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FISHERIES RESEARCH &  
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# **FRDC Harvest Strategy Extension Webinar**

**Summary Report**

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## FRDC Harvest Strategy Extension Webinar: Summary Webinar Report

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# Introduction

Harvest strategies provide a framework that specifies the pre-determined management actions in a fishery necessary to achieve management objectives. They take account of the economic and other objectives of stakeholders by conserving and managing fish populations to ensure their long-term viability. Effective collaboration between fisheries scientists, fishery managers, industry stakeholders, and policymakers is crucial for the success of these strategies. Harvest strategies are often contained within fishery management plans, and are also established separate to formal management plans or legislation.

The FRDC has funded several past and current projects pertaining to Harvest Strategy development and implementation and continues to receive interest from a range of stakeholders around further research and development opportunities in this space.

To promote discussion, extension, and adoption across current and recent related investments in harvest strategy R&D, the FRDC hosted an independently facilitated extension webinar. The webinar provided an opportunity for Project Investigators to socialise their research, extend the latest learning in this dynamic policy/research space, and promote a dialogue among research providers, fisheries managers, and harvest strategy practitioners.

## **The extension webinar aims were to:**

- i) Provide an opportunity for researchers to summarise their harvest strategy related projects and extend key elements;
- ii) Create and extend linkages between researchers and stakeholders in the harvest strategy space;
- iii) Inform and extend dialogue between researchers concerning the review of current [National Harvest Strategy Guidelines](#); and
- iv) Identify gaps, issues and innovative approaches in past, current and planned harvest strategy research.

FRDC also intended the webinar to inform the Australian Fisheries Management Forum (AFMF) led project [2021-135](#) “*Review of national guidelines to develop fishery harvest strategies*”. This project looks to build upon the foundational work delivered in project [2010-061](#) “*National Guidelines to develop fishery harvest strategies*” and contemporise information to policy makers and other stakeholders involved in the development of over-arching harvest strategy policies. Project 2021-135 also seeks to assist in ensuring there remains a leading guide for national best practice and/or a consistent approach to the development and application of such policies and harvest strategies themselves.

A national approach to harvest strategy development enables common challenges to be addressed in a consistent and coordinated manner, thereby avoiding unnecessary duplication of effort and resources, and ensuring more targeted investment in ways to address common challenges. The need to reduce duplication and increased targeting of resources equally applies to the harvest strategy research space.

# The Webinar

The extension webinar was attended by 41 participants that included fishery managers, research providers, harvest strategy practitioners, and government agency representatives (refer to [Appendix One](#)). Overall, presentations covered eight projects, broadly arranged under three themes:

- i) Projects focusing on [technical](#) approaches to harvest strategy development;
- ii) Projects focusing on [stakeholder-focused](#) approaches to harvest strategy development; and
- iii) Projects focusing on [policy guidelines](#) for harvest strategy development.

The agenda for the webinar is provided as an appendix to this summary ([Appendix Two](#)). Research project presentations are available on FRDC [YouTube Channel](#). Copies of the presentations are also available ([Appendix Three](#)).

The understanding and experience of harvest strategies varied across the webinar participants, which was reflected in the diverse views and technical nature of the discussion. This was particularly the case regarding the role of harvest strategies within the broader management planning framework.

This report of webinar proceedings presents the participant discussion in its entirety (with some grammatical editing), as it intends to respect the input and insights of the webinar participants.

## Key Issues

### Review of Harvest Strategies:

- The National Harvest Strategy Guidelines are currently being reviewed and these projects as well as webinar discussions will inform that review.
- The review of the harvest strategy guidelines is occurring concurrently with the review of the Commonwealth Harvest Strategy Policy, which has a strong focus on technical aspects.
- Emphasis on aligning harvest strategies with national and international obligations/best practice, and environmental sustainability.
- Targets and associated trade-offs for multi-species and/or multiple sector fisheries present an ongoing challenge.
- There is considerable research effort into optimising the technical design of harvest strategies to address the challenges of shifts in productivity, changing environmental conditions as well as the aspirations of different stakeholders. Including but not limited to:
  - Use of 'dynamic' reference points that adapt to changes in in stock status arising from environmentally driven changes in recruitment, growth or natural mortality.
  - Evaluation of the appropriateness of various target levels, including Maximum Economic Yield ( $B_{MEY}$ ) and more conservative targets for some species, for example forage species.
  - Greater consideration on integrating recreational and Indigenous objectives and data in harvest strategies.
  - Increasing focus on implications of climate change on harvest strategies.
  - Need for clarity/agreement on what should be included explicitly in harvest strategies; e.g. allocation, spatial/temporal management measures.

### Management Plans and Harvest Strategies:

- There appears to be some confusion between the respective roles of management plans and harvest strategies (NB a definition exists in the current [National Harvest Strategy Guidelines](#)).
- In general, management plans were seen to encompass the entire management of a fishery including input and/or output controls, technical tools such as mesh sizes and legal sizes, fishery closures,

resource allocation/resource sharing, etc. Harvest strategies generally sit within management plans that include these broader management measures.

- Harvest strategies are generally focused on controlling catches via harvest control rules to meet biological, economic and/or social objectives.
- There are linkages between the two as some of the tools identified in management plans are used in harvest strategy decision rules.
- It is important that harvest strategies do not unduly impact on other management objectives such as inadvertently changing agreed resource allocations.

#### **Recreational and Indigenous Fisheries:**

- There are challenges in integrating recreational and Indigenous interests into harvest strategies.
- Examples exist of approaches from other countries; e.g. New Zealand's Indigenous fisheries management.
- It is necessary to balance diverse objectives and interests in harvest strategy development and in so doing, the importance of communication and engagement with stakeholders was emphasised.
- Need for appropriate application of harvest strategies to recreational and commercial fishers, balancing rights and responsibilities.

