property fisheries resources (and therefore supporting the generation of the industry's social licence).

To realise these benefits, there will need to be a reinvigoration of purpose amongst fisheries management agencies. This can perhaps best be achieved through a renewed commitment by AFMF to actively encourage the development of strategic policies for integration and methods for implementation and ongoing monitoring as presented in this report.

Funding from the FRDC People Development Program Visiting Expert Award provided the basis for this initiative, and has enabled the exploration for future international collaborations to progress the practical implementation of social and economic dimensions into fisheries management decision making and broader integrated oceans management.

Appendix 1: Project Staff

- Prof Gavin Begg – South Australian Research and Development Institute
- Dr Robert Stephenson – Canadian Fisheries Research Network
- Dr Kate Brooks – FRDC Social Sciences Research Coordination Program
- Sean Sloan – Primary Industries and Regions SA

Appendix 2: Intellectual Property

No intellectual property has been generated by this project.

Appendix 3: References

Fletcher, W.J. (2012). National Application of Sustainability Indicators for Australian Fisheries - Part 2: Ecosystem based frameworks for aquaculture, multi-fishery and international applications. FRDC Report – Project 2000/145 Part 2. Fisheries Research Report No 235 Department of Fisheries, Western Australia.

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Smith, D.C., and Hodge, R. (2001). ESD and fisheries: what, why, how and when. A stakeholders workshop. Proceedings. Geelong, Victoria, 23-14 March 2000. Seafood Industry Victoria, South Yarra, Victoria.

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Appendix 4: Workshop Agenda

Practical implementation of social and economic elements in Ecosystem Based Fisheries Management and Integrated Fisheries Management Frameworks

24-25 March 2014

SARDI, West Beach

Agenda

Facilitators – R. Stephenson (Canadian Fisheries Research Network) and K. Brooks (FRDC Social Sciences Research Coordination Program)

Workshop Purpose:

- To review current Australian and international approaches to integrating the social and economic elements of fisheries management into ecosystem-based/integrated fisheries management (EBFM/IM).
- To identify the most robust and implementable methods to integrate social and economic factors into fisheries management.

The long term benefits of this workshop are envisaged to be a pathway to increasing the use of social and economic data in fisheries management that will assist in increasing public trust in the management of common property fisheries resources (and therefore supporting the generation of the industry's social licence).

DAY ONE (24 March 2013):

Morning tea on arrival

1000-1010: Welcome, introductions (Gavin Begg)

Acknowledgement of Country (Matt Osborne)

1010-1030:

- 1. Review of current and emerging fisheries management priorities and challenges in implementing EBFM/IM** – Outcomes sought (Rob Stephenson and Kate Brooks)

1030-1230:

2. Review of what jurisdictions are currently doing to integrate social and economic dimensions into fisheries management decision making, governance and reporting frameworks (incl. commercial/recreational/Indigenous sectors)

(10 min presentation + 5 min discussion; focus on social/economic dimensions, barriers & keys to success/implementation)

- SA – Mehdi Doroudi
- WA – Lindsay Joll
- NT – David McKey
- NSW – Bob Creese
- VIC – Ross McGowan
- QLD – Michelle Winning
- Commonwealth (AFMA) – Nick Rayns
- Commonwealth (DoA) – Tim Karloff

1230-1300: Lunch

1300-1515:

3. Current Australian research on the integration of social and economic dimensions into fisheries management decision making, governance and reporting frameworks

(10 min presentation + 5 min discussion; focus on social/economic dimensions, barriers & keys to success/implementation)

- FRDC overview – Patrick Hone
- ESD framework – Rick Fletcher (WA Fisheries)
- National harvest strategy guidelines – Sean Sloan (PIRSA)
- Economic objectives and indicators – Julian Morison (Econsearch)
- Social objectives and indicators – Kate Brooks
- Integration of methodologies in EBFM & fisheries health check (MSE, Atlantis) – Tony Smith (CSIRO)
- Socio-Economic Long Term Monitoring Program – Nadine Marshall (CSIRO)

1515-1530: Afternoon tea

1530-1730:

4. Indigenous perspective

(10 min presentation + 5 min discussion; focus on social/economic dimensions, barriers & keys to success/implementation)

- Indigenous Reference Group – Matt Osborne

5. Industry reality check ...Of what has been presented – what's working and what's not

(10 min presentation + 5 min discussion; focus on social/economic dimensions, barriers & keys to success/implementation)

- Wild Harvest – Jonas Woolford
- NT Seafood Council – Lyn Lambeth
- Goolwa Pipi Harvesters Association – Roger Edwards
- SA Sardine Fishery – Paul Watson
- Spencer Gulf Prawn Fishery – Simon Clark

5. International perspective and overview of methods being used to integrate ecological, social and ecological aspects (Rob Stephenson & Ashleen Benson)

- Summary of research approaches elsewhere
- Summary of benefits and challenges of mixed methods/cost benefit/scenario comparisons

6. Summary of Day 1 and Plans for Day 2 (Kate Brooks)

DAY TWO (25 March 2013):

8.30-900:

Summary/synthesis and discussion of Day One

900-1000:

Workshop – break out groups to discuss barriers and keys for success in practical implementation

1000-1030: Morning tea

1030-1115:

Summary of break out group discussions

1115-1230:

Future research / work required and Action Plan:

- Jurisdictional work to integration
- Identify opportunities and priorities to overcome implementation hurdles at an integrated oceans management level, to facilitate inclusion of social and economic aspects.
- Research priorities

Summary and wrap up

1230-1330: Lunch

Attendees –

Industry: Lyn Lambeth (NT Seafood Council), Jonas Woolford (Wild Harvest), Paul Watson (SA Sardine Industry Association), Roger Edwards (Goolwa Pipi Harvesters Association), Simon Clark (Spencer Gulf Prawn Fishery), Neill McDonald, Nathan Bicknell (Marine Fishers Association), Brian Jeffriess (ASBTIA), Justin Phillips (SARLAC/SEPFA)

AFMA: Nick Rayns

Canadian Fisheries Research Network: Rob Stephenson, Ashleen Benson

CSIRO: Tony Smith

Department of Agriculture: Tim Karloff

Department of the Environment: Nathan Hanna

Econsearch: Julian Morison, Stacey Paterson

Fisheries Queensland: Tony Ham, Michelle Winning, Anthony Roelofs, Ben Westlake

Fisheries Victoria: Ross McGowan

FRDC: Patrick Hone

FRDC Indigenous Reference Group: Matthew Osborne (PIRSA)

FRDC Social Sciences Research Coordination Program: Kate Brooks

IMAS: Klaas Hartmann

NSW DPI: Bob Creese, Fiona McKinnon

NT Department of Primary Industries & Fisheries: David McKey

PIRSA: Mehdi Doroudi, Sean Sloan, Keith Rowling, Lianos Triantafillos, Michelle Besley, Gavin Begg, Stephen Mayfield, Craig Noell (SARDI)

Thalassa Consulting: Ian Cartwright

University of Adelaide: Melissa Nursey-Bray

WA Fisheries: Lindsay Joll, Rick Fletcher

Appendix 5: Workshop Presentations

FISHERIES & AQUACULTURE PIRSA

Integration of social and economic dimensions into fisheries management decision making, governance and reporting frameworks: South Australia

24 March 2014

Professor Mehdi Doroudi

Legislative requirements

- The taking of aquatic resources in South Australia is regulated by the *Fisheries Management Act 2007*.
- An object of this Act is to protect, manage, use and develop the aquatic resources in a manner consistent with ESD.
 - access to the aquatic resources is to be allocated between users of the resources in a manner that achieves optimum utilisation and equitable distribution of those resources to the benefit of the community;
- A further object of this Act is that aquatic resources are to be managed in an efficient and cost effective manner and targets set for the recovery of management costs
- These requirements are incorporated in all new fishery management plans

Management plans

- Specify the allocation of shares between commercial, recreational and traditional fishing sectors
- Promote co-management arrangements
- GOAL 2 – Optimum economic utilisation and equitable distribution of the fishery
- GOAL 4 - Cost effective and participative management of the fishery

Data collection-economic

- Economic data has been collected (by EconSearch) for all major fisheries since 1997/98 and published in annual reports

	2009/10	2010/11	2011/12
	Average per tonne	Average per tonne	Average per Share of Volume TACC
(1) Total Gross Revenue	\$794,468	\$794,468	\$816,163
- Vessel Costs	\$15,000	\$15,000	\$15,000
- Fuel	\$80,000	\$80,000	\$80,000
- Repairs & Maintenance*	\$20,000	\$20,000	\$20,000
- Provisions	\$8,000	\$8,000	\$8,000
- Labour - vessel	\$10,000	\$10,000	\$10,000
- Other - vessel†	\$2,000	\$2,000	\$2,000
(2) Total Variable Costs	\$135,000	\$135,000	\$135,000
(3) Total Revenue	\$659,468	\$659,468	\$681,163
- Food Costs	\$60,000	\$60,000	\$60,000
- Vessel Fuel	\$65,000	\$65,000	\$65,000
- Insurance	\$10,000	\$10,000	\$10,000
(4) Net Revenue	\$524,468	\$524,468	\$546,163
- Labour - vessel*	\$10,000	\$10,000	\$10,000
- Labour - shore	\$10,000	\$10,000	\$10,000
- Repairs & Maintenance	\$10,000	\$10,000	\$10,000
- Storage & Marketing	\$10,000	\$10,000	\$10,000
- Transport	\$10,000	\$10,000	\$10,000
- Office & Admin	\$10,000	\$10,000	\$10,000
(5) Total Fixed Costs (2) - (4)	\$115,000	\$115,000	\$115,000
(6) Total Revenue (3) - (5)	\$409,468	\$409,468	\$431,163
(7) Total Variable Costs (2) - (6)	\$135,000	\$135,000	\$135,000
(8) Net Revenue (3) - (7)	\$274,468	\$274,468	\$296,163
(9) Total Revenue (3) - (8)	\$385,000	\$385,000	\$405,000
(10) Net Revenue (3) - (9)	\$109,468	\$109,468	\$111,163
(11) Total Revenue (3) - (10)	\$275,000	\$275,000	\$294,837
(12) Net Revenue (3) - (11)	\$84,468	\$84,468	\$86,326
(13) Total Revenue (3) - (12)	\$190,500	\$190,500	\$208,511
(14) Net Revenue (3) - (13)	\$75,968	\$75,968	\$77,845
(15) Total Revenue (3) - (14)	\$114,532	\$114,532	\$130,666
(16) Net Revenue (3) - (15)	\$58,436	\$58,436	\$62,821
(17) Total Revenue (3) - (16)	\$56,096	\$56,096	\$67,845
(18) Net Revenue (3) - (17)	\$5,000	\$5,000	\$5,000
(19) Total Revenue (3) - (18)	\$51,096	\$51,096	\$62,845
(20) Net Revenue (3) - (19)	\$46,096	\$46,096	\$57,845
(21) Total Revenue (3) - (20)	\$5,000	\$5,000	\$5,000
(22) Net Revenue (3) - (21)	\$41,096	\$41,096	\$52,845
(23) Total Revenue (3) - (22)	\$4,000	\$4,000	\$4,000
(24) Net Revenue (3) - (23)	\$36,096	\$36,096	\$47,845
(25) Total Revenue (3) - (24)	\$3,000	\$3,000	\$3,000
(26) Net Revenue (3) - (25)	\$31,096	\$31,096	\$42,845
(27) Total Revenue (3) - (26)	\$2,000	\$2,000	\$2,000
(28) Net Revenue (3) - (27)	\$26,096	\$26,096	\$37,845
(29) Total Revenue (3) - (28)	\$1,000	\$1,000	\$1,000
(30) Net Revenue (3) - (29)	\$21,096	\$21,096	\$32,845
(31) Total Revenue (3) - (30)	\$1,000	\$1,000	\$1,000
(32) Net Revenue (3) - (31)	\$20,096	\$20,096	\$31,845
(33) Total Revenue (3) - (32)	\$1,000	\$1,000	\$1,000
(34) Net Revenue (3) - (33)	\$19,096	\$19,096	\$30,845
(35) Total Revenue (3) - (34)	\$1,000	\$1,000	\$1,000
(36) Net Revenue (3) - (35)	\$18,096	\$18,096	\$29,845
(37) Total Revenue (3) - (36)	\$1,000	\$1,000	\$1,000
(38) Net Revenue (3) - (37)	\$17,096	\$17,096	\$28,845
(39) Total Revenue (3) - (38)	\$1,000	\$1,000	\$1,000
(40) Net Revenue (3) - (39)	\$16,096	\$16,096	\$27,845
(41) Total Revenue (3) - (40)	\$1,000	\$1,000	\$1,000
(42) Net Revenue (3) - (41)	\$15,096	\$15,096	\$26,845
(43) Total Revenue (3) - (42)	\$1,000	\$1,000	\$1,000
(44) Net Revenue (3) - (43)	\$14,096	\$14,096	\$25,845
(45) Total Revenue (3) - (44)	\$1,000	\$1,000	\$1,000
(46) Net Revenue (3) - (45)	\$13,096	\$13,096	\$24,845
(47) Total Revenue (3) - (46)	\$1,000	\$1,000	\$1,000
(48) Net Revenue (3) - (47)	\$12,096	\$12,096	\$23,845
(49) Total Revenue (3) - (48)	\$1,000	\$1,000	\$1,000
(50) Net Revenue (3) - (49)	\$11,096	\$11,096	\$22,845
(51) Total Revenue (3) - (50)	\$1,000	\$1,000	\$1,000
(52) Net Revenue (3) - (51)	\$10,096	\$10,096	\$21,845
(53) Total Revenue (3) - (52)	\$1,000	\$1,000	\$1,000
(54) Net Revenue (3) - (53)	\$9,096	\$9,096	\$20,845
(55) Total Revenue (3) - (54)	\$1,000	\$1,000	\$1,000
(56) Net Revenue (3) - (55)	\$8,096	\$8,096	\$19,845
(57) Total Revenue (3) - (56)	\$1,000	\$1,000	\$1,000
(58) Net Revenue (3) - (57)	\$7,096	\$7,096	\$18,845
(59) Total Revenue (3) - (58)	\$1,000	\$1,000	\$1,000
(60) Net Revenue (3) - (59)	\$6,096	\$6,096	\$17,845
(61) Total Revenue (3) - (60)	\$1,000	\$1,000	\$1,000
(62) Net Revenue (3) - (61)	\$5,096	\$5,096	\$16,845
(63) Total Revenue (3) - (62)	\$1,000	\$1,000	\$1,000
(64) Net Revenue (3) - (63)	\$4,096	\$4,096	\$15,845
(65) Total Revenue (3) - (64)	\$1,000	\$1,000	\$1,000
(66) Net Revenue (3) - (65)	\$3,096	\$3,096	\$14,845
(67) Total Revenue (3) - (66)	\$1,000	\$1,000	\$1,000
(68) Net Revenue (3) - (67)	\$2,096	\$2,096	\$13,845
(69) Total Revenue (3) - (68)	\$1,000	\$1,000	\$1,000
(70) Net Revenue (3) - (69)	\$1,096	\$1,096	\$12,845
(71) Total Revenue (3) - (70)	\$1,000	\$1,000	\$1,000
(72) Net Revenue (3) - (71)	\$96	\$96	\$11,845
(73) Total Revenue (3) - (72)	\$904	\$904	\$10,845
(74) Net Revenue (3) - (73)	\$808	\$808	\$9,845
(75) Total Revenue (3) - (74)	\$96	\$96	\$984
(76) Net Revenue (3) - (75)	\$812	\$812	\$884
(77) Total Revenue (3) - (76)	\$96	\$96	\$888
(78) Net Revenue (3) - (77)	\$816	\$816	\$788
(79) Total Revenue (3) - (78)	\$96	\$96	\$792
(80) Net Revenue (3) - (79)	\$820	\$820	\$688
(81) Total Revenue (3) - (80)	\$96	\$96	\$692
(82) Net Revenue (3) - (81)	\$824	\$824	\$588
(83) Total Revenue (3) - (82)	\$96	\$96	\$592
(84) Net Revenue (3) - (83)	\$828	\$828	\$488
(85) Total Revenue (3) - (84)	\$96	\$96	\$492
(86) Net Revenue (3) - (85)	\$832	\$832	\$388
(87) Total Revenue (3) - (86)	\$96	\$96	\$392
(88) Net Revenue (3) - (87)	\$836	\$836	\$288
(89) Total Revenue (3) - (88)	\$96	\$96	\$292
(90) Net Revenue (3) - (89)	\$840	\$840	\$188
(91) Total Revenue (3) - (90)	\$96	\$96	\$192
(92) Net Revenue (3) - (91)	\$844	\$844	\$88
(93) Total Revenue (3) - (92)	\$96	\$96	\$92
(94) Net Revenue (3) - (93)	\$848	\$848	\$8
(95) Total Revenue (3) - (94)	\$96	\$96	\$8
(96) Net Revenue (3) - (95)	\$852	\$852	\$8
(97) Total Revenue (3) - (96)	\$96	\$96	\$8
(98) Net Revenue (3) - (97)	\$856	\$856	\$8
(99) Total Revenue (3) - (98)	\$96	\$96	\$8
(100) Net Revenue (3) - (99)	\$860	\$860	\$8

Data collection-social

- Social data on recreational fishers has been collected every ~5 years since early 2000s (survey currently underway)
- Several social studies undertaken on MSF (e.g. Schirmer and Pickworth 2005)
- PIRSA is PI on FRDC project (2010/040) to 'develop and test social objectives for fisheries management'
 - Social data collected for the abalone, rock lobster, Marine Scafish and recreational fisheries
- Reports on social aspects of recreational and commercial fishing produced
- From 2014/15 onwards, social data will be collected by EconSearch for all major fisheries

Integration into decision making

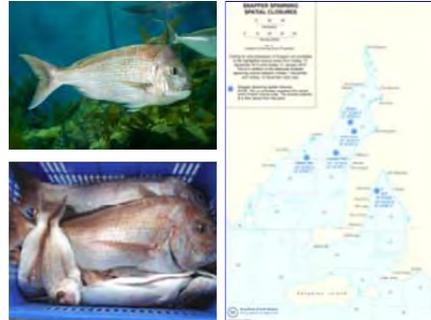
- Economic objectives explicitly incorporated in the Pipi harvest strategy – implemented since 2011/12
 - TACC increased by 50 tonnes when biomass has increased by one level or when fishery gross margin is expected to increase by at least 1.5% with increase in TACC

Integration into decision making (cont.)

