



Australian Government

Department of Agriculture, Fisheries and Forestry

Report on the review of the Commonwealth Policy on Fisheries Bycatch

April 2013



© Commonwealth of Australia 2013

Ownership of intellectual property rights

Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this publication is owned by the Commonwealth of Australia (referred to as the Commonwealth).

Creative Commons licence

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



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

This publication (and any material sourced from it) should be attributed as: DAFF 2013, *Report on the review of the Commonwealth Policy on Fisheries Bycatch*. CC BY 3.0

Cataloguing data

DAFF 2013, *Report on the review of the Commonwealth Policy on Fisheries Bycatch*, Department of Agriculture, Fisheries and Forestry, Canberra.

ISBN 978-0-9808519-7-7 (print)

ISBN 978-0-9808519-8-4 (online)

Internet

Report on the review of the Commonwealth Policy on Fisheries Bycatch is available at daff.gov.au

Contact

Department of Agriculture, Fisheries and Forestry

Postal address GPO Box 858
Canberra ACT 2601
Australia

Web daff.gov.au

Inquiries regarding the licence and any use of this document should be sent to copyright@daff.gov.au

The Australian Government acting through the Department of Agriculture, Fisheries and Forestry has exercised due care and skill in the preparation and compilation of the information and data in this publication.

Notwithstanding, the Department of Agriculture, Fisheries and Forestry, its employees and advisers disclaim all liability, including liability for negligence, for any loss, damage, injury, expense or cost incurred by any person as a result of accessing, using or relying upon any of the information or data in this publication to the maximum extent permitted by law.

Acknowledgements

The review was conducted by the Department of Agriculture, Fisheries and Forestry (DAFF) including the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), with support from the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC), the Australian Fisheries Management Authority (AFMA) and stakeholders representing commercial fishing, recreational fishing, research and environmental non-government agencies

Some of the cover photographs were provided by AFMA.

Contents

Summary	v
Summary of objectives and principles for bycatch management in Commonwealth fisheries	vii
1 Background to the review	1
Fisheries Management Review	1
Review methodology	2
2 Context and need for change	5
National Policy on Fisheries Bycatch	7
Domestic regulation	7
Ministerial Direction to AFMA to manage the broader environmental impacts of fishing	8
The Environment Protection and Biodiversity Conservation Act	8
Species protected under the EPBC Act	9
International commitments	9
Current bycatch management in Commonwealth fisheries	10
3 Issues canvassed in consultations and submissions	11
Stakeholder workshops	11
Issues paper and public submissions	11
4 Outcomes of commissioned and other relevant research	16
5 Main findings from the review	18
Bycatch policy within an ecosystem-based fisheries management approach	18
Domestic and international bycatch regulation	18
Assessment of current definitions of bycatch, byproduct and discards	19
Applicability of risk-based approaches	21
Reference points and performance measures	23
Addressing cumulative effects	24
Strengthening existing management approaches	25
Use of guidelines with a revised policy	25
Increased transparency for stakeholders	26
Mechanisms for considering social and economic objectives of ecologically sustainable development	27
6 Preferred approach to managing bycatch species—a tiered approach	28
7 Bycatch policy future framework	35
Objectives and definitions	35
Principles	37
8 Further work and research priorities	42

Implementing a revised policy	42
Identifying research priorities	42
Developing a performance management and evaluation framework	42
Glossary	44
References	45
Appendix A – Terms of Reference for the Review	46
Appendix B – Advisory Committee Members	48
Appendix C – First Workshop Report	50
Appendix D – Second Workshop Report	67

Tables

Table 1: Schematic representation of harvest strategy policy and bycatch policy components and processes	30
--	----

Figures

Figure 1: Potential catch component classifications and policy applications.....	20
Figure 2: Overview of ecological risk assessment for effects of fishing, ecological risk assessment/ecological risk management framework	21
Figure 3: Indicators and performance measures relating to limit and target reference points.....	24
Figure 4: Hierarchy of assessment methods and management approaches that may be applied to different species, depending on information availability.....	29

Summary

In March 2012, the Minister for Agriculture, Fisheries and Forestry, Senator the Hon. Joe Ludwig, announced a review of the Commonwealth Policy on Fisheries Bycatch 2000 (bycatch policy) and released the terms of reference.

Drivers for the review included the age of the policy, the subsequent implementation of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the release of the *Commonwealth Fisheries Harvest Strategy Policy and Guidelines* (harvest strategy policy) in 2007, and the range of bycatch management actions taken in Commonwealth fisheries since the release of the policy.

The review of the bycatch policy was prepared by the Department of Agriculture, Fisheries and Forestry including the Australian Bureau of Agricultural and Resource Economics and Sciences. It examined the context and purpose of the bycatch policy, its interaction with the harvest strategy policy, definitions of bycatch and other elements of catch, managing data-poor species, different assessment and management approaches, reference points, decision rules and risk-based approaches, and it considered cumulative effects from multiple fisheries.

The Department of Agriculture, Fisheries and Forestry held stakeholder meetings, including steering and advisory committees and workshops, to gather advice and identify key issues and areas for improvement within the current bycatch policy.