#### **Data-Limited Situations:**

- There are a range of options for addressing harvest strategies in data-poor scenarios currently under development, including where there is uncertainty of past stock status.
- Methodologies exist for testing harvest strategies under various scenarios, including changing climate conditions that will impact fish stocks.
- Some stocks under reduced fishing mortality are not recovering as expected and harvest strategy approaches to deal with changes in productivity have been developed.
- Technology and new data sources have a role in improving harvest strategies/fisheries management, particularly in the context of data-limited/data-moderate fisheries.

#### **Technical and Stakeholder Engagement:**

- Building trust among stakeholders and policymakers essential for effective harvest strategy development.
- Need for practical, implementable programs for effective fulfillment of obligations.
- Significant role of management advisory committees, resource assessment groups and other consultative processes.
- There is a need to build capacity of managers and other stakeholders to make full and effective use of harvest strategy developments.

#### **Future Research Needs:**

- Suggestions for national-level research on ocean access impacts due to overlap/competition for space from other user groups (the "spatial squeeze"), climate impacts, and spatial management in fisheries.
- A focus on multi-sector, multi-species, and multi-gear fisheries.
- Increasing complexity in fisheries management and requirement to formally test adaptive strategies.

#### **Suggestions for Follow-up:**

- Analysis of webinar chat for emergent themes and potential breakout group discussions.
- Sharing raw chat data for further analysis and application in ongoing projects.
- Potential for future discussions or working groups on identified key areas.

#### **Conclusions:**

- Acknowledgment of the complexity and evolving nature of harvest strategies.
- Recognition of the need for continued dialogue, extension, and research.

- Emphasis on practical solutions and stakeholder engagement for effective implementation of harvest strategies.
- Overall, the webinar reflected the need for a comprehensive and multifaceted approach to fisheries management highlighting the importance of collaborative approaches, data-driven decision-making, and the integration of diverse stakeholder objectives into policy and management frameworks.

## Setting the Scene

The Facilitator opened the extension webinar, welcomed participants, and provided an Acknowledgement of Country. It was noted that FRDC has been investing in harvest strategy development since 1977 and over 20 projects have been funded in a wide range of research areas, including complex, model-based and stakeholder (recreational and indigenous) centred approaches. There is limited awareness of these projects, their outputs, and outcomes. Additionally, there is a great diversity of understanding and application of harvest strategies and their integration into fisheries management frameworks.

The (Australian) National Guidelines to Develop Fisheries Harvest Strategies defines a harvest strategy “*as 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*” (Sloan et al., 2014). Harvest strategies specify operational targets to deliver biological (yield), economic and/or social benefits, whilst ensuring the stock is not reduced to a level that may impair recruitment to the fishery. Formal harvest strategies comprise several components:

- a fully specified set of rules for making tactical management decisions including specifications for a monitoring program;
- the performance indicators to be calculated from monitoring data (often via a stock assessment); and
- the use of those indicators and their associated reference points in management decisions, through application of decision rules.

The aims of the extension webinar were to:

- provide an opportunity for researchers to summarise their projects and present key elements;
- create/extend linkages between researchers and stakeholders in the harvest strategy space;
- inform and extend dialogue between researchers concerning the review of current [National Harvest Strategy Guidelines](#); and
- Identify gaps, issues and innovative approaches in past, current and planned harvest strategy research.

**Nick Giles** provided a brief overview of the National Harvest Strategy Guidelines review project ([2021-135](#)). Given that the National Harvest Strategy Guidelines were developed around a decade ago and centered heavily around Commonwealth fisheries (FRDC project [2010-061](#)), AFMF considered that it was timely to review harvest strategy development and develop a new set of guidelines. This FRDC-funded review [2021-135](#), will develop an updated common definition for harvest strategies and overarching principles for the development and application of them.

Initial comments from participants included:

- A need for increasing linkages between researchers and stakeholders in the harvest strategy space including the explicit inclusion of fisheries management partners and extending linkages between researchers, managers, and broader stakeholder groups.
- The National Harvest Strategy Guidelines project would like to receive, and be informed by, final (or preliminary) outputs and solutions arising from current harvest strategy research projects presented at the webinar to ensure that it reflects a contemporary understanding of harvest strategy development and implementation.

## Projects focusing on *technical* approaches to harvest strategy development

Researchers **Pia Bessell-Browne** and **Andrew Penney** each presented projects focusing on new approaches to developing control rules and reference points on harvest strategies for the Southern and Eastern Scalefish and Shark Fishery (SESSF) in the face of environmental and/or productivity change and uncertainty of past stock status.

[2022-006](#) **Developing a harvest control rule (HCR) to use in situations where depletion can no longer be calculated relative to unfished levels.** This project has reviewed and is trialing available HCRs to assess their performance when there is no longer a reliable estimate of  $B_0$ . The degradation of School Shark pupping grounds has meant that the stock assessment estimate of  $B_0$  no longer relates to the current population structure. The project aim is to develop a method for regulating shark catches in the SESSF (and beyond) that does not rely on traditional biomass estimates, which have become unreliable due to environmental changes. The project is focusing on F-based HCRs and the outcome will be an alternative, tested HCR that will facilitate the catch setting process for School Shark as an initial case, while meeting the broader needs of the Commonwealth Harvest Strategy Policy.

[2019-036](#) **Dynamic Reference Points in Trawl Stocks.** This project evaluates the use of 'dynamic' reference points that adapt to changes in stock status arising from environmentally driven changes in recruitment, growth or natural mortality. The project arose from a need identified by the SESSF RAG, driven by the non-recovery of several stocks, most notably Jackass Morwong, Silver Warehou, Redfish and Gemfish. Long term/persistent changes in productivity resulting from environmental change can change the level a stock will attain if left unfished, so that  $B_0$  is not static and may not be appropriate for calculating reference points. The project examined the use of Dynamic  $B_0$ ; i.e. the population size that would be achieved without fishing under long term/persistent changes in productivity. Management strategy evaluation (MSE) was used to test alternative HCRs (static, dynamic, dynamic with floor) under cyclical or persistent declines in recruitment. Results of simulations and MSE evaluation were as expected, whereby: application of Dynamic  $B_0$  HCRs, when the stock is below the breakpoint in a HCR, results in slightly higher catches and a low probability of fishery closure, using the lower reference points. A Static  $B_0$  HCR results in higher probability of fishery closure, and slightly lower catches. If environmental effects are temporary, and productivity will revert to previous levels, then use of a Static  $B_0$  HCR would be more appropriate to maximise unfished biomass. The appropriate approach is a management choice and depends on evidence that stocks have been environmentally affected and will remain at a lower productivity level for an extended period.