- Social and economic objectives are incorporated into all new fishery management plans
- PIRSA is currently developing social objectives (and indicators) developed by FRDC project 2010/040 for more explicit incorporation into Lakes and Coorong Fishery management plan
- PIRSA is supporting the Marine Fishers Association to survey which social objectives are most important for the MSF.
 - Results will be used to shape long term strategic plan for this fishery

Integration into decision making (cont.)

- SNAPPER-considered regional social and economic impacts of spatial closure options (Econsearch 2013)



Integration into decision making (cont.)

- MARINE PARKS- SA Marine Parks Commercial Fisheries Voluntary Catch/Effort Reduction Program



Bio-economic models

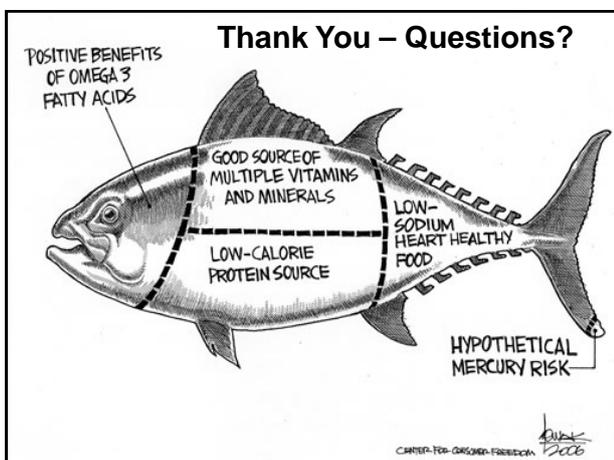
- ROCK LOBSTER-review harvest strategies for 2 fisheries



- GARFISH-measured economic impact of spatial and temporal closures on fishers



- PRAWNS-model currently being developed to:
 - quantify B_{MEY}
 - Optimise harvest strategy (pre-Christmas)





Social and Economic Elements of EBFM in Western Australia

**Lindsay Joll
(for Stuart Smith)**

Government of Western Australia
Department of Fisheries

Fish for the future



EBFM in WA

- WA incorporates the social and economic elements of EBFM through a number of approaches.
- Social and economic elements of EBFM are broadly incorporated through the Department's Risk Register.
- Social and Economic risks (as well as the Biological/Ecological risks) associated with each ecological asset are scored.
- The scores across all risks are combined to generate Departmental priorities based on overall risk.
- Scores are updated annually and priorities set accordingly

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Fish for the future



EBFM in WA

- Implementation of the economic elements at the level of particular fisheries can be seen in various ways.
- West Coast Rock Lobster
 - The catch reduction response to the series of low puerulus settlements was initially implemented through input controls.
 - This created significant imposts on economic efficiency.
 - Shifting to quota management equally resolved the stock risks associated with low settlement but substantially improved the operational economics.
 - Setting the quota around the 'MEY zone' has also improved profitability.
 - MEY advice provided through Departmental analysis and industry advice.
 - Move to year round quota around MEY has created some social risks (TEP interactions; GVP reduction)

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EBFM in WA

- Prawn and Scallop Trawl Fisheries
 - Management of the fisheries uses industry advice on target grades to operate real-time spatial/temporal closures to assist industry in achieving maximum value from the catch.
- Pearling
 - Production controls (through wild-stock catch and hatchery controls) give effect to industry advice on MEY for the resource
- Commercial fisheries generally
 - Transferability of entitlement in unutilised fisheries allows industry to determine appropriate entitlement holdings for economic operations.
 - Industry-funded Fisheries Adjustment Schemes in non-utilised fisheries allow industry to determine appropriate fleet sizes for economic operations.

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EBFM in WA

- The social elements of EBFM are being delivered primarily through an Integrated Fisheries Management (IFM) approach.
- A number of fisheries have been through formal IFM catch share allocations.
- Where formal IFM allocations have not been made, management is designed to ensure that catch shares are maintained.
- Current re-allocation mechanisms use 'political data' to determine the best social use of a resource.
- The proposed new Act (ARMA) will not only have a framework for formal resource share allocations but will also provide mechanisms for re-allocation based on sectoral valuations of the resource.

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Department of Fisheries

Fish for the future

Northern Territory Government
DEPARTMENT OF PRIMARY INDUSTRY AND FISHERIES

NT Update – Integration of social and economic dimensions into fisheries management decision making, governance and reporting frameworks

EBFMM Workshop
SARDI
24-25 March 2014

Presented by David Mckey,
Senior Aquatic Resource Manager
NT DPIF

www.nt.gov.au

Northern Territory Government

Presentation will cover:

- ❖ Legislation
- ❖ Advisory groups and formal engagement processes
- ❖ Stakeholder communications and knowledge sharing
- ❖ Resource sharing frameworks
- ❖ Integrated management examples – harvest strategies, decision rule frameworks and catch shares
- ❖ Aboriginal development aspirations and expectations for fisheries management under Blue Mud Bay outcomes

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Northern Territory Government

Legislation Objectives

- To maintain the aquatic resources of the Territory in accordance with the principles of ecologically sustainable development, whether managing a single fish species or an ecosystem.
- To maintain a stewardship of aquatic resources that promotes fairness, equity and access to aquatic resources by all stakeholder groups, including – indigenous people, commercial operators and aquaculture farmers, amateur fishers and others with an interest in the aquatic resources of the Territory.
- By means of a flexible approach to the management of aquatic resources and their habitats, to promote the optimum utilisation of aquatic resources to the benefit of the community.

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Northern Territory Government

Consultative mechanisms

- Aboriginal Fisheries Consultative Committees
- Fishery Management Advisory Committees and/or Groups comprising of astute, experienced people with a vision for the future
- Marine Ranger program
- Stakeholder communications and knowledge sharing through site visits and extension programs

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Northern Territory Government

Resource Sharing Frameworks

- NT Resource Sharing Framework
- Timor Reef Fishery and Demersal Fishery management frameworks include decision rules and cost sharing mechanisms
- Spanish mackerel Fishery includes total allowable catches and multi-sector resource allocations

Category	Percentage
Spanish mac licensees	76%
Fishing tour operators	3%
Recreational stakeholders	12%
Shark licensees	3%
Tribal licensees	1%

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Northern Territory Government

Integrated Management

- Continued movement towards eco system management
- Greater cross jurisdictional commitment for management
- Consideration of resource share allocations (Grey mackerel being considered)
- Greater accountability, transparency, and use of adaptive management mechanisms
- Greater consultation with stakeholders and federal and state agencies
- Increasing emphasis on cultural, social and economic values
- Exploration of regional co-management mechanisms
- Harvest strategies developed for Red snappers

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Integrated Management – con't

- Multi-jurisdictional response to issues facing shared stocks including;
 - Northern Operational Plans have been developed for Sharks, Red snappers and Spanish mackerel
 - Harvest strategies developed for red snappers
 - The Operational plans provide guidance and advice to agencies
 - Integrated into management arrangements for target and non-target fisheries

Integrated Management – con't

Regional Consultative Committees



- Indigenous Community Marine Ranger Program
- Indigenous Fisheries Development
- Indigenous Employment and Career Development
- Funding, training and technical support

- In conclusion.
- Marine resources shared by many sectors
- Blue Mud Bay access negotiations driving greater recognition of social and cultural elements
- NT working towards integration of resource sharing needs of stakeholders into effective management arrangements

NSW Primary Industries

Ecosystem-based marine management in NSW

Bob Creese
FISHERIES NSW
March 2014

The NSW Marine Estate



- 1300 km of coastline
- Extends 5.6 km offshore
- Tiny part of Aust's ocean jurisdiction (13.5 mil sq km)
- 184 estuaries; various types
- 6 large Marine Parks
- 12 small Aquatic Reserves

NSW Primary Industries

What guides Fisheries NSW

- Fisheries Management Act 1994**
- NSW DPI - VISION**
INNOVATIVE PRIMARY INDUSTRIES IN STRONG REGIONAL COMMUNITIES
- FISHERIES NSW – VISION**
HEALTHY AQUATIC ECOSYSTEMS, PRODUCTIVE FISHERIES & AQUACULTURE
- FISHERIES NSW – PURPOSE**
To work with industries and communities to maintain the health of our aquatic ecosystems for the economic benefit and enjoyment of the people of NSW
- MARINE ESTATE MANAGEMENT AUTHORITY – VISION**
A HEALTHY COAST & SEA, MANAGED FOR THE GREATEST WELL-BEING OF THE COMMUNITY NOW AND INTO THE FUTURE

NSW Primary Industries

MEMA vision

Healthy coast and sea,	<ul style="list-style-type: none"> clean and safe waters biologically diverse and resilient ecosystems
managed for the greatest well-being of the community,	<ul style="list-style-type: none"> accessible to the community maximum economic, social and environmental benefits
now and into the future	<ul style="list-style-type: none"> key community benefits maintained and enhanced for current and future generations

NSW Primary Industries

Characteristics of fisheries in NSW

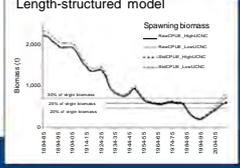
- Relatively small (and shrinking) commercial sector**
 - many small operators; many with multiple endorsements
 - only 2 quota managed fisheries (lobster & abalone)
 - managed under FMSs developed in early – mid 2000s
 - catch reasonably well quantified; effort less so
 - currently undergoing major structural reform
- Important aquaculture sector**
 - based on oysters
- Relatively large (but stable?) recreational sector**
 - shore-based, boat-based, charter, gamefishing, spearfishing
 - estimates of catch & effort now over 10 years old; but new survey nearing completion
 - managed largely by bag & size limits
- Small (but under-appreciated) indigenous sector**
 - important recent decisions & more in pipeline

NSW Primary Industries

Information collected about lobster fishery

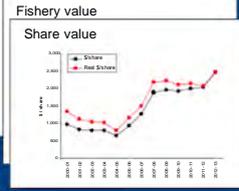
Research / monitoring

- Logbook CPUE
- Puerulus abundance (IS)
- FIS abundance
- FIS abundance – spawning stock
- Pre-recruit indices (logbook)
- Observer survey – size-distributions
- Length-structured model



Fishery

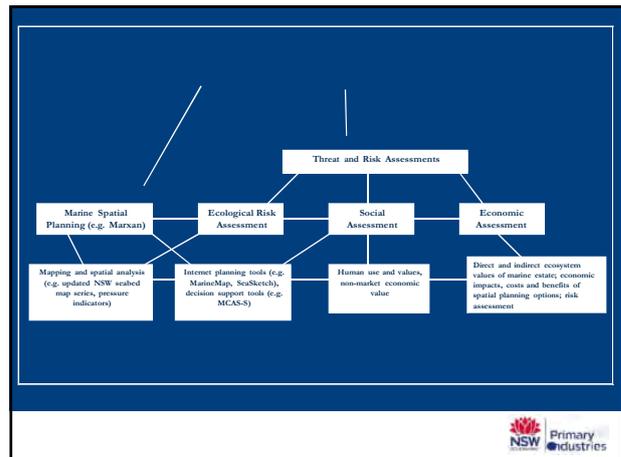
- Catch
- TACC & % TACC caught
- Fishery value
- Share value



NSW Primary Industries

The marine estate of NSW

- **Scientific Audit of NSW Marine Parks**
 - Commissioned in 2011, delivered in 2012
 - NSW Govt response in March 2013 established the Marine Estate Management Authority and a supporting ME Expert Knowledge Panel
- **MEMA**
 - 'Principles' document released in November 2013
 - Threat & risk approach used to determining priorities
 - Greater emphasis on, and integration of, social & economic considerations
 - Holistic approach to management
- **Current MEMA initiatives**
 - Assessment of shore-based rec. fishing in MP sanctuary zones on ocean beaches & headlands (as a result of amnesty)
 - Development of a threat & risk assessment framework
 - Community survey to characterise public's views on threats & values
 - New legislation to replace Marine Parks Act 1997



Marine EBM in NSW

- **Fisheries**
 - ESD concept recognised under the FMA
 - EBFM concept recognised under FMSs
 - Some progress on ESD (eg management of harvested sharks)
 - Integration of social & economical with ecological not explicitly happening in NSW
 - Long-recognised need to reform the 'rights' structure of commercial fishing; linking shares to catch/effort
- **Marine Estate**
 - Emphasis is on benefits & values and the threats to those
 - Benefit cost analyses (economic & social) likely to be used to make trade-offs among competing benefits
 - Current focus is on issues related to Marine Parks, but this will change in coming years



Where to from here in NSW

- **Complete reform of commercial fishing**
- **Encourage further R&D projects in NSW around social/economic themes**
 - Professionalising the fishing industry – Oceanwatch pilot
 - Indigenous cultural fishing and fisheries governance – SCU
 - Other FRDC proposals in the pipeline
- **Encourage use of marine estate management philosophy in Fisheries management**
 - Resource assessment is more than just harvested stock
 - The role of spatial management
 - Understanding what the community wants/expects
 - Capacity for greater, and better informed, participation in management
 - Development of suitable performance indicators & reference points



Fisheries management in Victoria: social and economic elements.



Department of
Environment and
Primary Industries
Victoria

DEPI Corporate Plan

Objectives for fisheries management:

- Optimise economic and social value
- Efficient allocation
- Regional community benefits
- Secure entitlements



1. Prospective cost recovery

- Principles: efficiency, equity, value of production.
- GVP to measure economic impact of fees.
- Small operator concessions.

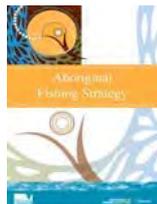
2. Management of new fisheries

- Allocation mechanisms.
- Devolved management approach.
- Co-management.



3. Victorian Aboriginal Fishing Policy

- Recognition of customary rights.
- Economic opportunities.
- Collaborative management.



4. Governance arrangements.

- Funding agreements for representative bodies.
- Performance indicators:
 - Advice on behalf of industry including minority interests.

Future approach.

- Pathways for industry.
- Management plan framework:
 - Social and economic objectives.



Questions?



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Queensland perspective:

Integrating social & economic dimensions in fisheries management decision making, governance and reporting frameworks

Great state. Great opportunity.