The review report outlines proposed principles for a new bycatch policy and associated guidelines plus areas that require further development.

The review recognises that while a range of bycatch management actions have contributed to good bycatch management; it is difficult to assess the performance of the bycatch policy, associated outcomes and trends. A CSIRO review of bycatch trends confirms this finding (Tuck et al. in press).

The current bycatch policy is a high-level policy document. Its three objectives are to reduce bycatch, to improve protection of vulnerable species and to arrive at decisions on the acceptable extent of ecological impacts. Substantial anecdotal evidence shows a significant effort by the regulator and the fishing industry to meet these objectives with considerable resources invested in research, development and extension since 2000. What is missing is a program of agreed performance measures, monitoring and assessment to demonstrate the efficacy of the various mitigation measures adopted since the policy was implemented. The result is a paucity of data to demonstrate the level of achievement. There is a clear need to develop effective performance monitoring and evaluation protocols for a revised bycatch policy.

The bycatch policy predated the Commonwealth's harvest strategy policy implementation by some seven years. There is now an opportunity to integrate both policies to facilitate seamless management of commercial species, byproduct and bycatch species, recognising that some species can, at different times, move between these categories within the same fishery or in different categories depending on the fishery.

The current bycatch policy provides high-level guidance to implementing the policy through bycatch action plans. A revised policy should seek to strengthen the current policy objectives with consideration of quantitative approaches, decision rules and trigger points and guidelines to aid implementation at the fishery level. A revised policy would seek to manage bycatch in a way that is practical and cost effective, taking account of the cost recovery framework and the principle of beneficiary pays. The policy framework should be consistent with, and help implement, relevant fisheries and environmental legislative objectives.

All stakeholders agreed that a revised bycatch policy was needed and that it should reflect Australia's domestic and international obligations, providing a more accountable approach for future bycatch management in Commonwealth fisheries.

Main principles and findings of the review that might guide a revised bycatch policy are identified. A new definition of bycatch is proposed, that applies to non-commercial species. The revised objectives aim to ensure all species that interact with fishing operations are clearly managed and covered under either a harvest strategy or bycatch policy. A revised bycatch policy should include implementation guidelines and improved performance monitoring.

It was apparent from submissions to the Fisheries Management Review by Mr David Borthwick AO PSM, the harvest strategy policy review and the bycatch policy review that some high level policy gaps need to be addressed. Submissions raised the need for an explicit ecosystems policy and greater clarity on where species sit on the policy continuum from key commercial to bycatch and highlighted the role of ecological risk assessment/ecological risk management in ecosystem-based fisheries management. These policy gaps could be addressed by development of a broader, overarching fisheries policy where high-level objectives and principles for Commonwealth fisheries management could be described. This would need to complement the individual policy components for harvest strategy and bycatch in a fisheries policy framework. This framework could illustrate how the policies and procedures interact and relate with one another in a way that is clear to fisheries managers, users and the general community. In considering a new framework it is also likely that a new policy on managing ecosystem effects of fishing may be needed.

The current bycatch policy does not explicitly address the issue of cumulative effects on bycatch species. While a challenging issue, not least where responsibility for a straddling stock is shared between jurisdictions, the revised policy should identify approaches to assessing and managing cumulative effects as a priority.

The current bycatch policy recognises the need for gathering data on the effect of fishing on various species but says little about managing uncertainty where it is either too technically challenging or not cost effective to actively address information gaps. A revised policy should address this gap.

Summary of objectives and principles for bycatch management in Commonwealth fisheries

The review of the *Commonwealth Policy on Fisheries Bycatch 2000* (bycatch policy) identified a series of new objectives and principles that would be relevant for a revised and comprehensive future bycatch policy.

Objectives, definitions and principles

The bycatch policy would most effectively be revised and further developed within a framework of policy instruments for fisheries management, which address all relevant aspects of fisheries management (including commercially targeted species, byproduct, bycatch, bycatch of EPBC Act protected species and ecosystems) and its effect on the marine environment. Application of the policy instruments should be regularly reviewed and updated, preferably every five years, based on the best available information.

A revised bycatch policy would form part of this overarching fisheries management approach which would better reflect today's operating environment and society's expectations about how fisheries are managed. All stakeholders who participated in the review supported development of a revised policy.

The revised bycatch policy should continue to recognise that it is in Australia's national interest to have an efficient, competitive and sustainable fishing industry.

A revised bycatch policy should be implemented within the context of a profitable and sustainable commercial fishing sector. When pursuing and implementing ecologically sustainable development and precautionary approaches, cost impacts on the sector, and sources of funding for managing the environment, should also be considered. The cost effectiveness of new measures implemented in a revised policy need to be balanced against the costs the fishing industry already contributes to management and the relative public and private benefits.

What is bycatch?

It is proposed that a revised bycatch policy would define bycatch as:

Species that physically interact with fishing vessels and/or fishing gear and which are not usually kept by commercial fishers

Where: 'Interact(ion)' includes any physical contact with a species and includes all catches (for example, hooked, netted, entangled), discards and releases and collisions with these species.'