*Question: Should there be additional precautionary management considerations such that reference points don't change in a linear relationship as Dynamic  $B_0$  decreases?*

*Response: There is an infinity of options. We tested the straightforward ones, to limit the confusion around performance measures. Ask yourself this: If you were faced with new, smaller, less productive stocks at the start of the fishery, how would you set reference points? Dynamic reference points (proportional to Dynamic  $B_0$ ) are being embraced by various jurisdictions on the way up (stocks increasing), but there is little agreement on what to do on the way down – this is because of the risks mentioned above.*

*Question: Is there evidence of life history parameters changing for these species with lower Dynamic  $B_0$ ? I'm trying to think through the concept of a lower Limit Reference Point (LRP) as 20% of a new, lower  $B_0$  in terms of the inherent resilience of the species' productivity. External environmental influences might result in a lower level to which the population would recover in the absence of fishing (so, a lower  $B_0$ ), but how can we justify a lower LRP if productivity isn't changing? Or is changed productivity inherently assumed if the population is affected by environmental influences?*



*Response: We know that recruitment has declined and remains well below predicted levels for the non-recovering stocks, notably Morwong and Silver Warehou. We don't know why. Simulations show that you would also get lower productivity with lower mortality and slower growth, but you need a lot of data to estimate those, and we don't have the data. So we are left with 'evidence' in terms of unexplained deviations from expected productivity. The problem is that using static reference points and reducing catches to levels that should allow recovery has not resulted in recovery for some stocks. Which leaves the options: i) close the fishery (targeted fishing for the species), which is what we have done for most species, or ii) accept a productivity shift and set lower limits and targets, which is what we have done for Jackass Morwong. The two options have always been on the table - this project ([2019-036](#)) has just fleshed out the methodology and evaluated consequences.*

*An added nuance to any multi-species HS is that productivity of some stocks is probably changing, raising questions of how to address this in a multi-species HS if that species is a component of the pretty good maximum sustainable yield (PGMSY), or a key indicator.*

*Comment: Need some agreed minimum strong guidelines.*

*Comment: Where a HS harvest control rule (HCR) calls for a reduction on commercial TACC there is a need for commensurate decline through the HCR used for managing recreational catch; maintaining balance between sectors is important.*

*Question: If stocks have not recovered, would not the anticipated recovery time for a stock with new, lower productivity be longer, though?*

*Response: Yes, and agree about the long-term sustainable catch being lower (correspondingly lower target reference point as well as lower LRP).*

*Comment: A key issue with dynamic reference points is that if productivity declines catches can actually go up; this is regarded as quite high risk.*

*Comment: Another key point – if targeted fishing for a stock is prohibited, you lose the fishery-dependent data needed to evaluate anything – recovery, productivity, non-fishing effects. This has been one of the outcomes in the SESSF. CSIRO has a small project looking at how we might detect recovery in stocks when we lose our key indicators.*

*Comment: Aah there we go again, calling an environmentally driven decline 'overfishing'. Funny how quickly, and how often, that happens.*

*Comment: Interestingly the 5<sup>th</sup> most abundant species caught during a recent CSIRO South East Coast trawl survey was [eastern] Gemfish (which is currently classified as 'depleted' in the recent Status of Australian Fish Stocks).*

**Rich Little** presented the the Southern and Eastern Scalefish and Shark Fishery (SESSF) multi-species harvest strategy project, which is part of a larger suite of SESSF projects including:

- 2014-203 SESSF Strategic monitoring and assessment;
- 2015-202 Maximising net economic returns in a multi-species fishery
- 2016-146 SESSF declining indicators and undercaught TACs,
- 2018-077 Declining Indicators / SMARP Implementation
- AFMA Research Council (2019 Strategic data strategy defining and meeting data needs

**[2018-021](#) Development and evaluation of multi-species harvest strategies in the SESSF.** In multi-species fisheries with technical interactions (i.e. the mixture of different species catches with the same gear) and ecosystem interactions (e.g. competition or predation), it is not possible to maintain all species at the same target level. It is recognised that net economic returns for multi-species fisheries may be maximised by

including differential targets in harvest strategies that are always above  $B_{LIM}$ , but greater or lower than  $B_{MEY}$ . Project [2018-077](#) recommended that HS settings should focus only on targets for key economic species and avoid the risk of recruitment failure for secondary and by-product species. A range of possible approaches to monitoring and assessment in the SESSF (as a case study fishery) were assessed across a range of HS criteria (i.e. data, analysis, HCR, multi-species, flexibility, and cost) using a comparative process informed through a workshop process. Two models (*Atlantis* and *ratpack*) were used to undertake a MSE test candidate harvest strategies. The significance of metier analysis (considering fishing operations targeting a specific assemblage of species, using a specific gear, during a specific season within a specific area) was a critical element of the HS evaluation process. The outputs of this project will inform the new SESSF harvest strategy and the associated ongoing data needs and monitoring.

*Comment - It would be interesting to explore the impact of putting a climate signal and options for multi-year TACs (MTACs); e.g. every two, three, five years. It would also be good to understand how risky such MTACs would be.*

**Ashley Fowler** presented an outline of a project to support the development of harvest strategies for data-limited fisheries. While the project has been approved for funding by FRDC, it is yet to commence.