Queensland perspective: the environment in which we currently operate

- Broad ESD objectives in the Fisheries Act (1994)
- No strategic policy under this guiding how fisheries managed
- 20 fisheries managed with range of input (many) and output (less so) controls in legislation
- No ongoing MAC engagement process (needs basis)
- Large recreational and Indigenous component
- Fishery management arrangements get 'reviewed' on a needs basis
- Larger reviews generally get broad stakeholder input/engagement across sectors (competing interests)
- Public service makes recommendations to govt (govt has final decision)

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Integrating social & economic dimensions in fisheries management decision making

- No explicit process for considering social/economics
- Ecological (stocks & bycatch) objectives most obvious
- More recently focused has been on economic viability
- Social objectives generally not explicit in final set of management arrangements
- **However**....social considerations (stakeholder views) can drive outcomes of management reviews due to engagement process
- e.g. East coast otter trawl fishery – research project to consider social objectives and management strategies to deliver

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Queensland fishery example: East Coast Inshore Fin Fish Fishery

- Net and line fishery, commercial, large rec component and Indigenous fishing
- Reviewed in 2007-08
- Controversial due to shark harvest, competing interests
- Ecological, economic and social dimensions obviously taken into consideration in proposals and final decisions, but where is the record of this?
- Are the management arrangements doing what they set out to achieve?
 - Some of the explicit objectives monitored in PMS (e.g. maintain the stock) but what about the rest?

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Reporting framework...social/economic

- Followed ESD framework since 2006
- Fisheries monitored via performance measurement system (PMS)
- Annual fishery reports (DoE guidelines)
- Less engagement with stakeholders in development (and refinement) of PMSs
- Economic indicators in PMS – GVP
- Social indicators – compliance levels
- Monitor GVP annually but confidence in it?
- Some fishery specific socio-economic research work completed (e.g. CT, SELTMP) but yet to integrate into monitoring/reporting
- Economic survey (via mail) in 2008 but poor return rate

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Barriers to success / implementation

- Legislation – broad ESD objectives
- Policy – no clear strategic policy document outlining how social and economic elements considered
- Fishery by fishery reviews
 - in absence of policy, how social and economic elements explicitly integrated appears to rest with individuals (within dept and stakeholders)
 - Fishery reviews to 'fix' issues
- Disjunct between setting of objectives & monitoring achievement of these via PMS

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Keys to success...

- Raise awareness of measurable benefits of considering, monitoring & reporting on social and economic objectives
- Policy to (and how) explicitly consider social and economic elements (ie 'not just consider the triple bottom line')
- Management agencies need high level drivers to make this a priority

- In February 2014, DAFF Minister announced a comprehensive review of how Qld's fisheries are managed
.... an opportunity?

Social & Economic Elements of EBFM

Some views from AFMA about context and implementation

By NICK RAYNS

A few Context Questions & Examples

- What type of fishery do you have?
Industrial, offshore, commercial
- What does your legislation require you to do?
Regulate the harvesting of fish
Manage the effects of fishing on the marine environment
Make decisions based on the best available science
- What does other legislation require you to do?
Minimise fishing impacts on threatened, endangered and protected species
- What does government policy require you to do?
Comply with the Commonwealth Harvest Strategy Policy
Comply with the Commonwealth Bycatch Policy
Comply with EPBC Act Guidelines

How do Australian fisheries vary?

- What sectors are within your jurisdiction?
Commercial, recreational, aquaculture, indigenous etc
- What are you responsibilities from harvest to consumption for each sector?
Harvest, processor, wholesale, retail and consumer
- What Outcomes Framework do you use?
eg, the ecosystem delivers the economic benefits from which social benefits flow
- What process(es) to do you use to make decisions?
eg, social processes (MACs, RAGs, etc) integrate ecosystem and economic considerations as a basis for advice & eg, appointed experts and professionals consider all reasonable sources of advice prior to making a decision

Where do Commonwealth fisheries fit?

- A narrow legislative and policy space
Commercial, industrial scale fishing and harvest sector only
- An ecosystem and economic outcomes focus
MEY based Harvest Strategy, Bycatch Strategy, TEPs
- A social and scientific process of advice giving and decision making
eg. MACs, RAGs, sector bodies, government agencies, external experts, the public and the Commission

For these reasons Commonwealth fisheries may be somewhat atypical as other jurisdictions often have broader mandates in terms of fishing sectors and how far post-harvest you manage.

How does AFMA implement socio-economic elements?

- Economics (profits & revenue)
Pursuing MEY to maximise harvester profit (not catch)
Cost-effective & efficient regulation (minimise costs while managing risks)
- Social (trust & confidence)
Stakeholder diversity on MACs, RAGs etc
High level of Commission acceptance of advice (80%+)
Testing co-management (GABTF & NPF)
Easily accessible advice and decisions (web based reporting and data availability)
Increasing participation/engagement in advice giving (through web-based tools & new forums)
Independent public reporting of performance through ABARES, ANAO etc

Questions?



FRDC EBFM RD&E INVESTMENT OVERVIEW

Patrick Hone

Australian Operating Environment for Ecosystem Based Fisheries Management



National Strategy on ESD (COAG, 1992)

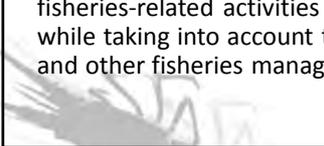
The Australian ESD strategy includes three key objectives:

- To enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations.
- To provide for equity within and between generations.
- To protect biological diversity and maintain essential ecological processes and life-support systems.




AFMF EBFM Approach

Ecosystem Based Fisheries Management (EBFM) is an holistic approach for the management of fishing activities, be they commercial, recreational, charter or customary fishing, at the regional or ecosystem level. EBFM considers the cumulative impacts on the environment from all fisheries-related activities operating in a region while taking into account the **social, economic** and other fisheries management objectives.




EPBC Act Assessment Guidelines

To ensure an **ecosystem approach to fisheries management** the Commonwealth has incorporated ecological sustainability requirements into Commonwealth environmental and fisheries legislation.

PRINCIPLE 1. A fishery must be conducted in a manner that does not lead to over-fishing, or for those stocks that are over-fished, the fishery must be conducted such that there is a high degree of probability the stock(s) will recover.

PRINCIPLE 2. Fishing operations should be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem



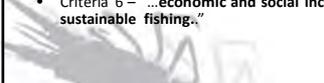

MSC Standard

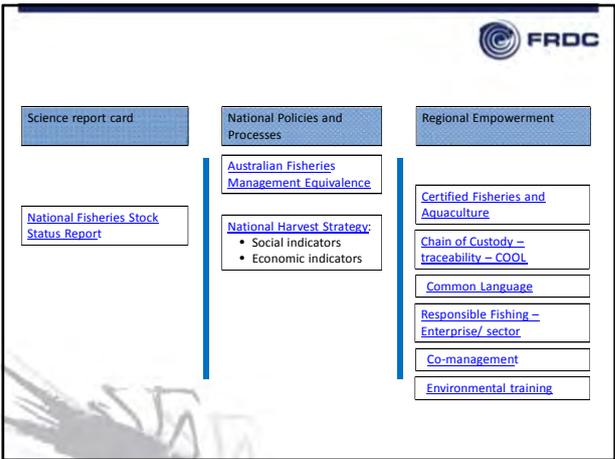
PRINCIPLE 1
A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery

PRINCIPLE 2:
Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends

PRINCIPLE 3:
The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be **responsible** and sustainable.

- Criteria 6 – “...**economic and social incentives that contribute to sustainable fishing.**”





Where next for RD&E investment ?

Considerable investment but there are still gaps and a lack of a national approach

- Harmonisation and tools for social and economic assessment and reporting
- Harmonisation of jurisdictional approaches to Harvest Strategy implementation
- By-catch performance reporting (inc TEPs)
- Ecosystem assessment tools



National Fisheries Stock Status Report

Purpose: To establish a single national reporting framework for wild catch fisheries management (environmental, social and economic)

Resources:

- Existing state and commonwealth status reports – including EPBC strategic assessments, stock assessments

How:

- Working with AFMF and jurisdictional fisheries research providers develop an agreed methodology for reporting stock status

Supporting Projects:

- 2006/071 Evaluating the performance of Australian marine capture fisheries - Expert assessment to assess outcomes of Australian fishing management (Ewan Colquhoun)
- 2013/009 Shark Futures: a report card for Australia's sharks and rays (ICU)
- 2013/233 Benchmarking Australia's national status reporting system (ICI Consulting)
- 2014/008 Fishery status reports: health-check for Australian fisheries (CSIRO)
- 2014/030 Status of key Australian fish stocks (SAFS) reports 2014 and beyond (ABARES)

www.fish.gov.au

[Back](#)

Australian Fisheries Management Equivalence Standard

Purpose: To develop a national fisheries management equivalence standard

Resources:

- Investment in FRDC as a Standard Development Organisation
- Industries investment in assessment report at state and commonwealth

How:

- Establish a national equivalence standards setting committee to oversee standard development
- Develop a publication that explains fisheries management standards
- Partner with UK Seafish, ASMI, NZ Seafish and US NFI

Supporting Projects:

- 2011/262 Funding for national fisheries standard – workshop
 - Marine Stewardship Council
 - Monitor - Global Sustainable Seafood Initiative (GSSI)
 - FAO Code of responsible fishing
 - EPBC Assessment Guidelines
 - Retail assessment criteria and procedures
- 2014/009 Development of guidelines for quality assurance of Australian fisheries research and science information (ABARES)

[Back](#)



National Harvest Strategy

Purpose: To establish a national HS framework that harmonises across jurisdictional boundaries using a triple bottom line approach with linkage to national reporting

Resources:

- FRDC's previous and current investment in ESD, and HS
- Seafood CRC Future Harvest Program

How:

- Led by AFMF with support from key project developments
- Ensure capture R&D from overseas

Supporting Projects:

2010/061 Development of a national harvest strategy framework (AFMF)
 2010/040 Developing and testing social objectives for fisheries management (AFMF/PIRSA)
 2010/766 Seafood CRC: policy shift to risk-based fisheries management – phase 1 proof of concept (WAFIC)
 ABARES projects for review of Commonwealth Harvest Strategy Policy
 2012/202 Operationalising the risk cost catch trade-off (CSIRO)
 2013/202 Identification of when current Commonwealth harvest strategies are inappropriate and possible alternatives (CSIRO)
 2013/204 Meeting sustainability expectations: translating and aligning objectives, reporting and evaluation of the performance of Australian fisheries (IMAS - Emily and Caleb)

[Back](#)



Certified Fisheries and Aquaculture

Purpose: To provide scientific support to those industry sectors seeking 3rd party certification – R&D focus

Resources:

- Existing investment through IPAs and FRABS

How:

- Link to Sustainability reporting, national fisheries management strategy and Harvest Strategy development
- NSW/SFM project for responsible fisheries management certification

Supporting Projects:

2011/222 Development of a cohesive industry-wide policy on Eco-Certification for Australian commercial fisheries
 2012/746 "SCRC: preliminary investigation internationally recognised Responsible Fisheries Management Certification"
 Coles – WWF
 Woolworths - SFP
 WA Government's \$14.5M investment in 3rd party certification – MSC
 WAFIC MSC proposal – not funded
 2013/030 "Extension of MSC Certification for Western Australian Fisheries" WAFIC
 2013/038 "Tactical Research Fund: Improving efficiency in generating submissions and consistency of outcomes for MSC based assessments" WA Fisheries

[Back](#)



Chain of Custody – traceability – COOL

Purpose: To develop science tools to improve traceability and country of origin labelling

Resources:

- Previous assessment of COOL in NT seafood industry
- ISO, EU and MSC existing standards and processes

How:

- Work with Seafood CRC on technology for improved product identification technologies

Supporting Projects:

2012/702 Seafood CRC: innovation in traceability for the Australian seafood industry - Austral Fisheries/Northern Prawn fishery case study
 2013/030 Extension of MSC Certification for Western Australian Fisheries WAFIC

[Back](#)



Common Language

Purpose: To establish a forum to resolve issues of difference between stakeholders using a science based process

Resources:

- FRDC's previous R&D investments
- FRDC's fact sheets on key issues

How:

- Establish a common language group
- CLG to identify areas that need resolving
- Establish a process to resolve priority issues

Supporting Projects:

2012/500 To establish a forum (Common Language Group) for working with all stakeholders to reach agreement on issues which are contentious in the fishing and aquaculture sectors (FRDC)
 2014/500 Implementation of the Common Language Group

[Back](#)



Responsible Fishing – Enterprise/ sector

Purpose: To provide the basis for an auditable framework under which fishers (individually and collectively) can extend to consumers and the public that they fish under an Australian Standard for Responsible Fishing.

Resources:

- Partnership with UK SeaFish(Phil McMillen)
- Previous development of the SRL Clean and Green Program
- Previous investment in Environmental Management Systems
- Previous investment in codes of practice

How:

- Develop standard
- Obtain support from retailers and fisheries certification programs

Supporting Projects: SRL Clean and Green program

2013/023 Develop a draft Australian Standard for Responsible Fishing on vessels to improve public perception of the commercial fishing industry (FRDC)
 2013/024 Professionalising Industry - NSW Pilot (OceanWatch)

[Back](#)



Co-management

Purpose: To implement improved co-management in Australian fisheries

Resources:

- Guide for co-management has been published
- Review recommendations published
- Case studies with AFMA and Qld fisheries completed

How:

- Project by project investment where evidence that investment is adding to innovation

Supporting Projects:

2006/068 Fisheries co- management initiative (Peter Neville)
 2008/045 Co-management in Commonwealth fisheries (AFMA)
 2009/211 Whose fish is it anyway? - Investigation of co-management and self-governance solutions to local issues in Queensland's inshore fisheries
 2011/216 Co management review (Peter Neville)
 2013/205 Beyond engagement: moving towards a co-management model for recreational fishing in South Australia (PIRSA)

[Back](#)



Environmental training

Purpose: To develop training resources to ensure fishers are trained to environmental responsible fishing standard

Resources:

- Links to project 2013/023

How:

- Partnership with AgriSkills Council to ensure Australian Seafood Training Competencies include the responsible fishing training components

Supporting Projects:

2009/330 Tactical Research Fund: SETFIA Accreditation of Commonwealth Trawl Sector skippers toward improved environmental operation in fishery (Simon Boag)

2012/700 Seafood CRC: Professional Fishing Certificate - A CRC legacy - phase 1 - industry demand (WAFIC)

2013/024 Professionalising Industry - NSW Pilot (OceanWatch)

[Back](#)

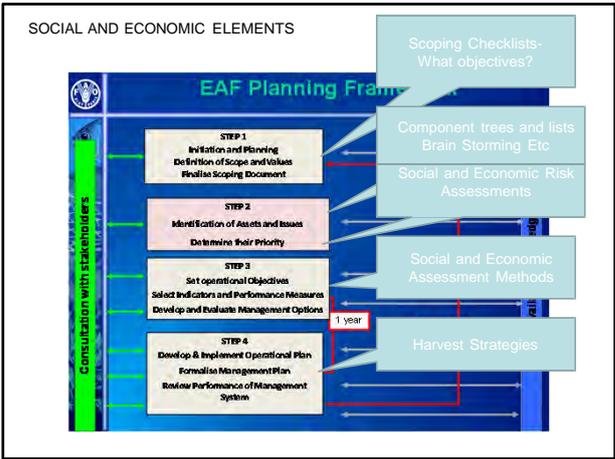
Where do Social and Economic Elements fit within the various ESD, EAF and EBFM etc.. Frameworks?

Dr Rick Fletcher
Department of Fisheries
Western Australia

Outline

- Fishery level frameworks - began life as ESD but has morphed into EAF at an international level - all located on FAO Toolbox website
- Regional Level frameworks – EBFM

www.fao.org/fishery/eaf-net



Fishery Level Uptake

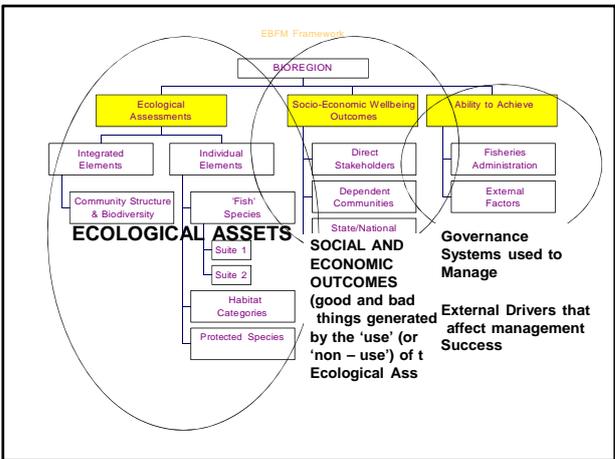
Australia -

- Primary focus was dealing with EPBC etc..