'Not usually kept' will be applied on a fishery-by-fishery basis—further guidance on how this will be assessed and determined will be developed and provided in implementation guidelines for the bycatch policy.

'Physically interact with' excludes attached sessile organisms. These and other ecosystem impacts will be managed under an ecosystem policy.

This definition does not include discards of commercial species.

A revised definition of bycatch gives stakeholders greater clarity on which components of commercial fishing catch are managed under the bycatch policy and which would be managed under the harvest strategy policy or a new ecosystem policy.

Objective

The proposed objective for a revised bycatch policy is:

To ensure the long-term sustainability of bycatch species by managing fishing-related impacts in a manner consistent with the principles of ecologically sustainable development (which includes exercise of the precautionary principle), by reducing risk, and minimising bycatch and the mortality of bycatch that cannot be avoided.

Sub-objective

- Managing the risk to bycatch species from fishing-related impacts, to pursue the maintenance of bycatch populations of (and rebuilding them where necessary) to levels consistent with maintaining their biological productivity and functional role in the ecosystem.
- Fishing operations are to be conducted in a manner that avoids the mortality of, or injury to species listed as protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and species prohibited from take under the *Fisheries Management Act 1991* (FM Act) recognising that there may be a need to recover populations of species listed in these categories.

Where: 'Protected species' are those which under Part 13 of the EPBC Act require a higher degree of protection.

Principle 1

The revised bycatch policy should, with the Commonwealth Fisheries Harvest Strategy Policy and Guidelines (harvest strategy policy), encompass the effects of fishing on all commercial and bycatch species (including protected species) and provide clarity around which policy applies to individual species.

This approach recognises that the level of management response would be applied according to the level of identified risk to a species and available information. This management response or approach would not lessen whether a species is managed under the bycatch or harvest strategy policy.

Principle 2

Interactions with bycatch species that are protected under the EPBC Act will continue, under a revised policy, to be managed under the FM Act separate to other bycatch species and consistent with the legislative requirements of the EPBC Act.

Principle 3

Bycatch species should be assessed and managed by the level of interaction with fishing vessels and/or fishing gear, and according to the level of understanding and risk of the impact of the interaction. The less certainty there is about the extent of interactions and the effect of an interaction, the more precautionary the assessment and management process should be. This approach could involve using quantitative decision rules and reference points for high risk species that ensure consistency of policy application across species and fisheries.

This approach is known as a tiered approach and recognises different information, analysis and management responses are required to manage risk. A more precautionary level of response is needed where uncertainty is greater.

The trade-off between catch, cost and risk is implicit in this decision process and is discussed further in Chapter 6. Essentially, where there is uncertainty about the impacts of fishing on a particular species that species may require increased levels of monitoring and information collection in order

to determine the risk of fishing to the species and appropriate mitigation measures. However management decisions should weigh the cost of obtaining the relevant information against the value of continuing to fish after applying mitigation measures.

Principle 4

The assessment and management of bycatch species should take into account the cumulative impact of all Commonwealth managed commercial fishing activities and the contribution of all management measures.

The assessment of bycatch species should also consider, where catch information is available, the cumulative effects from all commercial, recreational and/or Indigenous fishing operators—domestic and international. Where catch data are not available, but catch is known to occur in other sectors/fisheries, a more precautionary approach could be taken.

As a Commonwealth policy, the management of bycatch species will continue to focus on fishing activities in Commonwealth fisheries.

Consideration should also be given to commercial fishery effects on bycatch species of importance to the recreational or Indigenous fishing sectors.

Principle 5

The revised policy should be underpinned by implementation guidelines similar to the harvest strategy policy guidelines. The guidelines would provide direction on how to implement the revised bycatch policy and would be intended to support bycatch management across the full range of Commonwealth fisheries. They would provide important contextual information to help interpret the policy and technical information to support bycatch management in Commonwealth fisheries.

Principle 6

Performance monitoring and reporting should be explicit and transparent at both the policy and implementation (fishery) and evaluation level. A purpose-designed evaluation strategy will be necessary. The current policy lacks a performance monitoring and reporting framework which has created difficulties in demonstrating the efficacy of bycatch mitigation measures.

Principle 7

The revised bycatch policy should promote alignment with international bycatch management obligations. Where responses to bycatch management in Commonwealth managed fisheries are higher than international obligations, Australia will promote its level and standards internationally.

1 Background to the review

In March 2012 the Minister for Agriculture, Fisheries and Forestry, Senator the Hon. Joe Ludwig, announced a review of the Commonwealth Policy on Fisheries Bycatch 2000 (bycatch policy) and released the terms of reference. The full terms of reference for the review are in Appendix A.

The terms of reference canvassed:

- reviewing the bycatch policy's objectives within the current policy and legislative environment
- reviewing and assessing the adequacy and application of existing definitions of bycatch, byproduct and discards, concurrent with the harvest strategy policy review
- identifying and including reference to the domestic and international bycatch regulations and obligations with which Australian fisheries must comply
- considering and assessing the robustness and applicability of risk-based approaches to bycatch management
- evaluating the efficacy and appropriateness of reference points and structured decision rules in meeting the legislative and policy objectives for some bycatch species and/or groups
- reviewing approaches to incorporating and addressing the potential cumulative effects of fisheries' interactions with bycatch
- strengthening existing bycatch management tools and arrangements through mechanisms that will enhance benchmarking, performance monitoring and reporting
- identifying gaps, needs and priorities that could be incorporated into strategic plans for future bycatch research.