**[2023-010](#) Guiding development of harvest strategies for data-limited (DL) fisheries with multiple stocks, sectors, and objectives.** This research will address the challenge of developing effective harvest strategies for the many Australian fisheries with limited data. Following review of the unique complexities (multi-species, multi-sector, multi-gear) of these DL fisheries, the project aims to identify suitable approaches for addressing key characteristics of DL fisheries within HSs and develop a guide for harvest strategy ‘archetypes’ of DL fisheries, using examples of existing successful DL fishery harvest strategies. Through workshops, the guide and examples therein, the project seeks to tailor strategies to specific characteristics of DL fisheries, offering an opportunity to improve sustainability and efficiency in these complex environments. The project includes an extension plan to increase knowledge of DL archetypes and empower and inform fishery managers and stakeholders.

*Comment: CSIRO and other agencies globally have done considerable work on data limited approaches and it would be really useful for the national project to do a bunch of MSE testing on issues such as: i) the minimum data requirements ‘you can get away’, and ii) how often assessments need to be completed, given the extensive range of range of different DL scenarios. Tests could be conducted using ratpack type approaches or even Atlantis.*

*Answer: “Objective 6 of the project is MSE testing, and the ratpak software is one method noted in the methods that will be considered for the task.*

*Comment: We are in an environment – institutionally and literally (climate) – that is moving so fast. The wicked problem in the data limited problem is that sensors and new data sources (genetics, cameras) is changing the data we have, and ability to analyse, which means costs could come down... eventually... but which also means that it would be disruptive to the current management framework which uses other sources.*

*Comment: Three key problems that have arisen in recent AFMA RAG meetings:*

- 1. Commercial fishing has all but been excluded from some areas (Port Phillip Bay), without programs to provide data on recreational fishing in these areas to feed into assessments for shared stocks;*
- 2. For some commercial stocks (School Shark), there are few data on recreational fishing to feed into evaluation of stock recovery;*
- 3. For Indigenous fisheries in the Torres Strait, allegations and uncertainties regarding the recreational catch (is it increasing substantially?) confound, delay and derail discussions around assessments and recommended biological catches (RBCs).*

*Overall, the idea that you can increase recreational fishing without generating data to evaluate recreational fishing mortality just leaves you with less understanding that you had before. Not all recreational fishers are fishing for fun or trophies, many are retaining catches.*

*Comment: We have a legacy/culture of doing things (providing scientific advice) in a certain way, so change is slow and, often driven by scientists who also have their day job to keep providing the same sorts of science advice that their jurisdictions have always felt comfortable with and managers have an explicit need for.*

*Comment: Note CSIRO's work on model assisted CPUE analyses ('dynamic' Tier 4) for data limited fisheries.*

## **Projects focusing on stakeholder-focused approaches to harvest strategy development**

Ashley Fowler presented on the integration of recreational fishing into harvest strategies.

**2019-021 Integration of Recreational Fishing into Harvest Strategies for multi-sector fisheries.** The project reviewed recreational fishing objectives globally, along with data sources that may be used to monitor fisheries performance against those objectives within HSs. Using online workshops and surveys, a range of fishing objectives were identified for Yellowtail Kingfish, Snapper and Mulloway and preferences among those objectives were identified for recreational fishers in NSW. Objectives spanned biological, economic and social categories. Objectives were similar among stocks, with a strong preference for ecological objectives and maintaining stock biomass. While multiple data sources are available to monitor ecological objectives, there are few sources for monitoring economic and social objectives (e.g. participation and equity/allocation). The *FishPath* tool, which has been used to identify HS components for many fisheries, was enhanced under the project following expert review to increase relevance and better characterise recreational fishing. Guidelines and recommendations for integrating recreational fishing into HSs were developed, including the need for holistic decisions on sectoral inclusion, identification of appropriate objectives linked to data sources and performance indicators, and methods for operational inclusion in HSs, including assessments and HCRs. Harvest strategy development for NSW Mulloway and NSW's Line and Trap species (Yellowtail Kingfish and Snapper) is underway, including the integration of recreational fishing using the processes developed under this project, marking a significant step towards responsible and balanced fisheries management.

*Comment: There is an issue of shared accountability for the resource – in terms of data provision and in sharing the outcome of assessments into HCR implementation. With Australian recreational fisheries, problems arise because of what is effectively open access (albeit with permits), and limitations around "toothy" management measures, such as bag limits (it's hard to increase or decrease a bag limit by 0.28 of a fish). But generally, a lot of work needs to be done to ensure the recreational sector is accountable – but a big part of this is in operationalising and harmonising their objectives in HSs (you can only have one target reference point).*

*Comment: When we delve into the recreational sector objectives, we have to be careful around which are within the scope of a HS (able to be addressed via control rules influencing harvest), and which are not.*

*Comment: In NSW the working groups that are developing HSs seem to promote a rational discussion between the recreational and commercial sectors – experience is that many problems arise from misinformation spread via social media during the harvest strategy consultation phase, or earlier in some cases.*

*Comment: A key question is how you include recreational interests in processes to develop harvest strategies that explicitly share resources. In my experience, it is difficult to get representation of man-in-the-street recreational fisher objectives - you usually get such representation from competitive angling club interests.*

*Comment: FRDC project [2019-021 \(Integrating recreational fishing information into harvest strategies for multi-sector fisheries\)](#) did identify a number of common objectives and similar priorities from across the broad recreational fishing sector through focused workshops (more avid), through random diary survey and open access web based survey (from man-in-the-street punters). Outcomes of that project did support inclusion of some of the elicited recreational fishing objectives into harvest strategies, with data collection and monitoring programs funded through recreational fishing funds contributing to assessing harvest strategy performance generally. So, some work is underway chipping away at these issues, although it is noted that within the Commonwealth space it is more challenging.*

*Comment: It's a common conception that sector objectives will compete (i.e. the eradication perspective), but they can often be complementary (if potentially balanced); e.g. a healthy stock is good for all.*

*Comment: The NSW working group meetings have been an excellent environment to air perceived differences and for the representatives from different sectors to realise how much they have in common (at least at the objectives level, if not the exact reference points).*

**Nicola Pitt** presented on integrating recreational fisher experience into decision making, including harvest strategies.