Minimal uptake of social and economic elements

Internationally

- Prime focus on sustainable communities, food security – ecosystem necessary.
- Much greater focus on non ecological elements



Conclusion

- The frameworks and the tools are all there to include as many social and economic issues and information as you want.
- In the end - the question is, how much is sufficient to manage appropriately?
- This is not a technical problem it is a question of priorities

National Harvest Strategies Guidelines

FISHERIES & AQUACULTURE
PIRSA

National Workshop – Implementation of economic and social elements in fishery management decision-making

Sean Sloan, Tony Smith, Caleb Gardner, Kelly Crosthwaite, Lianos Triantafyllou and Brian Jeffries

Background

- Used internationally (RFMO's, South Africa, US, Canada, Iceland, New Zealand, Norway)
- Used widely in the Australian fisheries management context
- Inconsistent application across Australian jurisdictions
- Recognised as best practice – MSC requirement
- Commonwealth Harvest Strategy Policy (2007)
- FRDC Project 2010/061 – National Harvest Strategy Guidelines
- Harvest strategies offer mechanism for integration of ESD elements

Features of the National Guidelines

- Harvest Strategy definition
- Key harvest strategy elements
- Design principles
- Design process
- Fishery specific considerations

What is a harvest strategy?

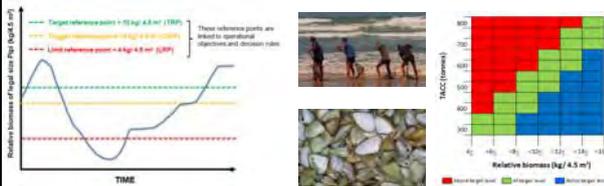
"A harvest strategy is a framework that specifies pre-determined management actions in a fishery for defined species (at the stock or management unit level) necessary to achieve the agreed ecological, economic and/or social management objectives".

What are the key elements of a harvest strategy?

- Defined operational **objectives** for the fishery
- **Indicators of performance** related to the objectives
- **Reference points** for performance indicators
- A statement defining **acceptable levels of risk** to meeting the objectives
- A **monitoring strategy** to collect data to assess performance
- A process for conducting **assessment** of fishery performance
- **Decision control rules** that control fishing catch or activity levels

Where do harvest strategies fit within the broader fisheries management framework?

Harvest strategy – SA Pippi example



Assessment of fishery performance relative to objectives

Step 1-Biological performance indicators are used to assess the current status of the Pippi fishery
 Step 2-Economic indicators (fishery gross margin-FGM) used to analyse economic returns over range of TACCs
 Step 3-Reference points and decision rules guide the TACC setting process.

Decision rules

TACC increased by 50 tonnes when biomass has increased by one level or when FGM is expected to increase by at least 1.5% with increase in TACC

TACC is reduced to corresponding green value when biomass is in the red range or where FGM is expected to increase by at least 1.5% with a decrease in TACC.

Social and economic considerations

- Harvest strategies offer mechanism for integration of ESD elements
- National snapshot audit of all Australian jurisdictions
- Many jurisdictions do not use social and economic indicators
- Many jurisdictions do not use target reference points
- Most jurisdictions do not have decision rules linked to economic factors
- Need for development of cost-effective methods to integrate economic information into harvest strategies - Proxies for MEY such as FGM
- HS provide opportunities for improved co-mgt
- Help to build public confidence and social licence

Thank you

Economic Objectives and Indicators

Julian Morison, Lisa Rippin & Stacey Paterson

Practical implementation of social and economic elements in
Ecosystem Based Fisheries Management and Integrated
Fisheries Management Frameworks

24-25 March 2014

EconSearch Pty Ltd



Overview

- Example of Economic Objectives
 - SA Abalone Fishery
- Potential Economic Indicators
- Example of Economic Indicators
 - SA Abalone Fishery
- Issues



Economic Objective #1

Objectives	Strategies	Performance indicators	Reference Point
<i>Maintain a flow of economic benefit from fishery to the broader community</i>	Develop and implement management arrangements that allow commercial operators to maximise operational flexibility economic efficiency and returns	Gross Value of Product (GVP) Gross Operating Surplus (GOS) Profit at full equity Licence value Value of quota units Economic rent Return on capital	Negative trend in one or more economic performance indicator for more than 3 consecutive years
	Communicate sustainability and economic outcomes of the fishery to the broader community		



Economic Objective #2

Objectives	Strategies	Performance indicators	Reference Point
<i>Ensure sufficient economic information exists to make informed management decisions</i>	Undertake periodic economic surveys of the commercial fishery to assess economic performance against a set of economic indicators	Delivery of periodic economic surveys assessing economic performance of fishery	
	Develop and implement methods to improve estimates of the total value of recreational fishing to regional economies and the broad community		



Economic Objective #3

Objectives	Strategies	Performance indicators	Reference Point
<i>Promote cost-effective and efficient management of the fishery, in line with Government's cost recovery policy</i>	Develop and implement management arrangements that are effective at achieving management objectives whilst minimising costs	Cost of management services Cost of licence fees	Commercial licence fees greater than 10% of GVP
	Determine and discuss the real costs of management, research and compliance for the fishery on an annual basis	GVP	
	Recover licence fees from commercial licence holders, sufficient to cover the attributed costs of management, research and compliance of the fishery, in accordance with the Government's cost-recovery policy		
	Explore methods for all stakeholders to share management costs		
	Influence other management processes that impact on access security		



Potential Economic Indicators

- Gross value of production and prices
- Cost of management
- Boat level financial performance indicators
 - income
 - operating costs
 - profitability
 - return on investment



Potential Economic Indicators

- State and regional economic impacts
 - Output
 - GSP
 - household income
 - employment
- Economic rent
- Other indicators
 - exchange rates, imports, exports, social characteristics

Seconsearch

FISHERY INDICATORS

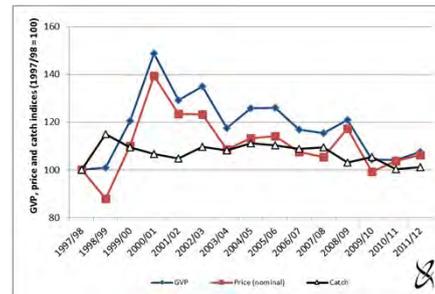
Seconsearch

Catch and GVP in the SA Abalone Fishery

Year	Southern Zone		Central Zone		Western Zone		South Australia	
	(tonnes)	(\$m)	(tonnes)	(\$m)	(tonnes)	(\$m)	(tonnes)	(\$m)
1997/98	123	4.0	180	5.7	509	17.2	812	26.9
1998/99	171	4.7	170	5.0	592	17.4	933	27.2
1999/00	149	5.2	190	7.2	550	20.0	889	32.4
2000/01	145	6.7	188	9.1	534	24.1	867	40.0
2001/02	141	5.9	193	9.0	516	19.9	850	34.8
2002/03	146	5.8	171	8.0	573	22.5	890	36.3
2003/04	143	4.3	177	6.6	559	20.6	879	31.6
2004/05	157	5.9	180	7.4	565	20.5	902	33.8
2005/06	136	5.1	181	7.2	579	21.5	896	33.9
2006/07	164	6.1	168	6.2	551	19.2	883	31.4
2007/08	146	4.5	193	7.0	550	19.6	889	31.0
2008/09	151	4.8	151	5.7	535	22.1	837	32.5
2009/10	147	3.5	164	5.5	544	19.1	855	28.1
2010/11	152	4.4	155	5.7	508	17.9	815	28.0
2011/12	153	4.8	166	6.3	503	17.8	822	28.9

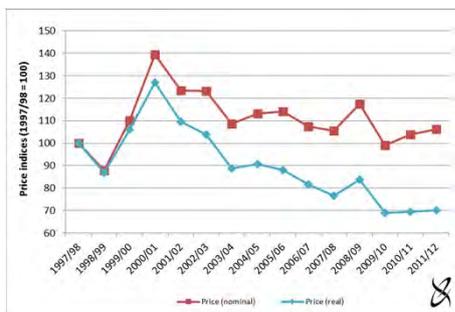
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GVP, Price and Catch Indices SA Abalone (1997/98 = 100)



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Real Price Over Time SA Abalone



Seconsearch

Management Fee as a Percentage of GVP SA Abalone Fishery



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SURVEY INDICATORS

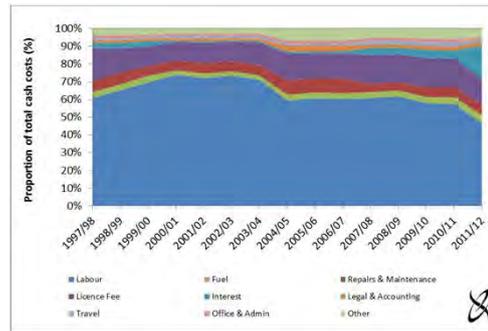
Survey Results

- Financial performance indicators
 - Income, costs and profitability as an average per boat
- Economic impact of the fishery
 - Direct and flow-on economic benefit created as a result of the operations of the fishing industry
- Economic rent

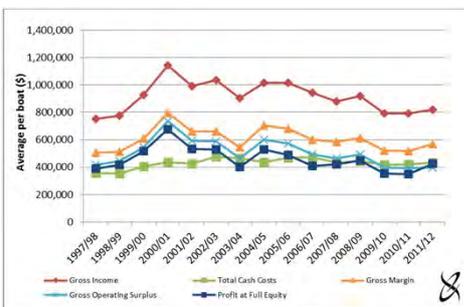
Survey (2011/12)

- SA Abalone: 19 responses from 35 licence holders (divers usually matched to licence holders)
- Data collected every 3 years for Economic Indicator reports to PIRSA

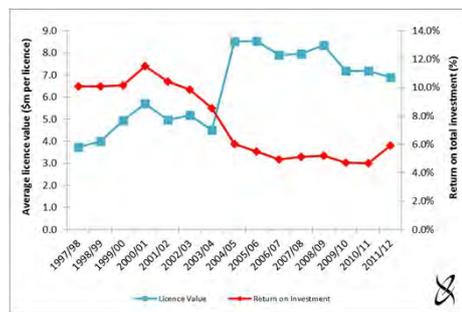
Operating Costs



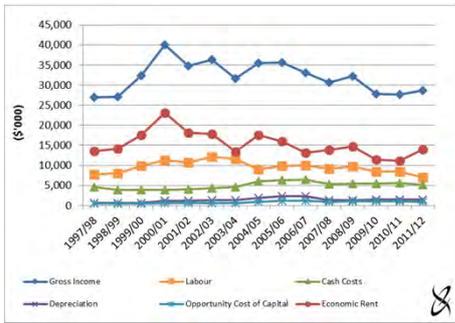
Profitability



Return on Investment



Economic Rent



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Economic Impact of the SA Abalone Fishery (Statewide), 2011/12

Sector	Output		Employment ^a		Household Income		Contribution to GSP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	28.9	34%	71	22%	6.9	31%	23.3	47%
Processing	12.2	14%	41	13%	2.7	12%	3.9	8%
Transport	2.0	2%	7	2%	0.5	2%	0.9	2%
Food services	0.6	1%	4	1%	0.2	1%	0.3	1%
Capital expenditure ^b	0.7	1%	4	1%	0.2	1%	0.3	1%
Total Flow-on ^c	41.7	48%	189	60%	11.5	53%	20.9	42%
Total ^c	86.1	100%	316	100%	22.0	100%	49.5	100%
Total/Direct	1.9	-	2.5	-	2.1	-	1.7	-
Total/Tonne	\$104,700	-	0.38	-	\$26,700	-	\$60,200	-

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Economic Impact of the SA Abalone Fishery (Eyre peninsula and West Coast)

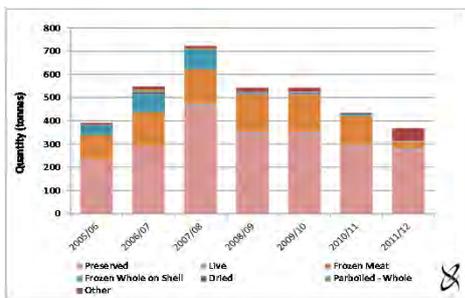
Sector	Output		Employment ^a		Household Income		Contribution to GRP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	17.8	47%	41	34%	4.8	49%	14.1	62%
Processing	7.4	20%	20	17%	1.6	17%	2.3	10%
Transport	0.3	1%	1	1%	0.1	1%	0.1	1%
Food services	0.0	0%	0	0%	0.0	0%	0.0	0%
Capital expenditure ^b	0.3	1%	3	2%	0.1	1%	0.1	1%
Total Flow-on ^c	12.1	32%	56	46%	3.1	32%	6.2	27%
Total ^c	37.9	100%	121	100%	9.8	100%	22.9	100%
Total/Direct	1.5	-	1.9	-	1.5	-	1.4	-
Total/Tonne	\$46,100	-	0.15	-	\$11,800	-	\$27,800	-

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OTHER INDICATORS

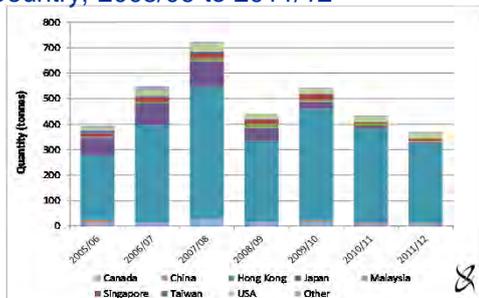
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Abalone Exports from SA by Product Type, 2005/06 to 2011/12



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Abalone Exports from SA by Destination Country, 2005/06 to 2011/12



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SA Abalone price and exchange rate (USD)



Co-efficient of correlation -0.48

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ISSUES

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Licence Holder Participation: Survey Response Rate

- Engagement of Executive Officer/Fishing Association Committee
 - Review questionnaire
 - Send supportive note to licence holders (email, newsletter, etc.)
 - Review presentation of preliminary results
 - Review draft report
- Assurances to Licence Holders
 - Individual confidentiality agreements with licence holders
 - Face-to-face interviews
 - Record data electronically with no identifiers
 - Destroy completed questionnaires

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Non-Survey Data: Access and Timeliness

- PIRSA
 - Licence numbers, fees, new boats
- SARDI
 - GVP, catch, effort, prices (Adelaide)
- Fish Markets
 - Sydney, Melbourne
- ABS
 - Import and export data

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Data for Bio-economic Modelling

- We can't track individual licence holders over time because we don't have identifiers
- Generally requires additional specific data depending on the objective of the analysis
 - Spatial and temporal catch and effort data, future price forecasts etc.

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Economic Objectives and Indicators

Julian Morison, Lisa Rippin & Stacey Paterson

Practical implementation of social and economic elements in Ecosystem Based Fisheries Management and Integrated Fisheries Management Frameworks

24-25 March 2014

EconSearch Pty Ltd

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Social Objectives and Indicators Guide for fisheries management

Practical Implementation of Social and Economic elements of EBFM and Integrated Fisheries Management Frameworks

24-25th March 2014

Presented by Dr. Kate Brooks (PI – Dr L.Triantafyllou; CI Dr. J. Schirmer, Dr. S Pascoe, Mr E. Jebreen, Dr C. Dichmont.





Project Purpose

To facilitate the integration of social factors into ESD and EBFM approaches, through:

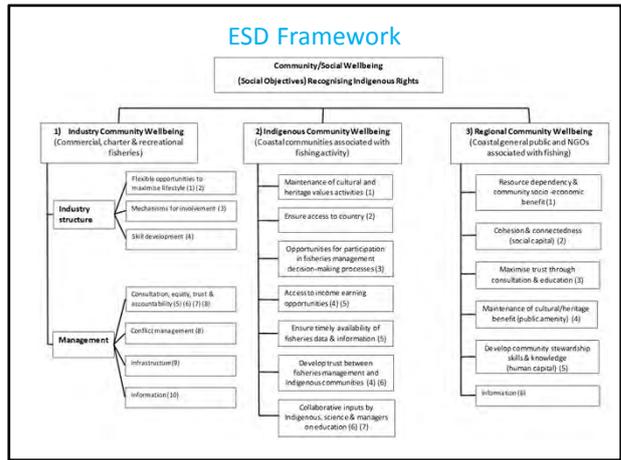
- Defining objectives for the different sectors;
- Developing tools to achieve these objectives;
- Develop tools to measure success;
- Better alignment of marine planning processes with fisheries management processes and arrangements; and
- Whole of government objectives for regions that have appropriate guidelines that clearly articulate what impacts are, and are not, allowed in relation to the social (human dimension) aspects of aquatic management.