The aim of the review is to develop a more effective and streamlined approach for managing bycatch in Commonwealth fisheries. The review also aimed to improve management of bycatch in Commonwealth fisheries by potentially developing an integrated policy and implementation framework that links with the harvest strategy policy.

Fisheries Management Review

The review of the bycatch policy occurred concurrently with the review of the Commonwealth Fisheries Harvest Strategy Policy and Guidelines (harvest strategy policy), from March 2012 to March 2013. In September 2012, a third review was announced as a review of the Commonwealth fisheries legislation (the fisheries management review). Mr David Borthwick AO PSM was appointed to undertake this review and consulted widely in the last quarter of 2012. He delivered his report titled Review of Commonwealth Fisheries: Legislation, Policy and Management to the Minister for Agriculture, Fisheries and Forestry, Senator the Hon. Joe Ludwig, in late December 2012.

The fisheries management review was the first of its kind in over twenty years, and examined a range of issues to identify if any improvements were needed to ensure community and industry expectations of the Australian fisheries management regime can be met into the future. Minister Ludwig released the fisheries management review report on 21 March 2013 and announced his in-principle agreement with the direction of the Review's 15 recommendations. A Ministerial Statement has been issued on the government response to the review. A public consultation process will follow on the implementation of the Review's recommendations. This consultation will also be informed by the reviews of the bycatch policy and harvest strategy policy and will occur after their release.

In the Fisheries Management Review, Mr Borthwick emphasised the importance of the harvest strategy policy as the primary driver of fisheries policy, the need to update and expand the bycatch policy and the importance of managing the impact of fishing on ecosystems. Mr Borthwick recommended that the Australian Government should set an overarching fisheries framework, capitalising on the review of the harvest strategy policy and bycatch policy reviews and developing a 'third' policy pillar that addresses ecosystem impacts in a fisheries context. The Fisheries Management Review identified high level policy gaps that could or should be addressed. Submissions were received that raised the need for an ecosystems policy, greater clarity on where species sit on the policy continuum from key commercial to bycatch and highlighting the role of ecological risk assessment/ecological risk management in ecosystems based fisheries management.

These policy gaps could be addressed with the development of a broader, overarching fisheries policy where high level objectives and principles for Commonwealth fisheries management could be described. This would complement the individual policy components for harvest strategy policy and bycatch policy in a fisheries policy framework. This framework could illustrate how the policies and procedures interact and relate with one another in a way that is clear to fisheries managers, users and the general community. In considering a new framework, the department agrees that it is also likely that a new policy may be required on ecosystem impacts of fishing.

The fisheries management review report noted that the integration of all policy elements (harvest strategy, bycatch and a potential new ecosystems policy) should be fundamental to fisheries management planning and decisions. Minister Ludwig has agreed with this in-principle and therefore consideration of how this might be efficiently achieved will be a part of the upcoming consultation. This further consultation will not be constrained by the scope of any existing policy and will allow stakeholders and government to articulate how the bycatch policy can be further integrated but also how policy support can be provided across the full continuum of management requirements from incidental ecosystem impacts through to sustainable extraction of commercial species.

Review methodology

The review of the bycatch policy was conducted between 28 March 2012 and 28 March 2013 and was supported by a steering committee and an advisory committee. The review sought out relevant work already underway for bycatch management to inform its discussions.

The steering and advisory committees were formed to oversee and provide direction and advice about the review. The steering committee comprised senior executive officers from the Department of Agriculture, Fisheries and Forestry (DAFF), the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), the Australian Fisheries Management Authority (AFMA) and the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC).

The primary role of the steering committee was to support the bycatch policy review by guiding and overseeing the review in accordance with its terms of reference. The steering committee met five times during the course of the review.

The advisory committee's role was to provide advice to the steering committee on matters that arose during the review. The advisory committee comprised steering committee members and representatives from the commercial fishing industry, recreational fishing sector, environmental non-government organisations (eNGOs), research organisations and the Fisheries Research and Development Corporation (FRDC). The advisory committee met twice in session and once out of session. A full list of members is in Appendix B.

DAFF also held two stakeholder workshops (see Chapter 3). These were conducted to capture stakeholder views and input to the issues paper, and to inform this review report.

DAFF considered research already underway, and commissioned further research to support the review. The research is summarised here with key findings detailed in Chapter 4.

- ABARES completed an FRDC-funded project to:
 - assess the robustness and applicability of risk-based approaches to bycatch management for species or groups of species taking into account their biological status, data availability and other factors
 - evaluate the efficacy and appropriateness of reference points and structured decision rules in meeting the legislative and policy objectives for some bycatch species and/or groups
 - initially assess approaches to incorporating and addressing the potential cumulative effects of fishery interactions with bycatch
 - assess the robustness and application of risk-based approaches to byproduct management for species or groups of species, taking into account their biological status, data availability and other factors

ABARES has prepared a report *Technical Review for the Commonwealth Policy on Fisheries Bycatch: risk-based approaches, reference points and decisions rules for bycatch and byproduct species* (Penny et al. 2013) that provides guidance on the applicability of various assessment methods for managing bycatch and byproduct species in Commonwealth fisheries.