**[2022-170 Integrating Recreational Fisher Experience/Satisfaction into Decision Making.](#)** This project aims to enhance the management of fisheries by including recreational fishers' experiences and satisfaction levels into decision-making processes. Focusing particularly on Barramundi fishing in the Northern Territory, this project recognizes the gap in understanding the recreational fishing experience. It uses methods like Max-Diff analysis to assess factors affecting fishers' satisfaction and importance, such as availability of fish, fishing regulations, and infrastructure. The project involves extensive data collection through surveys, interviews, and social media interactions, reflecting a comprehensive approach to understanding the needs and preferences of recreational fishers. The insights gained are intended to inform fisheries management strategies, ensuring they are more aligned with the expectations and experiences of the recreational fishing community. This will require the definition of measurable metrics, distinguishing between fishery dependent and peripheral factors as well as considering data sources, collection methods, and assumptions. Recommendations will be made as to how these metrics can be applied in a HS, using the NT Barramundi Fishery as a case study fishery.

Unfortunately, it was not possible for **Rachel Groom** to present on project at the extension webinar.

**[2021-098 Incorporating Aboriginal perspectives into fishery management review processes, using the Northern Territory Barramundi Fishery as a case study.](#)** The facilitator provided a brief overview and update on progress with the project noting that the project has experienced some significant delays due to the following:

- Local community flooding and Sorry business.
- Barramundi songline discussion in NE Arnhem delaying workshop 2 – a requirement to pause the project in the region until cultural authority is given by the songline custodians to proceed. We await further instruction on a meeting time/place from a senior Traditional Owners.
- Change in NT Fisheries staff and the Barramundi Fishery MAC shifted focus to develop an interim harvest strategy for the commercial sector to facilitate timely WTO application submission. This has paused aspects of the Barramundi Fishery review that would have included the Aboriginal sector (and other sectors) that we were coordinating workshops with.
- The project completion date has been extended to accommodate the delays has been revised to mid-2025.

In lieu of Rachel's presentation, **Nick McClean** presented on two other HS-related projects.

**2021-024 Development of an engagement strategy for Indigenous fishing interests with a focus on the Commonwealth.** This project responds to legislative changes in the Fisheries Management Act, reflecting the obligation to consider the interests of Indigenous fishers in Commonwealth fisheries management. The primary purpose was to create engagement strategies that effectively incorporate Indigenous perspectives, reflecting a broader move towards more inclusive and culturally sensitive fisheries management. One aspect of the project focuses on incorporating Indigenous rights and interests into policies, particularly in those covering harvest strategies and bycatch. To achieve this aspect of the project, an advisory/reference group was established, which developed a comprehensive set of initial recommendations related to the current Commonwealth Harvest Strategy Policy, covering standards, processes, and default principles around Indigenous engagement in HS development. It was noted: i) that harvest strategies can address some issues of priority to Indigenous groups effectively, but others require attention outside of a HS (e.g. resource allocation) and ii) while advisory and reference groups have a role to play, there are wider needs for representation and consultation that these groups cannot perform. The intention is to release these recommendations and a wider draft strategy early in 2024.

**2022-036 Approaches for incorporating Indigenous Rights, practices and catch into resource sharing and harvest strategy frameworks, based on international experience.** Using literature reviews and interviews in Australia and internationally, the project will connect with indigenous groups overseas on case studies. There are three focus areas: i) fisheries agreements/arrangements, including Indigenous fishing rights, practices, and management (HS, allocation etc.); ii) legal, political and policy contexts, including enabling and constraining factors towards indigenous involvement such as formal agreements and treaty-based processes; and iii) community, social and economic development contexts, including the qualities, characteristics and histories of communities that have effectively delivered outcomes for their people. The aim is to make the project relevant to management jurisdictions within Australia such that valuable learnings and experiences are integrated into broader fisheries policy processes.

*Comment: NSW is moving towards to sorts of approaches outlined in [2022-036](#) and have established (with DPI) two Local Management Plans for coastal fisheries in the Hastings and Tweed coastal areas. Groups in these areas negotiated different management arrangements for Aboriginal people, including fishing areas and bag limits on certain species including those of cultural significance. Ultimately if you could look into the future, you would be hopeful that these plans could expand to do the sorts of things that Nick McClean was talking about. Other opportunities include the use of apps to monitor catch, the data from which could ultimately feed into harvest strategies. Compliance officers still have a role in keeping an eye on limits. While the developments are encouraging, it is early days yet and we do not have Rolls Royce Solution (or even a BMW or Mercedes).*

*Comment: The role of harvest strategies to document and deliver Indigenous fishing interests is not clear, requires understanding and extension within management, policy and research development and resourcing to support engagement (as briefly outlined in FRDC Projects 2021-024 and 2022-036).*

*Comment: It's interesting that, when asked, Indigenous fishers usually ask for higher targets, around 60% B<sub>0</sub>, to try and ensure easy availability in local areas, without the need to travel far to find fish. With current fuel prices, local availability is always seen as more important than just ensuring that the stock is 'sustainable'.*

*Comment: Harvest strategy development and science priorities have traditionally been focused on commercial and recreational priorities. Moving forward to explicitly consider cultural priorities requires a shift in jurisdictional /portfolio policy thinking – so that it does indeed extend beyond "pure" HS science considerations.*

*Comment: Note that regarding very low Indigenous cultural harvest, control rules may only need to apply to other sectors.*

*Comment: In the case of the Rock Lobster Fishery in NSW, there is a harvest control rule for recreational fishers, and the current planned approach for Indigenous harvest is that it will be 'taken off the top' of any TAC allocation.*

## Projects focusing on *policy guidelines* for harvest strategy development

Nick Giles provided a more detailed presentation of the process behind the national harvest strategies guidelines review.