What we did....

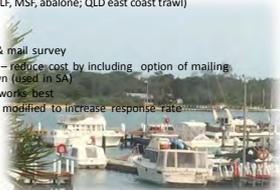
Three phases:

1. a) Literature and legislative review b) Develop draft objectives and indicators c) Industry workshop to test initial relevance across fisheries in Australian jurisdictions.
2. a) Implement data collection to test indicators and test significance to objectives (BBN Analysis) for **Industry** (commercial, charter and recreational), **Indigenous** communities and **Associated Regional** communities. b) AHP to identify prioritisation
3. a) Workshop with Australian jurisdictions to refine b) Write up with fully detailed guide for implementation.

Data collection to test indicators – Commercial fishers

- South Australia
 - Added 'social questions' to existing economic surveys of fishers
 - Face to face with mail option for fishers preferring to complete themselves
 - Marine Scalefish Fishery: 32% response (106/328, May-Jun 2011)
 - Southern Zone RLF: 25% (45/181, May-Jul 2012)
 - Northern Zone RLF: 48% (22/46 active, May-Jul 2012)
 - Abalone Fishery: 51% (18/35, Sep-Oct 2012)
- Queensland:
 - Trialled online survey, plus face to face surveys, Apr-Aug 2012
 - Queensland East Coast Trawl Fishery: 21% (63/approx. 300 trawlers)
- Fisheries Managers
 - Questionnaire developed for assist managers to regularly collect and document data
 - Tested on managers of four fisheries (SA RLF, MSF, abalone, QLD east coast trawl)
- Key issues/barriers:
 - Low literacy – reduced usefulness of online & mail survey
 - Face to face survey successful but expensive – reduce cost by including option of mailing survey to those able to complete on their own (used in SA)
 - Adding questions to existing, trusted survey works best
 - Some questions highly sensitive – have been modified to increase response rate



Data Collection to test Indigenous Objectives

- Literature review
- Engagement with Indigenous fisheries officers, agencies and departments;
- Draft of potential objectives and indicators
- Case study through focus groups with a South Australian indigenous community – Narrunga community in Port Pearce.
- Refined suggested list of objectives from 6 to 7 and provided associated indicators
- Recommendations require further research, and data to be collected and tested for significance, and across multiple communities.



Associated Regional Communities' data

- Only one indicator identified requires community survey
- Majority of indicators are proxies for community engagement/impact.
- Minimal testing of 'Associated Regional Community' objectives and indicators, due to funding constraints.

AHP Ranking of Objectives

Objective	Southern States	Northern States	Commonwealth	National average
Industry (Commercial, recreational and charter) communities				
1.1 Provide flexible opportunities to ensure fishers can maintain or enhance their livelihood (CC only)	3	4	3	4
1.2 Maximise cultural, recreational and lifestyle benefits (including health benefits) of fishing	5	3	6	5
1.3 Ensure appropriate mechanisms exist for fisher involvement in development of fisheries management advice	7	13	7	8
1.4 Improve the ability of fishers to participate effectively in fisheries management advisory processes	16	18	20	19
1.5 Industry stakeholders have a high level of trust in the management of fisheries	9	10	12	10
1.6 Maximise stewardship of fisheries resources	10	14	8	9
1.7 Ensure transparent decision making process by fisheries agencies	6	7	10	7
1.8 Ensure equitable treatment and access for fishers	2	5	4	2
1.9 Ensure adequate access to infrastructure needed for successful operation of fishing activities	4	3	2	3
1.10 Ensure fisheries information is available in a timely and publicly accessible manner				
Indigenous communities (NB: these objectives may differ to those in section 2 due to low study outcomes)				
2.1 Maintenance of cultural and heritage values related to fishing activities in Indigenous communities	17	12	17	16
2.2 Ensure provision of access to 'Country' to enable continuation of traditional activities	12	17	12	15
2.3 Ensure appropriate consultation of Indigenous people	15	11	9	11
2.4 Ensure open and transparent communication	18	16	14	18
2.5 Develop economic opportunities	13	8	15	13
2.6 Ensure collaborative issues by Aboriginal communities	13	8	15	13
Regional and associated communities				
3.1 Positively influence fisheries related socioeconomic benefits for regional communities	1	2	1	1
3.2 Facilitate/support the cohesion/connectivity of fishers with their regional communities through fisheries management	8	6	5	6
3.3 Maximise community trust in fisheries agencies to manage fisheries	11	19	18	12
3.4 Ensure fisheries management contributes to the maintenance of cultural and heritage values related to fishing activities	20	20	19	20
3.5 Facilitate capacity building for community members to enhance stewardship of fisheries resources	19	15	11	17
3.6 Ensure fisheries information is available in a timely and publicly accessible manner				

The rankings of the Indigenous community objectives were deemed to be generally low due to a lack of fisheries manager expertise or confidence in this domain. This is supported by the higher rankings noted by fisheries managers in the northern States.

Sample of Guide Part 1 Summary

Objective number and name	Indicator number and name	Measurement method/s	Measure's costs	Measure's complexity	Independ. of indicator	Additional information
1.3 Provide flexible opportunities to ensure fishers can maintain or enhance their livelihood, within the constraints of ecological sustainability (Page 21)	1.3.1 Provision of livelihood opportunities: cost of entry and access to fisheries (CC only)	Management agency	Low	Low	High	Page 47
	1.3.2 Perception of flexibility: fisher belief that management processes are flexible enough to allow them to adapt to changing conditions	Fisher survey	Medium*	Low	High	Page 49
	1.3.3 Existence of transferable property or use rights that allow access to marine and aquatic resources (CC only)	Management agency	Low	Low	Medium	Page 52
	1.3.4 Proportion of fishers accessing a livelihood from fishing (CC only)	Management agency	Low	Medium	Medium	Page 54
	1.3.5 Constraints access to livelihood opportunities imposed by fisheries management (CC only)	Management agency	Low	Low	Low	Page 57
2.4 Fisheries management actions support the maintenance of cultural and heritage values related to fishing activities in Aboriginal and Torres Strait Islander communities (NB: Indicator 2.2.2 must be undertaken to effectively implement indicators under 2.1) (Page 32)	2.2.1 Level of recognition and protection of both iconic species and habitat in fisheries management plans	Management agency	Low-Medium	Low	Low	Page 123
	2.2.2 Existence of continued access to identified community iconic species through habitat protection and catch management	Management agency & discussions with community representatives	Medium-High	High	High	Page 125
	2.2.3 Level of Indigenous community satisfaction with management impacts on access to iconic species over time	Survey of Indigenous community or advice from advisory group	Medium-High	Medium-High	High	Page 127
3.2 Facilitate and support the cohesion and connectedness of fishers with their regional communities through fisheries management (Page 40)	3.2.1 Level of recognition of key social and community needs in fisheries management processes	Management agency	Low	Medium	Medium-High	Page 130

Sample of Guide Part 2 indicator implementation guidelines

Indicator 1.1.2-Perception of flexibility: fisher belief that management processes are flexible enough to allow them to adapt to changing conditions

How do you collect data:	Measurement cost:	Measurement complexity:	Indicator independence:
Fisher survey	Low	Low	High

Social objective this indicator addresses: Objective 1.1 - Provide flexible opportunities to ensure fishers can maintain or enhance their livelihood, within the constraints of ecological sustainability. **What is the indicator?** This indicator identifies whether fishers believe management processes are flexible enough to let them adapt their fishing to changing conditions.

Why is it measured? It is important to identify the views of fishers on whether management processes enable adequate flexibility. Flexibility is critical to ensuring an ongoing viable livelihood, and in the case of recreational fishing, enjoyment of the resource. Management processes that enable fishers to adapt to changes in the external environment, such as markets, weather, etc., will support livelihood and resource enjoyment.

How is it measured? This indicator is measured through a survey of fishers, with fishers asked whether they agree or disagree with the statement 'Fisheries management is flexible enough to allow fishers to adapt to changing conditions'.

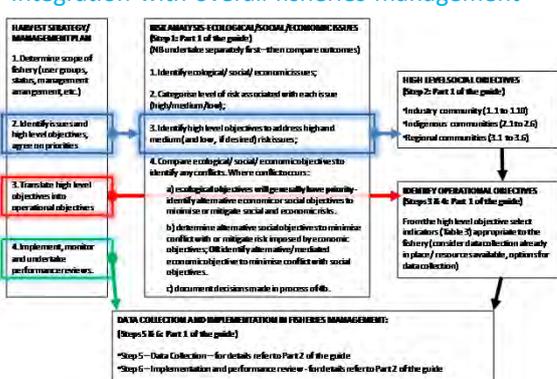
How is it analysed and interpreted?

This indicator is being met if the proportion of fishers who think fisheries management is flexible is 50% or greater and this has remained stable or is increasing over time.	There is need to consider further management action if the proportion of fishers who think fisheries management is flexible is <50% but is increasing over time. This means the indicator is moving poorly but further monitoring or management action is required.	There is an urgent need for management action if the proportion of fishers who think fisheries management is flexible is decreasing over time, or is 50% and stable or decreasing. This means the indicator is not being met and management action is urgently required.
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Sample report of Social Objectives and indicators.

Operational objective	Indicator	East Coast Trawl Fishery (QLD)	Recreational Fishery (SA)
Commercial, Recreational and Charter fishing Community			
1.1-Provide flexible opportunities to ensure fishers can maintain or enhance their livelihood	1.1.1-Provision of livelihood opportunities: How is the ability of fishers to access livelihood changing?		
	1.1.2-Perception of flexibility: Do fishers believe fishing management processes are flexible enough to allow them to adapt to changing conditions?		
	1.1.3-Transferable property or use rights exist for accessing marine and aquatic resources		
	1.1.4-Proportion of fishers accessing livelihood opportunities: What % of the livelihood opportunities (e.g. quota licences) are being taken up in the fishery?		
	1.1.5-Are fisheries management decisions ensuring ongoing access to livelihood opportunities?		

Integration with overall fisheries management



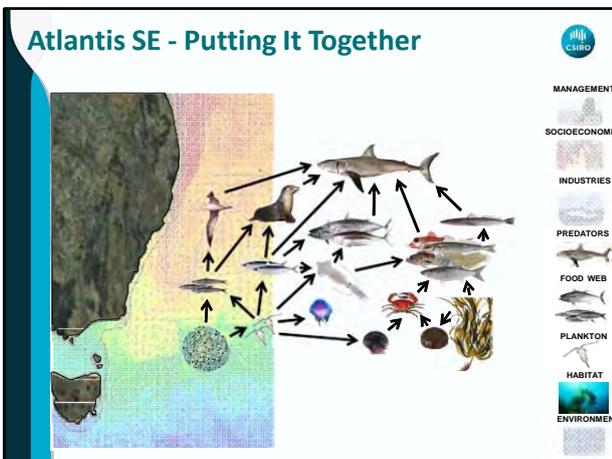
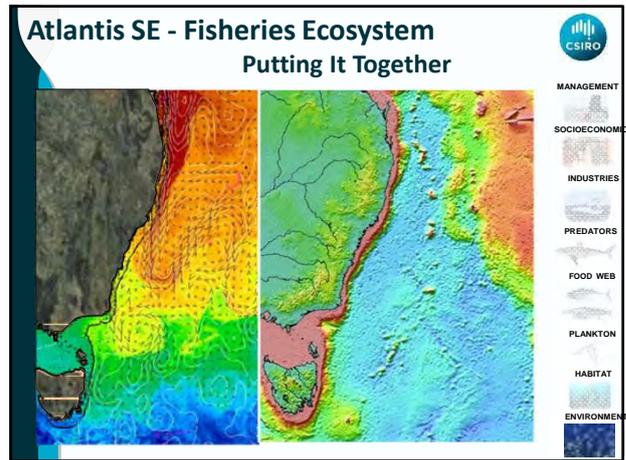
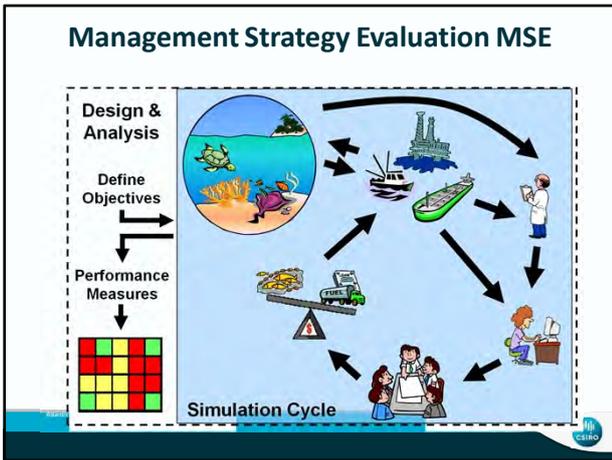
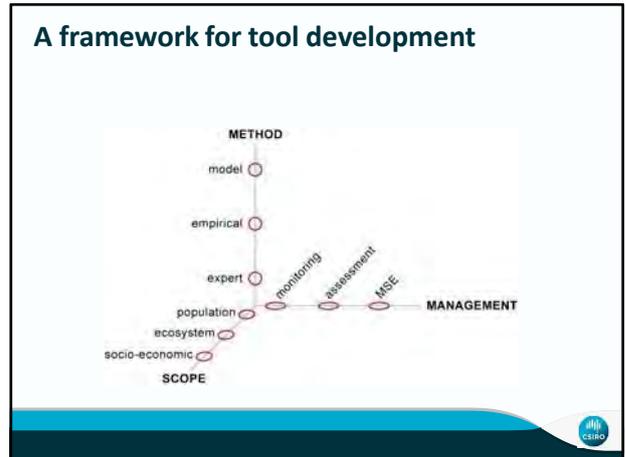


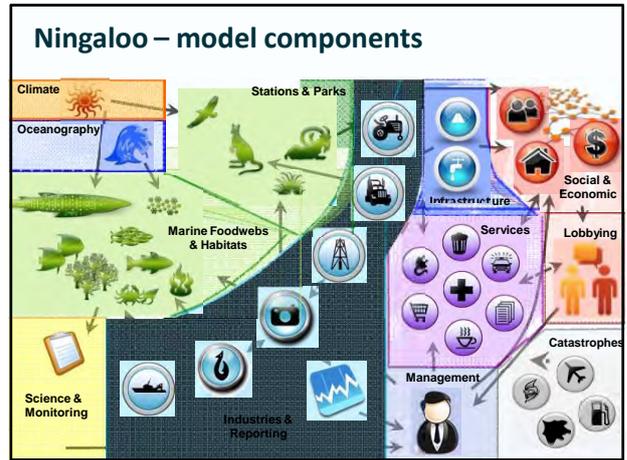
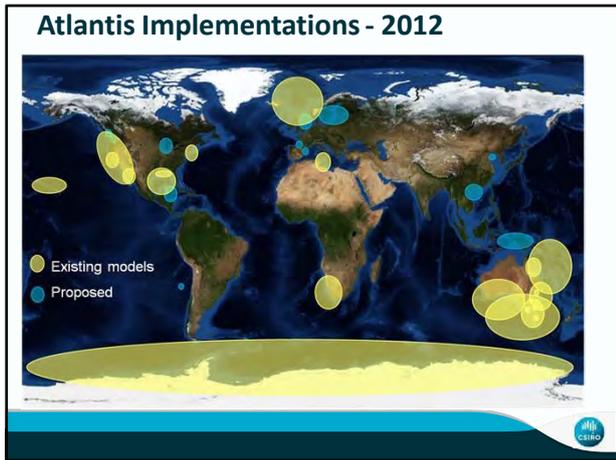
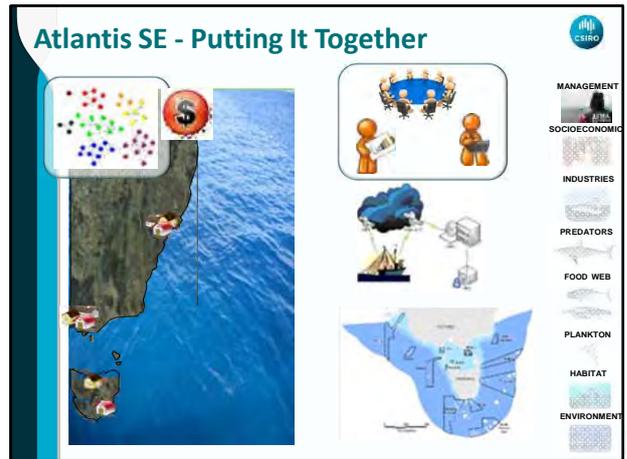
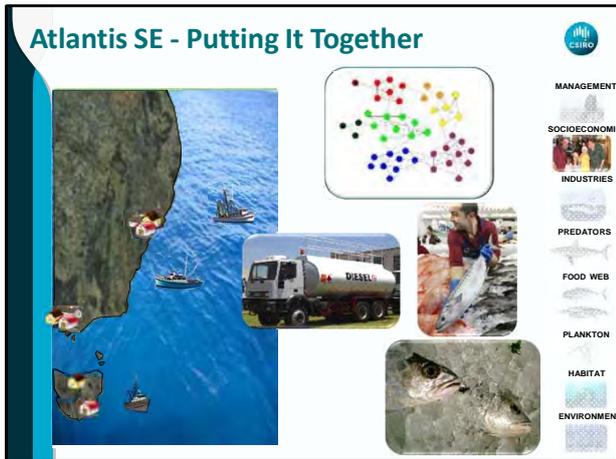
Integrating social and economic factors into EBFM

Tony Smith

Adelaide, SARAI, March 2014

CSIRO WEALTH FROM OCEANS FLAGSHIP
www.csiro.au



Proposal FRDC 2014/008

Healthcheck for Australian fisheries

Alistair Hobday (CSIRO), Matthew Flood (ABARES), Emily Ogier (IMAS)

Presented by Tony Smith

If funded...
A collaborative, consultative investigation of what will be needed to project Australian fisheries
Develop in collaboration with SAFS process
Develop in consultation with fishery stakeholders
Risk management will be foremost in mind

CSIRO

Are current reports serving Australian seafood industry?