- The Commonwealth Scientific and Industrial Research Organisation (CSIRO) undertook an FRDC-funded project to assess trends in bycatch of key Commonwealth fisheries. The objectives of the study were to:
 - document changes in Commonwealth fisheries relevant to bycatch
 - collate and synthesise all available bycatch data for Commonwealth fisheries
 - analyse and report on trends in bycatch rate, total bycatch and catch composition.

CSIRO has completed a draft report titled *Informing the review of the Commonwealth policy on fisheries bycatch through assessing trends in bycatch of key Commonwealth fisheries*. The draft report describes, for each Commonwealth fishery examined, the currently available data on bycatch species, the policy and management arrangements and, where appropriate, the trends in bycatch or discards.

- DAFF undertook a desktop study of bycatch management regimes internationally to capture different bycatch management methods and approaches. Its report, *Review of International Bycatch Policies*, identifies bycatch policies and other methods used by various countries to manage bycatch. Comparisons can be made between the progress Australia has made in managing bycatch and those of other countries where, in many cases, Australia is ahead in terms of implementation of bycatch management initiatives. Outcomes from the report were presented at the second stakeholder workshop in February 2013 and covered bycatch management practices in the European Union, the United States, Canada, New Zealand, Norway, Chile, Japan, Korea, Mexico, Greece and Portugal.

- Before the review of the bycatch policy was announced, ABARES had started work on an FRDC-funded project to improve the management of bycatch by effective mitigation in Commonwealth fisheries. The objectives of the study were to:
 - develop standards for mitigating bycatch in Commonwealth fisheries including an accompanying set of guidelines for establishing technical criteria for assessing the performance, ongoing monitoring and review of bycatch mitigation measures
 - test the proposed standards and guidelines on a bycatch issue in a key Commonwealth fishery.

The project was developed to research the potential benefits of adopting a more systematic, standardised approach to dealing with fishery bycatch issues. ABARES prepared a report titled *Improving the management of bycatch: standards for the effective mitigation of fisheries bycatch* (Kirby and Ward, 2013). Although this project was initiated ahead of the bycatch policy review, it provides a useful reference for further discussion, testing and development of bycatch standards and guidelines proposed by this review report.

2 Context and need for change

Fisheries bycatch generally refers to incidental capture of non-target species (Bensley et al. 2010) most or all of which is discarded. This includes other fish species and shellfish as well as marine birds, mammals and reptiles. Some bycatch is common in most fisheries, the bycatch species type and frequency of interactions vary with each fishery, fishing method and time and area fished.

AFMA manages 20 fisheries, including five fisheries managed on behalf of the Torres Strait Protected Zone Joint Authority. These range significantly in size and complexity. The total Gross Value of Production (GVP) of Commonwealth fisheries was \$320.4 million in 2010-11. The most valuable Commonwealth fishery is the Northern Prawn Fishery with a GVP of \$94.8 million in 2010-11, followed by the Southern and Eastern Scalefish and Shark Fishery with a GVP of \$83.5 million, the Eastern Tuna and Billfish Fishery (ETBF) with a GVP of \$30.9 million and the Southern Bluefin Tuna Fishery with a GVP of \$30.6 million. The total GVP for the Torres Strait fisheries was \$33.5 million of which the Tropical Rock Lobster (TRL) Fishery contributed \$28.3 million. All GVPs are for 2010/11.

AFMA-managed fisheries vary in the level of complexity in terms of fishing gear used and the management measures applied. The Northern Prawn Fishery uses a single method, otter board trawling; the Bass Strait Scallop Fishery uses a harvester (dredge) to target a single species (commercial scallop); the tuna and billfish fisheries use two major methods longline and minor line; the Southern Bluefin Tuna Fishery is predominantly a purse seine fishery although Southern Bluefin Tuna is also taken by longline in other fisheries where permitted. In contrast, the Southern and Eastern Scalefish and Shark Fishery is comprised of a number of sectors using various methods including otter board trawling, Danish seining, demersal longlining, gillnetting and droplining. The Coral Sea Fishery is a multi-species, multi-gear fishery (trawl, trap, hook, line and hand collection).

Commonwealth-managed fisheries can interact with up to 2000 different marine species that are not retained for commercial purposes. It is important that any measures to minimise bycatch are practical and cost effective to implement. Additionally, bycatch is by nature, characterised by low data availability.

Management of bycatch in Commonwealth fisheries is guided primarily by the bycatch policy which was released in 2000 building on the 1999 *National Policy on Fisheries Bycatch* (national bycatch policy).

The Commonwealth bycatch policy is a government initiated high level policy document responding to the legislative objectives of the *Fisheries Management Act 1991* (FM Act) as well as community concerns over the effects of removing bycatch species from the ocean, interactions with protected species and the waste of possible food sources.