**2021-135 Review of National Guidelines to Develop Fishery Harvest Strategies.** This project, led out of NSW Fisheries, involves reviewing and updating the 2014 national guidelines for developing fishery harvest strategies. Recognising the need for consistent and harmonized approaches across various fisheries, the project will produce a report with an updated version of the national guidelines and a detailed communication plan to promote the outcome of the review. The outcome is expected to lead to the development of harvest strategies that balance the diverse requirements of different fisheries while addressing modern challenges, including environmental changes. Technical and desktop reviews will be followed by working groups and workshops engaging a wide range of stakeholders with the updated guidelines, report and communications package expected to be complete in early 2025. Common issues already identified include; resourcing, improvement of data, stakeholder engagement, the role of harvest strategies in the broader fisheries management context, operationalising economic and social objectives and responding to environmental change and exceptional circumstances.

*Comment: For all projects, it would be great to have an indication on whether preliminary or final outcomes may be available during 2024; i.e. further detail on issues and potential solutions to some of the bigger issues facing HS development that could be considered in updating the National Guidelines.*

*Comment: It is important that these new/revised guidelines, in dealing with the issue of multiple sectors does not end up with reallocation. The issue of HSs is getting trickier as harvest strategy development is moving away from the data rich single species lens and we, and the guidelines will have to deal with all the issues that we heard have heard about today. It would be tempting to try and encourage people to explore how to develop these HSs and not just focus on what (to do). It would be of value to provide links to some of these products that are coming out of these projects to give people the 'how to' achieve good outcomes for multi-sectors with multi-species management, which in many cases are data limited. We have highlighted projects and certain outputs that will help but I think there's another discussion to be had around the full range of tools that are out there, some of which will emerge from Ashley Fowler's project (2019-021) and some of the stuff out of Ash's new proposed project that we could probably use. FishPath can help managers achieve the 'how'.*

*Comment: Practitioners often know that "what" (e.g. "we have to develop a HS; we need to address and harmonise multi-sector objectives"), but there is limited active experience with the "how" of constructing a HS, especially in DL contexts. Hopefully this project (the guidelines review) will provide practical support for this.*

## Other issues raised

Over the course of the extension webinar, several other relevant/tangential issues were touched upon. These topics have been collated here:

### Targets

*Comment: A technical review of the policy and guidelines specifically for the Commonwealth is underway and there will be a report, probably by the end of the year. In terms of some of the discussion we've been having and particularly in this last session (on stakeholder-focused approaches), the focus is much more on the technical aspect of harvest strategies and how they're developed, confronting issues like the shifting baselines, and setting of appropriate targets.*

*The fact is that while Commonwealth fisheries mostly don't have a large recreational or Indigenous component there is an acknowledgement that such interests need to be included and it's good to hear*

from Nick McClean and Stephan Schnierer that there are processes underway to bring those aspects into the HS debate.

*Comment: It is interesting that targets are beginning to be more conservative than the traditional 40%  $B_0$ . Fisheries where this has occurred include the Marine Scalefish Fishery in SA and the NSW Trap and Line Fishery, which have both adopted, or have proposed as an initial starting point for strategy development, a 50%  $B_0$  target. This represents a different sort of view from the  $B_{MEY}$  target, which the Commonwealth currently has. One of the issues in the Commonwealth review that we're picking up on is that we only know  $B_{MEY}$  as it relates to an objective for commercial fishing. While there are a lot of other objectives, sectors, and interests for any given harvest strategy in any stock, you can only have one biomass target, noting that different people have different views on what the target should be. One way of resolving that issue is to come up with an agreed value (e.g. 50%  $B_0$ ), which meets, to a greater or lesser extent, everyone's needs including the environmental and ecological needs. There is going to be more debate around this notion of where these targets should lie. At the moment, we don't have any sort of national agreement on such a target and perhaps that would be difficult to arrive at (although advice on a default would be useful).*

*Comment: There are a whole range of biomass conditions that that individual sectors would like to see and for some of those, simplistic HCRs will not be able to fix them. These conditions range from  $B_{MEY}$  for the commercial sector, a larger biomass for recreational fishing and a stock a level approaching  $B_0$  to restore some coastal stocks to the point where indigenous cultural fishing opportunities are fully restored. Static fishing measures (e.g. fixed spatial closures, size limits etc.) have role to play, but there is no clear agreement as to where such measures, along with issues including allocation and resource sharing, fit (or indeed do not fit) within harvest strategies as per the initial definition.*

*Comment: It is time that the Commonwealth had a real close look at this whole  $E_{MEY}/B_{MEY}$  issue as it seems that, certainly for multi species fisheries, you can't actually measure them, and they are next to impossible to implement.*

## **Research areas**

*Comment: Two suggested research priorities: i) Addressing the spatial squeeze (marine parks, seismic testing, wind turbines etc.) issue, at a program level where various industries are all working in the same space; and ii) more work on climate impacts and how we address them such as applying a precautionary buffer and if it there is a buffer, how big should it be. MSE testing of those sorts of things and also the role of spatial management would be useful. For instance, from a fisheries perspective, if you've got a closure from another sector, does that give you an extra buffer in your tier harvest strategy framework? Whatever it is, it would be quite useful to look at such issues at a national level.*

*Comment: Support "spatial squeeze" research; more specifically we need to be able to anticipate fleet dynamic responses to spatial squeeze (amongst other drivers of change) to understand the effects on fishing strategies and efficiency. This is the black box of fisher behaviour.*

## **What should be in and out of a harvest strategy?**

*Comment: Explicitly stating what is and is not within scope of harvest strategies (noting the scope of the current review) would be helpful.*

*Comment: The review will not be prescriptive concerning allocation in the HS national guidelines, but they will provide some general context around the issues and options for dealing with it.*

*Comment: There are always management issues such as allocation and resource sharing, which should be outside harvest strategies; harvest strategies are about controlling fishing mortality and the sort of the biomass that you want to meet management objectives.*

*Comment: Allocation and resource sharing should be dealt with in a management plan rather than a HS.*

*Comment: It's quite a spurious debate to have concerning what should be in and out of a harvest strategy; there is no 12-foot wall between the two (harvest strategies and other management actions) as they're all very closely linked. It's just what's in the traditional definition of a harvest strategy versus the overall management framework or management plan and different states have handled that in different ways.*