Some independent, some not...some good, some bad...

All report on status of fish stocks – biological sustainability

Consumers and higher levels in supply chains want independent verification

- Society is not making choice just on biological sustainability

Social license increasingly important

- Fisheries need to be engaged

We need a wide ranging and independent summary of Australia's world leading status of fisheries

Australian Marine Conservation Society

“Healthcheck” - Objectives

1. In consultation with fisheries stakeholders identify a broad range of criteria for reporting the status of Australian fisheries (vs stocks)
 - Biological, economic, social, governance, etc....
2. Develop a web-based and summary template for reporting the status of Australian fisheries across a range of criteria
3. Undertake preliminary assessment of selected fisheries to demonstrate approach
 - Not to be public unless agreed
4. Develop a pathway for linking these fishery-level reports with the stock reports (SAFS) and the operationalisation of the reports into the future
 - Jurisdictions, FRDC, independent,



Reporting criteria - range of issues

While the set of indicators and reporting criteria would be developed in consultation, some example indicators might be based on;

Stock status – as from SAFS report

Economic performance

- Research investment
- TEP issues and how addressed
- Availability of recruitment indicators
- Disease risk
- Social indicators
- Recreational issues
- Market role (e.g. domestic, international, food, petfood)
- Carbon footprint or storage potential
- Eco-certification status
- Tourism role



This project will not include new data collection



Outputs & Extensions

Australian fisheries consider a much broader range of issues than just status of the target species. This recognition is important for the seafood industry and for customers nationally and internationally.

- This project will test the concept of reporting on fisheries indicators that are broader than stock status.

Consistent comparative treatment of Australia's national and state fisheries is important, and will also allow comparisons with international fisheries.

- Without proactive presentation of the health of our fisheries, third party reports (e.g. seafood guides) may fill the gap. These reports, while often comprehensive, fail to consider the range of indicators that we will consider.

The main output will be templates for the reporting of fisheries status across a wide range of indicators. These templates will be in both printed (e.g. report card style) and in web-based format which allows a hierarchy of information to be presented, as well as linking to resources held in disparate locations, and regular updating.

These materials will be targeted for use by managers, policy makers, marketers, and the public to assess a range of seafood issues.

The approach for updating and operationalising these reports will be discussed and developed during the project.



Centre for Marine Socioecology



Socioecology: the study of entire systems, particularly the interaction of humans with each other and with their environment



- Coasts & oceans = loci of activity
- Competing uses & objectives
- Managing impacts and feedbacks between ecosystems & people (focus on interactions)
- Cumulative pressure, increasing demand (& new uses) with global change context
- Transdisciplinary approaches



Thank you

Wealth from Oceans Research
Flagship
Tony Smith
Stream Leader

WEALTH FROM OCEANS
www.csiro.au





SELT

A Social and Economic Long Term Monitoring Program for the Great Barrier Reef

Brief Overview

WEALTH FROM OCEANS FLAGSHIP
www.csiro.au




SELTMP



- Reef managers 'know' local people, but difficult to incorporate human dimension into decision-making
- Monitoring offers opportunity to understand current status & trends

Background

www.csiro.au




SELTMP

- For better decision-making
- Imagine managing 2000km of Reef without knowing any thing about the people
- Opportunity to ask hard science questions

Aims

www.csiro.au



1. Frameworks --- 2. Concepts --- 3. Checklists --- 4. Tools --- 5. Applications



SELTMP



SELTMP 2013

Steering Committee: Advisor, SSAP

Working Groups: National Residents, TOs, Ports & Shipping, Drivers of change, Case studies, Commercial Fishing, Well-being, Economics, Recreation, Marine Tourism, Coastal Communities

External Processes

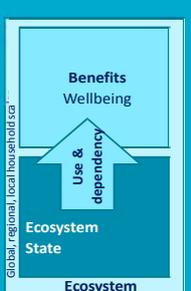
Strategic Advisory Component

Approach

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SELTMP



Global, regional, local household scale

Benefits Wellbeing

Use & dependency

Ecosystem State

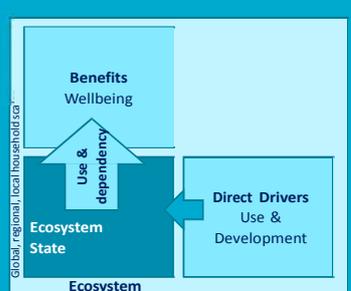
Ecosystem

SELTMP Framework

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SELTMP



Global, regional, local household scale

Benefits Wellbeing

Use & dependency

Ecosystem State

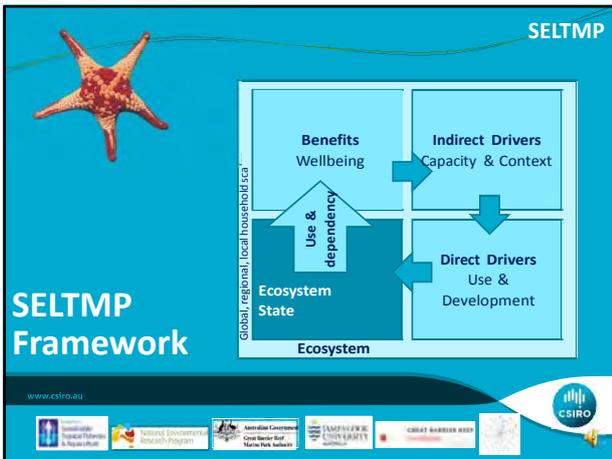
Direct Drivers Use & Development

Ecosystem

SELTMP Framework

www.csiro.au

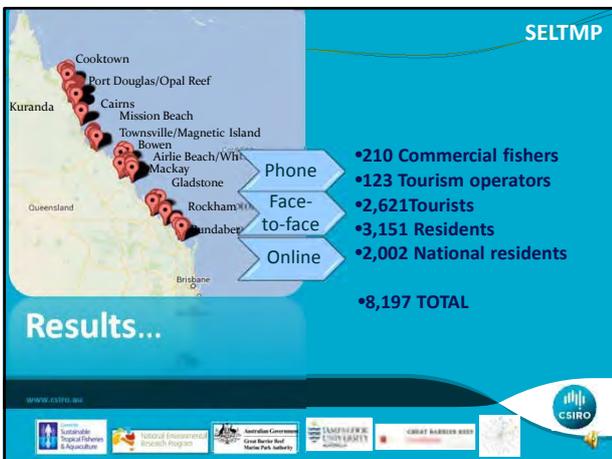




- SELTMP
-
- Summary Qs**
1. Patterns of Use
 2. Level of Dependency
 3. Well-being
 4. Indirect Drivers
- www.csiro.au

- SELTMP
-
- Our approach**
- Intense engagement with Users
 - Existing datasets identified
 - Used Model to identify gaps
 - Designed 5 surveys
 1. National Residents
 2. GBR Residents
 3. Marine Tourism Operators
 4. Tourists
 5. Commercial Fishers
- www.csiro.au

- SELTMP
-
- Methods...**
- Phone
 - Face-to-face
 - Online
- Industry operators
 - Public places with an ipad
 - Case study interviews
 - Via marketing co.
- www.csiro.au



SELTMP

feel proud that the GBR is a World Heritage Area

Area	Disagree	Agree
It is the responsibility of all Australians to protect the GBR	5 11 6 6 24 19	30
The GBR is part of my Australian identity	6 12 4 5 9 11 23 14 24	
I am concerned about the impacts of climate change on the GBR	7 12 3 5 9 12 25 14 17	
I would not personally be affected if the health of the GBR declined	8 11 8 17 9 9 11 7 12 3 4	
I feel optimistic about the future of the GBR	10 13 8 9 10 15 15 19 4 3	
I feel confident that the GBR is well managed	13 13 9 8 10 13 15 18 4 2	
It is not my responsibility to protect the GBR	8 13 9 18 9 10 11 8 9 3 3	

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SELTMP



Outputs...

- NERP Technical report series
 - Overall
 - Tourism
 - Recreation
 - Fishing
 - Case-study: Fishing
 - Coastal Communities
 - Wellbeing
 - Shipping and Ports
 - Drivers of Change
 - Place and people

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SELTMP



Useful bits...

- Outlook report
- Strategic Assessment
- Working with Industry
- Having MG, LS
- Synergies with other projects:
 - Conceptual framework?
 - Comparison data
 - Survey questions?
 - Developing social currencies?

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SELTMP



Thanks

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www.csiro.au






Northern Territory Seafood Industry Ecosystem Based Fishery Management

Lyn Lambeth
Officer
Northern Territory Seafood Council (NTSC)
SAR I, 24th March 2014
www.tsc.com.au



Overview of Presentation:

- Intro to NTSC
 - Overview of the three sectors NTSC represents
 - Seafood Labelling
 - Support NT Caught
 - Responsible Fisheries
- Current processes used to implement change
- Social performance
- Current data used



NTSC - Aims:

- Provides a representative voice at the Territory and national
- Provides a single contact point for the NT seafood industry.
- Promotes, encourages and assists industry.
- Promotes, conducts and assists in research.
- Promotes and assists in the development of NT commercial fishing and aquaculture.



Three sectors of the seafood industry in the NT

1. Wildcatch (10 fisheries)
2. Aquaculture
3. Trader processor

Over \$1.4 billion invested in licences, vessels and equipment, land-based support structures and aquaculture facilities.

registered commercial vessels.

650 businesses directly involved.

number of other businesses dependent on the industry.



1. Wildcatch

10 different fisheries requiring separate licences, each operating under their own gear restrictions, defined area regulations:

- **Barramundi** – Barramundi, King Threadfin (14 licences)
- **Coastal Line** – Black Jewfish, Golden Snapper (52)
- **Coastal Net** – Mullet, Blue Salmon, Queenfish (5)
- **Demersal** – Goldband, Crimson and Saddletail Snapper (20)
- **Mud Crab** – Mud Crab (49)
- **Offshore Net & Line** – Blacktip Shark, Grey Mackerel (17)
- **Spanish Mackerel** – Spanish Mackerel (16)
- **Timor Reef** Goldband Snapper, Crimson Snapper, Saddletail Snapper (14)
- **Trepang** – Sandfish (Sea Cucumber or Trepang) (6)
- **Aquarium** – Aquarium species (11)



2. Aquaculture - 2 main aquaculture industries, 2 in development

- Pearl culture



- Barramundi farming



- **Sea cucumber** (Trepang) hatchery (Goulburn Island) and "ranching" still in a trial period – production in the hatchery and then grow-out in the sea.
- **Giant clam** hatchery and "ranching" in trials – Nhulunbuy.

3. Trader Processors

Buy, process and deliver seafood to large and small retailers, restaurants and businesses needing large quantities of seafood.

Some also have a retail premises and sell to the public.

Fish Retailers (330 licences)

Sell to the public.



Seafood Labelling

Vinehina mamasan Cold lamb sautéed with browned onion, green chili, ground coriander, black pepper and curry leaves – a specialty of Andhra	18.50
Lamb korma Lamb sautéed in a mildly spiced with rich cream based korma sauce	18.50
Malabar beef curry Tender beef sautéed with onion tomato, anard, fenel seeds, and coconut milk	17.90
Beef Vindaloo Hot and sour goat beef curry	18.90
FROM THE OCEAN	
Salmon mochi Teriyaki salmon cubes poached in a ginger and soy sauce flavoured mild coconut curry	24.50
Jhinga ka satan Fried prawn sautéed in a cashew, peanut and sesame sauce flavoured with mustard, mustard, fenel, and curry leaves	23.50
Kudat prawn Succulent imported prawns sautéed in a tomato and onion masala with freshly ground spices and green capsicum	23.50
Barramundi usaruji Local prawn barramundi marinated with ginger, garlic, lime juice & chili	22.90

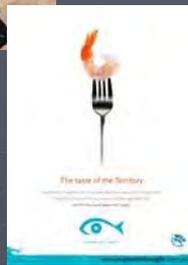
- Since 2008 NT seafood retailers must label imported seafood.
- First and only place in Australia to have this law.
- Extends all along the supply chain – from retailers to restaurant menus, fish and chip shops and market stalls.
- Increasing demand for local product.
- Only requirement is to label imported seafood, but many now label product as imported or from Australian / NT waters.

Support NT Caught

- In 2009 NTSC started the **Support NT Caught** campaign – website, logo, information on labelling laws and buying local seafood.
- Now found on restaurant menus, signs and seafood shop displays.

idespread consumer support labelling laws.

- survey showed labelling laws influence consumer choice.
- survey has shown a drop in imported product provided to retailers.



Responsible fisheries

Seafood is a community-owned resource harvested on behalf of the community by licensed fishers. That licence certain responsibilities to protect:

- **the resource and the environment** (EMS, CoP, Protected Species Guides, ghost net reporting & removal, Darwin Harbour clean-up)
- **the people who buy the seafood** (quality & food safety, supply chain temperature controls)
- **those who work in the industry** (vessel & crew safety regulations, training and equipment checks, emergency gear requirements, manning requirements, work health & safety)



Environmental responsibility

Improving and demonstrating environmental responsibility is an important part of ensuring a healthy industry and ongoing community



Processes used to implement change

Management Advisory Committee's or Advisory Groups including recreational, fishing tour operators, indigenous, commercial, environment, government.

- Discussion Papers
 - Public comment, comments reviewed sometimes by Fisheries and where they exist the relevant MAC
- Decision Frameworks
 - Only recently introduced for Timor Reef and Demersal Fishery once moved to quota
 - litical decisions
 - Lead up to elections, closures (Barramundi Fishery), marine parks (Limmen Bight Marine Park), size limits (Mud Crab Fishery)



Resource Sharing Framework

Effective and stakeholder supported resource sharing frameworks are of all Fisheries.

Stakeholder conflict is greatly limiting the optimal management of our fisheries.

Draft **NT Framework** guiding principles: Sustainability; Customary Use; Stewardship; Information; Transparency; Goal Orientation; Strategic Development; **Social Performance**; Practicality; Certainty; Structural Adjustment and cost contributions.



Social performance

Maximising community benefit:

•What levels of access provide for the greatest economic return from the fishery?

•Careful cost / benefit analysis is required investigating the **social**, biological and **economic** impacts of any decision.



Social and Economic data used

Very little.