The guiding principles of the bycatch policy seek to foster stewardship of Australia's marine resources and to promote cooperative and transparent processes that promote sustainable management—both short and long-term.

The current bycatch policy applies to Commonwealth commercial fisheries and seeks to assess and minimise the effect of fishing on bycatch species as an integral part of fisheries management. Australian state and territory fisheries are covered by the relevant state or territory legislation and policy. The overarching objective of the existing bycatch policy is to ensure maintenance of bycatch species and populations. This is supplemented with sub-objectives to reduce bycatch, to improve protection for vulnerable species, and to arrive at decisions on the acceptable extent of ecological impacts.

The objectives of the policy were to be pursued by introducing bycatch action plans (later renamed bycatch and discarding work plans) for all Commonwealth fisheries as the mechanism for managing

and reducing bycatch. The policy provided guidance on the form and development of bycatch action plans.

Under bycatch and discarding work plans, AFMA adopted a range of measures to address bycatch issues in Commonwealth fisheries. Ecological risk assessments (ERAs) have been carried out for each Commonwealth fishery and have produced priority lists identifying key species that need attention in each fishery. Ecological risk management (ERM) responses have been developed to address these, with bycatch species being managed using a variety of management responses under bycatch and discard work plans, specific fishery management strategies and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) responses.

AFMA implemented tailored responses to risks identified in ERAs. Introduction of turtle excluder devices in the Northern Prawn Fishery has had a significant impact on the number of turtle mortalities and interactions in that fishery. Since their introduction in 2000 the capture rates of turtles, once estimated to be between 5000 and 6000 per annum, have decreased; in 2011 reported turtle interactions were 53 and to 30 June 2012 was 34. Survival rates of captured turtles have also increased; fewer now drown due to use of turtle excluder devices and introduction of crew-base turtle recovery education programs.

Similar improvements in reducing interactions with seabirds in trawl fisheries have occurred. Seabird species, including albatross and petrel, are known to interact with a range of fisheries. To minimise the risk to seabirds from trawl fishing activities in the Southern and Eastern Scalefish and Shark Fishery, AFMA in conjunction with industry implemented seabird management plans, which became compulsory for all otter board trawl vessels in the fishery on 1 November 2011. The plans aim to reduce the attractiveness of fishing boats to birds looking for food and seek to eliminate the risk of entanglement for birds that do follow the boats.

In the years since the bycatch policy was developed, the broader legislative and policy environment covering Australia's oceans, and their sustainable use has evolved. The social and economic circumstances of fisheries have also changed both domestically and internationally. Community expectations relating to effective bycatch management are rising and Commonwealth fisheries continue to face high profile bycatch issues.

Stakeholders have been concerned that it is not possible to determine the extent to which the overarching objective of the bycatch policy has been achieved (Bensley et al, 2010, Tuck et al. in press). Thirteen years after introduction of the existing bycatch policy, no publicly available data exist on levels of bycatch for most Commonwealth fisheries. Many stakeholders view this as an implementation issue that reflects a lack of monitoring and oversight in implementing the policy.

The existing bycatch policy is non-prescriptive and provides little guidance on implementing the objectives of the policy. As a result a multiplicity of methods is being used. A revised bycatch policy is needed to develop appropriate guidelines to assist with implementation.

The bycatch policy review sought to consider how a revised policy would result in actual and sustainable improvements in managing bycatch in Commonwealth managed fisheries.

A revised bycatch policy may contribute to:

- the sustainability of bycatch species
- improving public confidence in Australian fisheries by demonstrating the sustainability of fisheries, particularly relating to interactions with protected species, other bycatch and the broader marine environment

- maintaining and increasing demand and market access for Australian seafood, in response to changing expectations from markets about environmental stewardship.

A revised bycatch policy also needs to respond to current developments, such as:

- the review of the harvest strategy policy, noting that a key objective of both policy reviews is ensuring they are aligned and complementary
- the government response to the review of the EPBC Act and its interaction with fisheries legislation
- the need to streamline and increase efficiency of fisheries regulation, with the aim of reducing the regulatory burden on the fishing industry
- current arrangements to respond to bycatch-related objectives of the FM Act, and the 2005 Ministerial Direction, directing AFMA to, among other things, implement the harvest strategy policy
- completion of the marine bioregional planning process.

National Policy on Fisheries Bycatch

All Australian Governments agreed in the late 1990s to develop a bycatch policy to provide a national framework for coordinating efforts to reduce bycatch. The national policy is the product of these efforts. The national bycatch policy provides options by which each jurisdiction can manage bycatch according to its situation in a nationally coherent and consistent manner. The national bycatch policy was endorsed by the Ministerial Council on Forestry, Fisheries and Aquaculture in April 1999 and published by DAFF in August 1999.

The primary reason for a national bycatch policy is to ensure direct and indirect effects on marine systems are taken into account when developing and implementing fisheries management regimes.

Domestic regulation

Management of bycatch in Commonwealth fisheries is principally governed by the FM Act and subject to environmental assessment under the EPBC Act. Both provide a legislative framework that establishes the objectives and obligations for fisheries bycatch. Australia also implements its international obligations on bycatch through this legislation. The key agencies involved in bycatch management in Commonwealth fisheries are DAFF, and AFMA and SEWPaC are responsible for undertaking environmental assessments under the EPBC Act.