*Comment: Some of the issues which might appear to be outside a HS in generality; e.g. resource access, can also be addressed within a HS at times. Localised abundance, which influences access [for Indigenous fishers for example] even where an overall biomass level is at a safe level, is a good example and was part of the purpose of including these issues in advice [generated by the current Indigenous specific projects presented on].*

*Comment: Access and local availability is certainly within the scope of a HS, as these are influenced by fishing mortality. Allocation per se is not within the scope of a HS. But as I understood it, this point was about static management measures, and whether these should be written into a HS.*

*Comment: Absolutely issues like allocation should be in management plan primarily. But where the measures have relevance in achieving operational objectives, I feel they should be acknowledged within the HS so that it's transparent how objectives are being achieved. If, say, a TAC is the primary management measure adjusted by a HCR in the HS, this only goes part of the way to addressing sustainability objectives. Size limits and spawning closures are static measures but also contribute to achieving this. As such they should at least be mentioned when writing up the HS. But only as part of the decision rule not in a generic or ad hoc sense.*

*Comment: HSs, being the implementation tool for objectives that principally deliver against state/jurisdictional legislation and policy goals, are an uncomfortable, arguably incorrect tool to manage fishery harvest in response to market and business drivers... which are often understood by the commercial sector as one of the goals of developing a HS; e.g. individual transferrable quota (ITQ) holders make decisions about supply in competition with other ITQ holders, often to the net detriment to the value of the fishery and potentially HS objectives (e.g. 'flood' market to support business need vs what's best for the fishery/resource. Similarly, the recreational sector often identifies desirable outcomes that do not comfortably fit within the management of harvest levels (e.g. resource sharing). Understanding what HSs can and cannot do would help manage expectations.*

*Comment: There really are questions about what belongs in a harvest strategy with regard to recreational and indigenous fisheries, and particularly whether control rules in the harvest strategy should deal directly with these. You don't generally run a harvest control rule process and then spit out recommendations for recreational and Indigenous fisheries. Think of one scenario where you're pretty sure the bulk of your recreational catch is being returned alive. In this and similar cases where you have some estimates of recreational mortality and they seem to be pretty low, then commercial harvest strategy generally does it. Estimated mortality from Indigenous or recreational fisheries can be fed into HCRs just so that total mortality is applied. New Zealand provides one example where the Indigenous harvest is covered during separate process whereby the Māori are given the right to appoint their own people to manage their own Indigenous harvest, pretty much without restrictions, although there are always discussions around keeping it sensible and there is a requirement to estimate what the take actually was, which is then fed into the estimate of total mortality. And then in that case, that estimate of total mortality (catch) is taken away from the commercial sector.*

*So the Māori traditional harvest gets first crack, but they are required to manage, monitor, and estimate it themselves. This doesn't then turn into a control rule whereby their harvest is adjusted.*

### **Awareness and capacity building**

*Comment: Harvest strategy development itself is maybe only 30% of the battle. The rest is what I call "left-hand side" issues such as obtaining buy-in and trust, ensuring capacity exists, and clarifying the*



*reason for the journey, and "right-hand side" issues of implementation, compliance and enforcement, review, and ongoing capacity for data collection and assessment.*

*Comment: One thing that has become clear from processes in the Torres Strait is that, for every day that experts spend in technical discussion (with Indigenous representatives), you probably need two to four days, over multiple visits, with a good facilitator patiently explaining, and re-explaining the concepts and outcomes to actual communities.*

*Comment: This aspect of consultation, and capacity building is relevant to WA fisheries.*

*Comment: We had a recent Australia–Seychelles–Kenya harvest strategy workshop. The resounding message was that it takes a huge amount of time to develop trusted relationships, buy in and belief in the value of harvest strategies, and developing appropriate forums and expectation management for shared inputs, and for transparent and understandable output... but that this investment was critical and was universally deemed responsible for success of harvest strategies.*

*Comment: Harvest strategies are not rocket science and is really just common sense, but in many contexts, it's all "harvest strategy first" without due regard for that prior time and investment in developing that trusted foundation.*

## Wrap up and next steps

Overall, the webinar highlighted the complexity and evolving nature of harvest strategies, but importantly, the need for practical solutions and approaches to enable the successful design and implementation of harvest strategies as well as the effective engagement and buy-in from stakeholders. The webinar also reflected the need for a comprehensive and multifaceted approach to fisheries management highlighting the importance of collaborative approaches, data-driven decision-making, and the integration of diverse stakeholder objectives into policy and management frameworks.

It was suggested that the webinar chat, recording and the discussion be used to identify emergent themes/strong threads that there may be interest from participants in progressing; e.g. through the establishment of breakout or subgroups. It was further suggested that FRDC needs to decide what, if anything, they would like breakout groups to achieve.

The Facilitator concluded the extension webinar by thanking the presenters for providing stimulating presentations and thanked the participants for their time and input.

It was considered that the webinar successfully addressed the stated objectives by providing a forum to socialise and create linkages among related/complementary harvest strategy focused projects and stakeholders. There was recognition of the need for continued dialogue, extension effort, and potential research.

The webinar also enabled an informed dialogue among participants concerning the review of the national harvest strategy guidelines and highlighted issues and opportunities to optimise the design and implementation of harvest strategies based on past, current, and planned research.

The inception of this extension webinar was intended to inform the AFMF-led project 2021-135 "*Review of national guidelines to develop fishery harvest strategies*". The sharing of the project presentations and this summary report is thus intended to primarily act as a resource for the project team reviewing and updating the national harvest strategy guidelines.