- GVP
- Recreational fishing survey (effort)
- National Indigenous fishing survey (2000)



Northern Territory Seafood Council

NTSC Project Officer
email: ntsc@ntsc.com.au phone: 08 8981 5194 mobile: 0497 865 082
www.ntsc.com.au

Thank You



The Mighty Goolwa Pipi Industry - South Australia's Sunrise Seafood Sector
and our pursuit of the Holy "Optimally Utilised Fishery" Grail



Background



- Operating for 60 years as part of Lakes & Coorong Fishery
- Hand harvested 450 tonne quota fishery
- 25 quota holders & 18 active fishers
- 60km SASQAP certified area Youngusband Peninsula
- Beach value \$3.3m
- MSC certified
- GPHA formed 2008
- 7 members
- 65% of quota

Strategic Challenges

- Rebuilding the fishery to a level that will sustain catches 50% higher than current levels
- Building price by 50% -
 - meeting current available market supply timing and quality specifications and
 - developing new market opportunities
- Countering imported Asian and New Zealand clams
- Investigating aquaculture and re-seeding opportunities
- Capturing economies of scale through internal restructuring
- Building business confidence and investment certainty through:
 - removal of management blockages and
 - investment in capacity to deal with wider external industry challenges.
- Marine Parks
- Resource sharing with recreational
- Producing a useful management plan

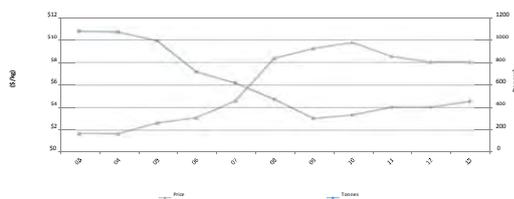


Progress to date

- Rebuild underway – up from 300t TAC to 450t heading to 600t
- No MPA exclusion zones
- Area based resource shares
- 12 month season
- Removal of owner operator provisions
- Market review and strategy development
- Value add MAP products R&D completed
- Pilot MAP plant secured and operating
- Value added product and single brand market research
- Industry co-investment business model developed for packing, processing & marketing
- New single industry processing and distribution facility planned for '15
- Harvest strategy using biological and profit decision rules in place



Goolwa Pipi Catch and Price '03-'13



Harvest Strategy Economics

Objectives:

1. Maintain a target Pipi relative biomass above 10 kg/4.5 m² and not less than 8 kg/4.5 m²
2. Ensuring that the Pipi relative biomass does not drop below 4 kg/4.5 m²
3. Maximise Fishery Gross Margin

Fishery Gross Margin (FGM) is used as a proxy for maximum economic yield (MEY)

FGM: is the total commercial catch multiplied by the (actual or estimated) net market price averaged across all market segments, less fishery and operator costs that vary with the TACC level

FGM Decision Rules

- **Increase in TACC**

Fishery Gross Margin is expected to increase by at least 1.5% with an increase in TACC.

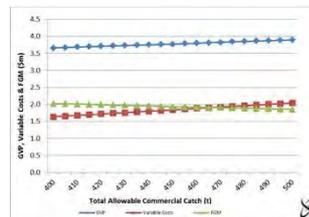
- **No change in TACC**

Fishery Gross Margin is not expected to increase by at least 1.5% from a higher TACC.

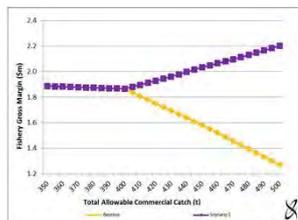
- **Decrease in TACC**

Fishery Gross Margin is expected to increase by at least 1.5% with a decrease in TACC.

FGM 2012-13 (Possible 500t – decision 400t)



FGM 2013-14 (Possible 450t – decision 400t without value adding & 450t with value adding)



Draft Management Plan Due for completion end of 2104

- GOAL 1 – ENSURE THE LAKES AND COORONG FISHERY RESOURCES ARE HARVESTED WITHIN ECOLOGICALLY SUSTAINABLE LIMITS
- GOAL 2 – OPTIMUM UTILISATION AND EQUITABLE DISTRIBUTION OF THE LAKES AND COORONG FISHERY RESOURCES
- GOAL 3 – MINIMISE IMPACTS ON THE ECOSYSTEM
- GOAL 4 – COST EFFECTIVE AND PARTICIPATIVE MANAGEMENT OF THE FISHERY

Innovation – under discussion

- Working with Jackie Schrimmer on social objectives
- Harvest strategies picking up environmental conditions e.g. setting allowable effort based on water flows
- Allocation of resource shares defined both spatially and by tonnage.
- Reallocation based on value of resource shares (e.g. Hundloe) rather than politics.
- Trying to define optimum utilisation – how do we measure? Has the optimum fishery ever been found? How will we know when we arrive at the Holy Grail?

Summary



- Fishery is rebuilding under harvest strategy
- Market highly sensitive to volume (TACC)
- Harvest strategy will see TACC cut without market development
- Market research & development is underway with value added products
- Industry is moving to joint processing, value adding and marketing under one brand, as the strategy to protect/build price and capture TACC increases on offer.
- Double whammy – higher price and volume = 50% -100% increase in GVP
- Innovation with social objectives, environmental indicators, resource sharing and optimum utilisation coming through the Management Plan

EBFM and the South Australian Sardine Fishery



South Australian Sardine Industry Association Inc
March 2010 edition

Paul Watson

www.sasardines.com.au

The SA Sardine Fishery ...in brief

- SASF.....commenced in 1991
- Rapid expansion - driven by development of SBT ranching
- SASF is now Australia's largest single species fishery by volume
- Current TACC of 34,000 Tons



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Setbacks during development.....

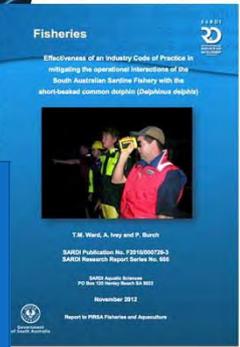
- 2 mass mortality events in 1995 and 1998 temporarily wiped out up to 70% of the adult stock
- Retarded development
- Fishery temporarily closed in response to TEPS interactions during 2005



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Response and adjustment

- Regular DEPM Surveys
- Stock recovery was strong post mortality events.
- Fishery re-opened with robust and regular stock assessments
- Independent audits of TEPS interactions and reporting accuracy/observer coverage
- Introduction of Industry based Real Time TEPS monitoring program (2010)

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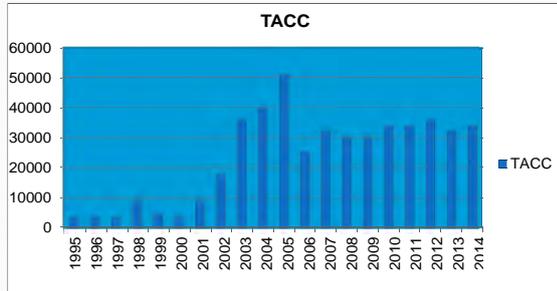
Stabilization brought substantial economic expansion as confidence grew in the SIF

Several "purpose" built state of the art vessels entered the fishery 2000 onwards




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SASF TACC across years.....



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Spatial allocations

Agreement between Industry and managers has seen the fishery adopt spatial management.



- The Gulf Zone (GZ) has an agreed upper limit of 30,000 Tons
- Any increase to future TACC can only be harvested from the Outer zone (OZ)
- This will ensure the GZ harvest remains stable and in keeping with previous EBFM research indicators

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Recent research.....

- In 2011 a comprehensive study was conducted on the SASF in order to ensure that knowledge gaps on potential impacts to predator species had been assessed as a result of the rapid expansion of the fishery.
- This study saw the culmination of 7 years work at a cost of over 2 M.
- All predators were breeding and foraging successfully
- Eco-system indicators were all positive....
- But it can be difficult to digest

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STOCK MANAGEMENT

AUSTRALIAN SARDINES ACCOMMODATE FISHERY EXPANSION

A healthy system of sardines for commercial fisheries could mean a big boost for the Australian economy, according to a new report from the Department of Fisheries and Aquaculture.

The report, titled 'The Great Australian Bight (GAB) Pelagic Ecosystem Assessment', was released last week. It found that the GAB pelagic ecosystem is healthy and resilient, and can support a large-scale commercial sardine fishery.

The report also found that the GAB pelagic ecosystem is a highly productive and diverse system, and that it is capable of supporting a large-scale commercial sardine fishery. This is good news for the industry, as it means that the fishery can expand without causing significant damage to the ecosystem.

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EBFM..... What's working....What's not?

- An industry perspective on EBFM....."Industry perspective on what's working and what's not".....
- It could be argued that the the SASF is probably the most identifiable example of EBFM in Australia
- Mainly driven by the output of the fishery and the dependence of sardines on key predator species and eco-system health

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- The 2011 EBFM project on the SASF is a key reference for the ongoing management of the fishery
- But large scale commercial fishing has triggered new community interest
- With politics potentially over-riding management and research



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- Community and political expectations of the fishing Industry have been amplified
- The fisheries management has recently changed

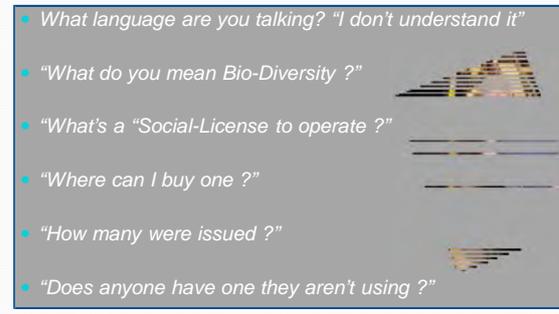


This is not EBFM

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EBFM...say what?

- *What language are you talking? "I don't understand it"*
- *"What do you mean Bio-Diversity ?"*
- *"What's a "Social-License to operate ?"*
- *"Where can I buy one ?"*
- *"How many were issued ?"*
- *"Does anyone have one they aren't using ?"*



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Communication gaps

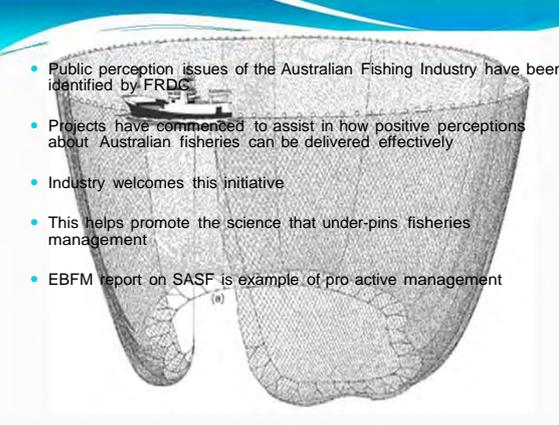
- Communication....One of the frustrations for industry stakeholders and executives is the language that is used among fishery managers, researchers, service providers and NGO's.

For example:

- Conversations around ESD, risk assessment, eco system impacts, social license, food webs, trophic species, localized depletion, community expectations, 3rd party accreditation, biodiversity, NGO's...etc...
- This is simply not a language previously used or well understood by fishermen.....

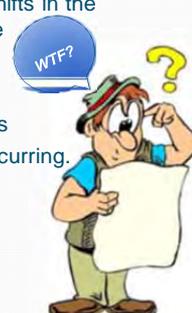
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- Public perception issues of the Australian Fishing Industry have been identified by FRDC
- Projects have commenced to assist in how positive perceptions about Australian fisheries can be delivered effectively
- Industry welcomes this initiative
- This helps promote the science that under-pins fisheries management
- EBFM report on SASF is example of pro active management



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- But an ageing population of commercial operators are "lost at sea" with the current shifts in the management environment and the language around it
- Confusion remains as to why shifts in fisheries management keep occurring.
- Industry becomes confused!



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Simplistic language is key

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As we know.... fishermen are always diplomatic when questioning management decisions.....



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Is EBFM a management tool?

Fishermen can be "Flat earthers"

View is..... it another way of saying more complex management/compliance?

Is there a place for it?

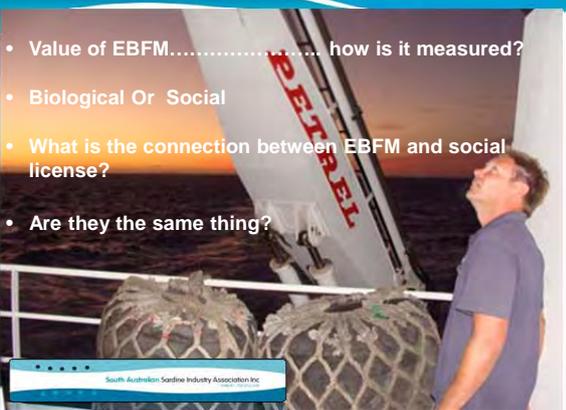
Is EBFM a sexed up way of pitching existing arrangements?

What are the precedents for EBFM fisheries?



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- Value of EBFM..... how is it measured?
- Biological Or Social
- What is the connection between EBFM and social license?
- Are they the same thing?



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Industry view

(SASF perspective)

- Communication should be extended beyond the scientific community in digestible terms
- Developed fisheries thought they had their species management issues addressed
- Fishermen/stakeholders also need to be involved in the social expectation discussion



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- Should be kept in perspective and not over ride existing management arrangements
- Is poorly understood by industry
- Should be a complimentary element of fisheries management not a complete management platform



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MARK ANE

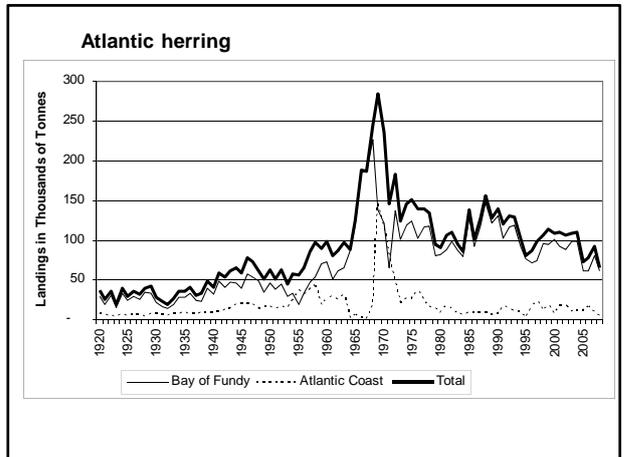
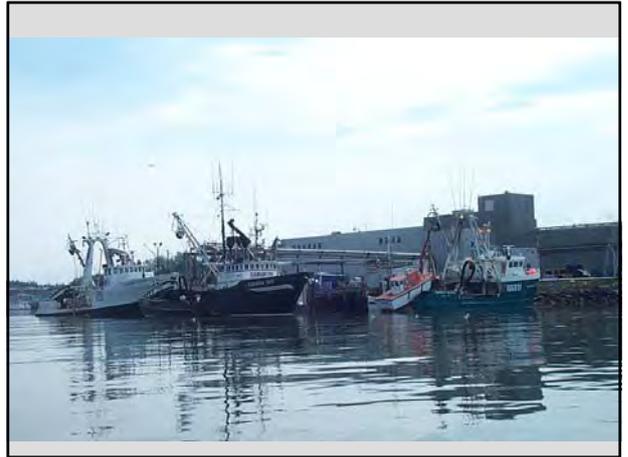
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EBFM and the South Australian Sardine Fishery



Paul Watson

www.sasardines.com.au



Variety of products includes canned, frozen, smoked, roe



Changes (1): Innovation in management

- Early quotas and first ITQ's
- Industry participation in management (emulating 'co-management')
- Industry participation in science (Pelagics Research Council)
- Industry sampling and acoustic surveys
- Explicit care of population sub-units

Changes (2): Consideration of a greater range of ecosystem attributes

- **Productivity**
 - Primary Productivity
 - Community Productivity
 - Population Productivity
 - **Biodiversity**
 - Species Diversity
 - Population Diversity
 - **Habitat**
 - **Social and Economic objectives**
- Societal expectation is greater than the minimum established in law = 'Social license'**

Criticisms of current management

Unintended consequences:

- Fish stock collapse
- Overcapacity and corporate ownership of fisheries
- Collapsed coastal communities

...in spite of elaborate fisheries management schemes

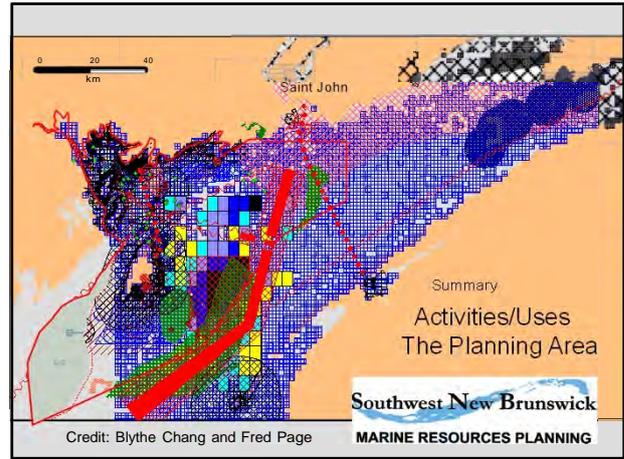
Criticisms of current management

- 1) activities managed by different groups using different tools/standards/approaches
- 2) Insufficient attention to full suite of values (esp social/economic aspects)
- 3) insufficient consideration of cumulative effects;
- 4) perception of a lack of transparency and lack of participation in management
- 5) insufficient public appreciation of the tradeoffs among activities when decisions are made

Most cannot be solved with existing assessment/management structure!