AFMA is responsible for managing fisheries under Commonwealth jurisdiction. AFMA was established under the *Fisheries Administration Act 1991* (FA Act), which along with the FM Act identifies AFMA's objectives, functions and powers. Commonwealth fisheries legislation is designed to promote responsible fishing and conservation of marine living resources and to ensure fisheries are managed in an efficient and cost-effective manner. The legislation aims to optimise sustainable productivity of fish stocks by maximising sustainable catch and pursuing economic efficiency under a range of objectives that also address cost recovery and ensure accountability to the fishing industry and the Australian community.

DAFF assesses implementation of bycatch policy in line with the objectives of the FM Act and its portfolio objectives. This includes ensuring long-term sustainability, productivity and competitiveness of Commonwealth fisheries. It also involves monitoring AFMA's implementation of relevant policies and legislation and working with SEWPaC on implementing environmental legislation and policy.

The FM Act also sets out AFMA's responsibilities relating to pursuit of ecologically sustainable development. This objective requires AFMA to ensure long-term sustainability of fisheries resources for the benefit of all users and interest groups both now and in the future.

The FM Act includes objectives that AFMA and the Fisheries Minister must pursue. Most relevant to bycatch management is Objective 1(b):

Ensuring that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development (which include exercise of the precautionary principle), in particular the need to have regard to the impact of fishing activities on non-target species and the long term sustainability of the marine environment.

Ministerial Direction to AFMA to manage the broader environmental impacts of fishing

In 2005, as a consequence of the poor biological and economic status of a number of Commonwealth fisheries, the then Minister for Fisheries, Forestry and Conservation issued a direction (under section 91 of the FA Act) to AFMA to take immediate action in all fisheries to cease overfishing and recover overfished stocks, avoid stocks from being overfished in the future and manage the broader environmental impacts of fishing, including species protected under the EPBC Act. The direction also directed AFMA to implement the harvest strategy policy by 2007.

The Environment Protection and Biodiversity Conservation Act

SEWPaC assesses the environmental performance of Commonwealth, state and territory fisheries with an export component and promotes ecologically sustainable management.

SEWPaC's role, through the EPBC Act, is to evaluate the environmental performance of all export and Commonwealth fisheries, including:

- the strategic assessment of Commonwealth managed fisheries under Part 10 of the EPBC Act
- assessments of fisheries relating to impacts on protected marine species and communities under Part 13
- assessments for the purpose of export approval under Part 13A.

All assessments are conducted against the *Guidelines for the ecologically sustainable management of fisheries* 2nd edn (the guidelines). The guidelines outline specific principles and objectives designed to ensure a strategic and transparent way of assessing the ecological sustainability of fishery management arrangements.

The strategic assessment also informs assessments under Part 13 of the EPBC Act. It is an offence under Part 13 to harm protected species (other than conservation dependent species) in Commonwealth waters unless fishers have obtained a permit or the management arrangements for the fishery are accredited.

The EPBC Act is also the key enabling legislation for giving effect to a range of conservation focused international obligations to which Australia is a signatory, which include:

- Convention on Biological Diversity
- Convention on the Conservation of Migratory Species of Wild Animals
- Convention on International Trade in Endangered Species of Wild Fauna and Flora.

The current bycatch policy, released in 2000, broadly coincided with the EPBC Act coming into effect in 2000. The policy does not specifically mention EPBC Act obligations for fisheries, in particular EPBC Act requirements for non-target and protected species.

The EPBC Act and FM Act have the same definition of ecologically sustainable development and the precautionary principle in applying a precautionary approach.

Species protected under the EPBC Act

Some species that fishers may catch as bycatch are afforded higher levels of protection under the EPBC Act. The term 'protected species' means all species protected under Part 13 of the EPBC Act, including whales and other cetaceans and listed threatened, marine and migratory species. Species listed as threatened under the EPBC Act may be vulnerable, endangered or critically endangered because they are facing a level of high risk of extinction in the wild. These species need recovery in Australia and should be afforded different protection and consideration than other bycatch species. Species listed under the international conventions and agreements to which Australia is party, are also protected under the EPBC Act in the listed migratory category which includes species such as some sharks, birds and mammals. Interactions with species protected under the EPBC Act are considered in the assessment of individual fisheries.

It is an offence under the EPBC Act to kill, injure, take, trade, keep or move a member of a species protected under Part 13 (other than conservation dependent species) in a Commonwealth area unless the action is covered by a permit issued by the Minister for the Environment or is otherwise exempt. The EPBC Act also specifies that certain actions are not offences, including for example, actions authorised by a permit, taken in accordance with a wildlife conservation plan or undertaken in accordance with an accredited management plan or regime (such as fishery management plans or management arrangements). Fishers are obliged to report any interactions with protected species.