# Appendix One: Participant List

Name	Institution
Ian Cartwright	Facilitator, Thalassa Consulting Pty Ltd
James Woodhams	ABARES
Nicola Pitt	Action Market Research
Luke Sexton	Action Market Research
Dan Corrie	AFMA
David Smith	AFMA
Jeremy Lyle	Independent Consultant
Pia Bessel-Browne	CSIRO
Paul Burch	CSIRO
Beth Fulton	CSIRO
Richard Little	CSIRO
Robin Thomson	CSIRO
Geoff Tuck	CSIRO
Asher England	DAFF
Emma McCormack	DAFF
Ian Knuckey	Fishwell Consulting
Nathan Bicknell	FRDC
Kylie Dunstan	FRDC
Steve Eayrs	FRDC
Chris Izzo	FRDC
David Maynard	FRDC
Chris Padovani	FRDC
Tony Piddocke	FRDC
Lauren Thornton	FRDC
Neil Howells	Hudson Howells
Emily Ogier	UTAS IMAS
Andrew Penney	Pisces Australis
Stephan Schnierer	Independent consultant

Tony Smith	Independent consultant
Rowan Chick	NSW DPI
Ashley Fowler	NSW DPI
Nick Giles	NSW DPI
Thor Saunders	NSW DPI
Michael Lowry	NSW DPI
Bryan McDonald	NT Fisheries
Nicholas McClean	UTS
Dan Gaughan	WA DPIRD
<b>Apologies</b>	<b>Institution</b>
Sean Sloane	NSW DPI
Sean Tracey	UTAS IMAS
Caleb Gardner	UTAS IMAS
Rahcel Groom	Charles Darwin University

# Appendix Two: FRDC Harvest Strategy Webinar (Agenda)

## FRDC Harvest Strategy Webinar

**Date / Time:** Thursday 14 December 2023, 09:00am – 01:00pm (AEDT)

**Location:** Online – FRDC MS Teas

**Facilitator:** Ian Cartwright (Thalassa Consulting)

Time	No.	Item	Who
<b>Setting the scene</b>			
09:00am	1.	Acknowledgements and Welcome	Ian
	2.	Scene setting	Ian
	3.	Overview of National Review Project	Nicholas Giles
<b>Technical - introductions</b>			Ian
09:15am	4.	<a href="#">2022-006</a> - Developing a harvest control rule to use in situations where depletion can no longer be calculated relative to unfished levels.	Pia Bessell-Browne
09:30am	5.	<a href="#">2019-036</a> - Implementation of dynamic reference points and harvest strategies to account for environmentally driven changes in productivity in Australian fisheries.	Andrew Penney
09:45am	6.	<a href="#">2018-021</a> - Development and evaluation of multi-species harvest strategies in the SESSF.	Richard Little
10:00pm	7.	<a href="#">2023-010</a> - Guiding development of harvest strategies for data-limited fisheries with multiple stocks, sectors, and objectives.	Ashley Fowler
10:15am	8.	Panel Discussion (30m).	Ian and PIs
10:45am	9.	Morning Tea (15m).	All
<b>Stakeholders – introductions</b>			Ian
11:00am	10.	<a href="#">2019-021</a> - Integrating recreational fishing information into harvest strategies for multi-sector fisheries.	Ashley Fowler
11:15am	11.	<a href="#">2022-170</a> - Integrating recreational fisher experience/satisfaction into decision making.	Nicola Pitt
11:30am	12.	<a href="#">2021-024</a> - Development of an Indigenous Engagement Strategy for fishing interests with a focus on Commonwealth fisheries.	Nick McClean
		<a href="#">2022-036</a> - Approaches for incorporating Indigenous Rights, practices and catch into resource sharing and harvest strategy frameworks, based on international experiences.	

11:45am	13.	Panel discussion (30m).	Ian / Pls
<b>Policy guidelines - introductions</b>			Ian
12:15pm	14.	<a href="#">2021-135</a> - Review of national guidelines to develop fishery harvest strategies.	Nicholas Giles
12:30pm	15.	General discussion (20m).	Ian / all
<b>Wrap-up</b>			Ian
12:50pm	16.	Summary and next steps.	Ian
13:00pm	17.	Close.	Ian

# Appendix Three: Presentation slides

Copies of the slides from the project presentations are available [here](#).

# Appendix Four: Participant Feedback

Thank you to those participants who provided feedback via email, or the short survey provided, this information will help shape our process of continual improvement:

## Summation of Event Feedback

- 100% of the respondents felt like they gained useful information for them and their business.

## Usage of Information from the Event

- *Practical Application in Projects:* Attendees plan to utilize the information in current and future projects. This includes integrating insights on RF metrics into HS, reflecting the event's direct impact on specific ongoing work.
- *Extension and Collaboration:* The session was seen as a catalyst for extending knowledge, fostering collaboration, and broadening perspectives. Participants valued the push to look beyond immediate issues and consider the wider landscape, planning to apply the learnings in their work and share insights with colleagues.
- *Policy and Research Development:* The information was deemed useful for policy review and in shaping future project planning. It highlighted the need for identifying harvest strategy requirements and further research and development priorities, as well as for bridging research efforts and spotting knowledge gaps.

## Feedback on the Session and Suggestions for Future Webinars

- *Session Management:* Positive feedback was given to the event organizer, but participants pointed out the challenge of condensing a lot of information into short presentations.
- *Timing and Duration:* Concerns were raised about the timing of the webinar (just before Christmas) and its length, suggesting a maximum of 3 hours to keep the audience engaged.
- *Communication and Summarisation:* Recommendations included better communication of project outcomes, a summary of action items at the end of sessions, and a more relaxed schedule for future webinars.

## Suggestions for Related Actions/Outputs

- *Educational Materials:* There were requests for simplified materials on harvest strategies and access to the webinar transcript for reference.
- *Reporting and Dissemination:* The importance of compiling and reporting the session's outcomes was emphasized. Suggestions for keeping the audience informed included reports on the webinar, notices about upcoming reports, and summaries in relevant newsletters.

## Suggestions for Related RD&E Priorities

- *Targeted Discussions:* A proposal was made for a focused follow-up discussion, specifically addressing RD&E priorities from the project perspective rather than institutional or agency viewpoints.
- *State-Level Implementation:* While acknowledging the development of harvest strategies at the Commonwealth level, participants noted the necessity for state jurisdictions to also develop and test these strategies.



- *Adjustment of Effort-Dependent Indicators:* There was a call to address the adjustments needed in effort-dependent indicators, particularly considering the impact of losing access to fishing grounds on catching efficiency.