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

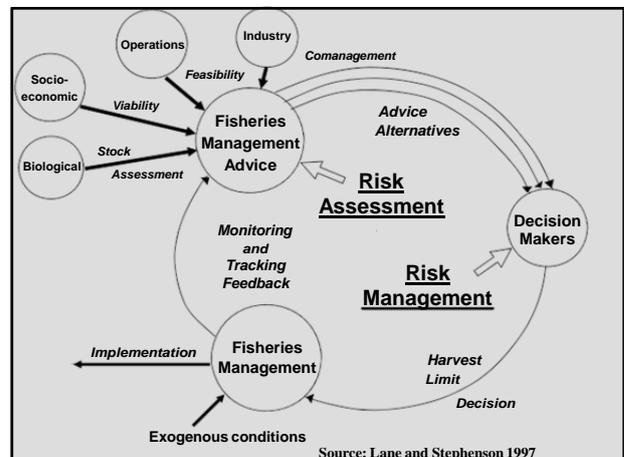
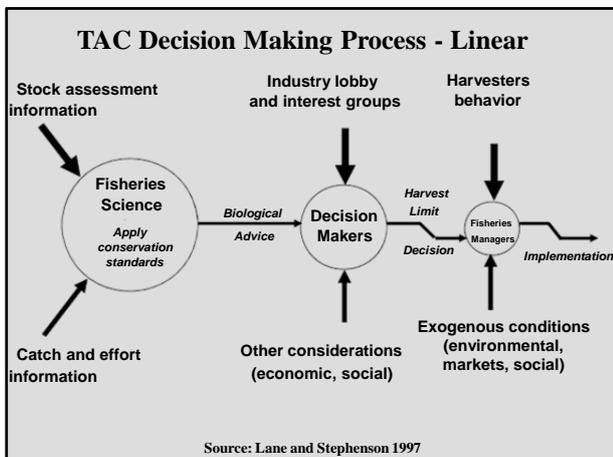


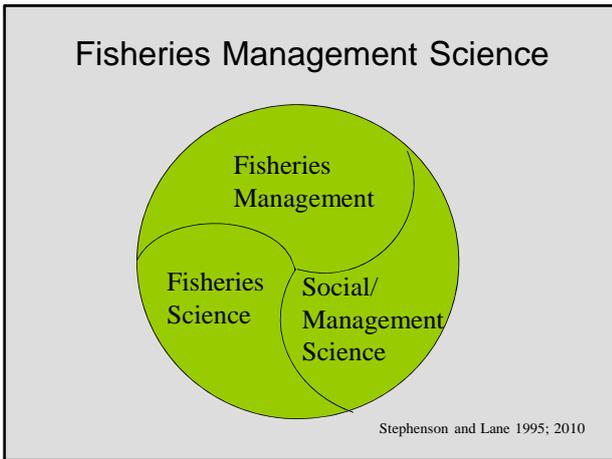
Major Observations

- Competition/conflict re space
- Many of the things we 'value' are not currently being considered adequately
- Need a more diverse set of objectives reflecting 'Community Values'
- Applied to all activities
- Need an open and transparent, participatory, process for tradeoffs among activities/objectives

To achieve Ecosystem approach and Integrated management?

- Diverse, common objectives
 - Higher standards of EAM and PA
- Applied to all activities
 - Cumulative effects
- Appropriate governance structure and methods
 - Issues can be articulated, compared and used as basis for rational decisions
 - Participatory process and appropriate jurisdiction





Réseau canadien de recherche sur la pêche Canadian Fisheries Research Network

RESHAPING FISHERIES RESEARCH IN CANADA

Bringing together industry, academia and government to answer strategic questions through collaborative research

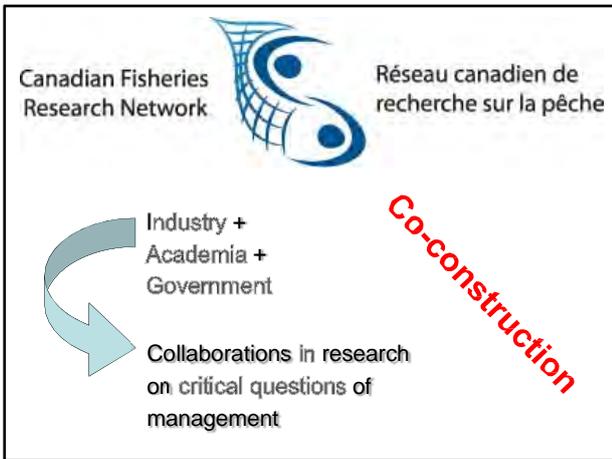
Training the next generation of fisheries researchers and managers

Working toward a sustainable fishing industry in an evolving management system

www.cfrn-rcrp.ca NSERC CRSNG

- Industry Priorities:**
Need for research in support of...
- Sustainability
 - Social acceptance
 - Evolving ecosystem-based management
 - Socio-economic viability
 - Fishing community well-being
- ...a sustainable industry in a changing landscape of management**

- ### NSERC call (2009)
- The network will draw on the **extensive experience, expertise, data and technology of the fishing industry, government scientists and managers, and fisheries academics to build capacity and forge partnerships** among these groups to develop a national capture fisheries sector research capacity
 - Industry + DFO + Academics



- ### Network Vision
- Reshape fisheries research in Canada
 - Bring together industry, academic community, government research
 - Link existing work/research so that it is useful
 - Train a cohort of practitioners for future
 - Improve sustainability, viability, competitiveness of industry

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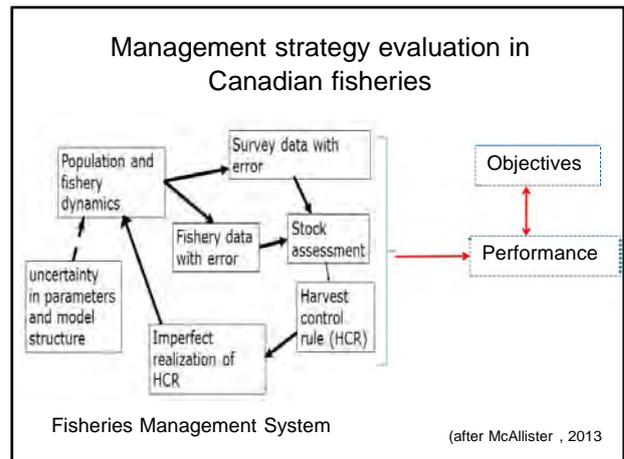
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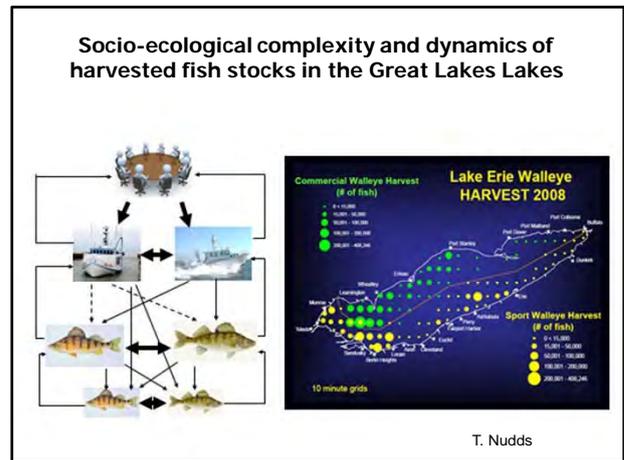


Management strategy evaluation decision support tools

In 5 diverse case studies...

- Fisheries management decision support tools
- Arrangements for collaborative evaluations of policy options
- Resource monitoring arrangements
- Approaches and methods for assessing and managing particular fisheries

(after McAllister, 2013)



Enhanced fisheries knowledge for an evolving management regime

Research collaboration is required to enhance the capacity to contribute effectively in Ecosystem-based and Integrated Management, and to provide tools for implementing expanded conservation, social, economic and institutional objectives for sustainable fisheries

Canadian Fisheries Research Network Réseau canadien de recherche sur la pêche

Canadian Policy

- Sustainable Fisheries Framework
 - Conservation & Sustainable Use policies
 - IFMP – identify goals; biological and socio-economic considerations for decisions
- 2011 Office of Auditor General
 - Need explicit objectives:
 - Healthy Ecosystems
 - Sustainable human use/Social and cultural wellbeing
 - Economic well-being
 - Collaborative governance and Integrated Management

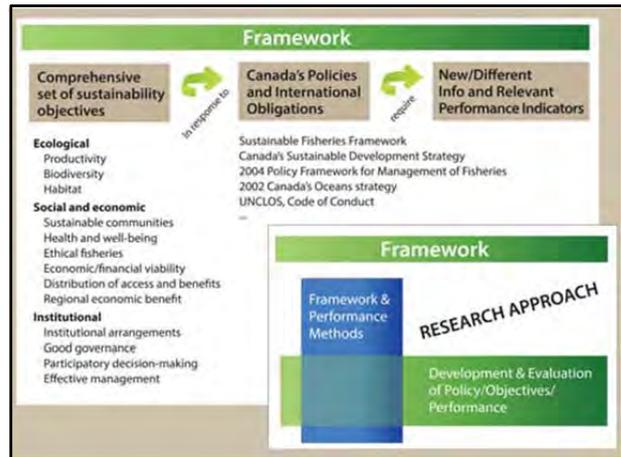
Demands consideration of a broader set of objectives and comprehensive evaluation

Enhanced fisheries knowledge for evolving management

Requirements of emerging 'ecosystem-based' and 'integrated management' approaches...



- Interdisciplinary collaboration



Syntheses

- Framework of objectives and performance indicators for holistic evaluation (Project team)
- Current data and future requirements for holistic evaluation (Paul)
- Methods that will allow practical incorporation of social and economic considerations (Benson)
- Review of DFO 'experience to date' in broader participation and inclusion of social and economic aspects (Saunders)



A Broad view of sustainability...

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.

(Project 1.1 meeting April 2012)

Framework - objectives

- **Ecological**
 - Productivity
 - Biodiversity
 - Habitat
- **Social and economic**
 - Sustainable communities
 - Health and well-being
 - Ethical fisheries
 - Economic/financial viability
 - Distribution of access and benefits
 - Regional economic benefit
- **Institutional**
 - Institutional arrangements
 - Good governance
 - Participatory decision-making
 - Effective management



	Objectives?	Information?	Analyses?	Used in decisions?
Ecological	Yes	Yes	Yes	Yes
Economic	Yes	Yes	Yes	Yes
Socio-cultural	General Variable	No	No	Yes
Institutional	Yes			

(S. Paul)

	Is More Information Required?	What type?	Who is best to provide it?	What is our capacity to provide it?
Ecological	No*	?		
Economic	Yes			
Social/Cultural	Yes			
Institutional	Yes			

(S. Paul)

Methods for integrating ecological, economic, social and institutional aspects?

Status quo – sequential treatment with mixed methods
-peer review of ecological, no review of social/economic

Simultaneous review using mixed methods
-peer review of all aspects?

Management Strategy Evaluation Risk Assessment Frameworks Finnish Decision Support framework

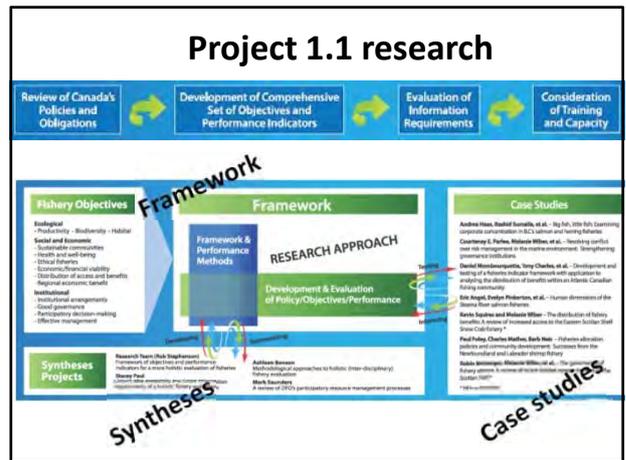
-agreed decision system; modelled together, decision rules



Spectrum of methods for combination ?

	Mixed/sequential methods	Mixed/Simultaneous reviewed	MSE	ERAF	BBN
Application	Tactical advice		Strategic advice	Planning/prioritizing assessment	Holistic strategic advice
Ease of understanding by all participants	Low				
Stakeholder participation	Low				
Cross-disciplinary	Low				
Ability to integrate diverse information	Low				
Ease of integration into current system	High				
Scientifically defensible	High/low				
Cost effective	Low				

A. Benson



- Issues...of relevance to this meeting
- Consensus on approach – Practical EBFM?
 - Institutional framework
 - Challenge of interdisciplinarity
 - Training and capacity to participate in IM
 - Additional load on industry, science and management
 - Provision of new and different info?
 - Capacity to handle more complex process?

- Future of Canadian fisheries?
- Challenges of future management → **need interdisciplinary approach**
 - Increasing public pressure to demonstrate sustainability → **'social license'**
 - Important gaps in information and methods → **unique potential contributions of fishing industry, academia and government**
 - Recognition of the need for a new way of doing things → **participatory management**
- Collaboration → capacity building → participation

Needs/challenges?

- Articulation of objectives (conservation, social, economic and institutional)
- Methods for comprehensive evaluation (including decision support tools, cumulative effects)
- New data requirements (what and from whom)
- Capacity development for participatory, integrated management

Elsewhere? EU CFP Dec 2013

(4) The CFP should ensure that ... activities contribute to long-term environmental, economic, and social sustainability.

Article 2 Objectives

1. ... managed in a way that is consistent with the objectives of achieving economic, social and employment benefits, and of contributing to the availability of food supplies.

5. The CFP shall, in particular: (c) provide conditions for economically viable and competitive fishing capture and processing industry and land-based fishing related activity;

(f) contribute to a fair standard of living for those who depend on fishing activities, bearing in mind coastal fisheries and socio-economic aspects



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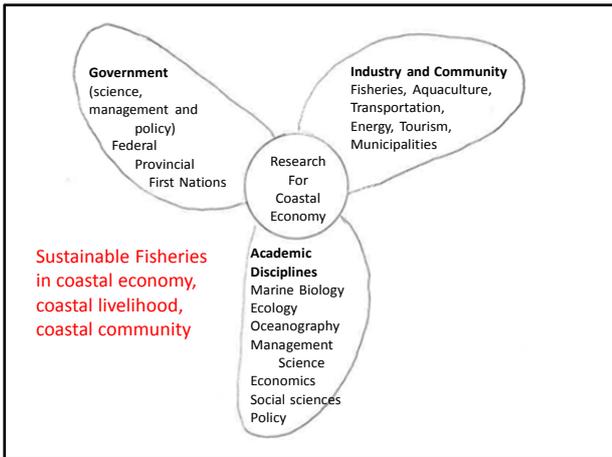
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The changing landscape of management...



Looking forward... one idea

- Integrating ecological, economic and social aspects in applied decision support
- Evaluation of cumulative impacts of multiple activities in relation to coastal communities, livelihoods, economy
- Fisheries as important part of coastal communities
- Policy and management alternatives



- ### Potential research themes?
- Holistic/comprehensive (e)valuation of fisheries
 - Evaluation of fisheries management policies and processes. Best use of fish as a public resource. Evaluation of alternate management scenarios
 - Contributions of fisheries to coastal economy
 - Information and capacity needs for participatory (structured) decision-making