International commitments

Development of arrangements for managing bycatch in Commonwealth fisheries is closely linked to international commitments, which originated in obligations established under the United Nations Convention on the Law of the Sea 1982 (UNCLOS). Obligations to conserve bycatch species are also extended, in the United Nations Fish Stocks Agreement 1995 (UNFSA), to apply to 'species belonging to the same ecosystem or associated with or dependent upon the target stocks'. AFMA's objectives, which closely guide domestic management, also reflect obligations under UNCLOS and UNFSA which is annexed to the FM Act.

In support of the fisheries management obligations established by UNCLOS and UNFSA, the Food and Agriculture Organization of the United Nations (FAO) provided guidelines for implementing responsible fisheries management practices. These guidelines, along with the FAO *Code of conduct for responsible fisheries* (FAO 1995), include measures to protect endangered species, reduce bycatch and protect ecosystems. The guidelines suggest fisheries management objectives should include a statement to the effect that 'biodiversity of aquatic habitats and ecosystems is conserved and endangered species are protected'. The FAO supplemented its code of conduct with guidelines on implementing an ecosystem approach to fisheries (FAO 2003).

Although instruments such as the FAO code of conduct and related guidelines are not binding, many key provisions relating to high-seas fisheries have been implemented in the form of conservation and management measures that regional fisheries management organisations have adopted. Regional fisheries management organisations that have adopted bycatch related measures, of which Australia is a signatory and active participant, including the:

- Western and Central Pacific Fisheries Commission

- Commission for the Conservation of Southern Bluefin Tuna
- Indian Ocean Tuna Commission
- Commission for the Conservation of Antarctic Marine Living Resources
- South Pacific Regional Fisheries Management Organisation.

Australia promotes a range of best practice bycatch management measures at international meetings and encourages adoption by other countries and member states, this includes for example banning the use of wire traces in tuna fisheries, mitigation measures to reduce seabird mortality, full use of retained sharks, and prohibition of retaining, transshipping or landing any part of a white shark.

Current bycatch management in Commonwealth fisheries

Since the 1990s Australia has researched and implemented mitigation and management measures for bycatch in Commonwealth fisheries. Some of the progress can be attributed to implementing management actions under the bycatch policy, but other factors include management responses to increasing international obligations and EPBC Act assessments of fisheries.

Industry organisations and fishers have been involved in and innovative when introducing codes of practice, mitigation measures and revised fishing practices to reduce unwanted bycatch in Commonwealth managed fisheries. Fishers have actively trialled bycatch mitigation tools, such as seal and turtle excluder devices in trawl fisheries and tested different seabird deterring equipment in longline fisheries, in order to develop and adopt the most effective mitigation measures.

Funded by the Natural Heritage Trust, a wildlife bycatch project (Bensley et al. 2010) reviewed government performance in managing wildlife bycatch. It highlighted the need to:

- improve information to support decision-making
- introduce effective performance monitoring and evaluation frameworks
- identify priorities and attributing resources
- introduce incentives and disincentives for stakeholders.

The report recommended improving implementation of bycatch policies and legislation and providing industry with the ability to clearly demonstrate its environmental stewardship. This included developing a more integrated, inter-agency working relationship and implementing bycatch mitigation performance standards and assessments.

3 Issues canvassed in consultations and submissions

Stakeholder workshops

A stakeholder workshop, held on 21 June 2012, identified a number of issues relevant to the review. Issues discussed included the definition of bycatch and byproduct, ensuring there are no gaps between any revised bycatch and harvest strategy policies and that the transition of species between policies needs to be properly addressed. Other issues discussed included the need for the policy to reflect current obligations under the EPBC Act and international fisheries and conservation conventions. Discussion of these issues and the workshop report contributed to the development of an issues paper that was released for public consultation. The workshop was attended by representatives of the commercial fishing industry, government, environmental non-government organisations (eNGOs), the CSIRO and the FRDC. The first workshop report is at Appendix C.

A second stakeholder workshop, held on 4 February 2013, considered public submissions in response to the review's [issues paper](#). The workshop also considered a range of research commissioned to inform the review and discussed draft key principles for a revised bycatch policy. The workshop was attended by representatives of the commercial fishing industry, the recreational fishing sector, eNGOs, the CSIRO, government and the FRDC. The second workshop report is at Appendix D.

Issues paper and public submissions

DAFF, in consultation with ABARES, AFMA and SEWPaC, developed an issues paper to seek views from interested parties to inform the review of the bycatch policy and develop future policy options for bycatch management in Commonwealth fisheries. The issues paper also promoted discussion and feedback on issues relevant to the bycatch policy that may need refinement, elaboration or further development.

The issues paper provided a snapshot of the bycatch policy at the time of establishment and the progress made since the policy was developed. It also outlined a number of possible methods and approaches for future management of bycatch species as well as posing a number of questions for respondents to consider.

The issues paper was released for six weeks of public consultation on 9 November 2012; interested parties were able to provide submissions until 21 December 2012. Submissions received are available at daff.gov.au/fisheries/environment/bycatch/review/submissions-received.

The issues paper was published on the DAFF website and a copy was emailed to stakeholders in the fishing industry, government and environmental groups and research agencies. DAFF issued a press release and short articles on the issues paper public release were placed in *AFMA News* and the FRDC fisheries quarterly magazine *Fish*.

Responses

Submissions on the bycatch review issues paper were received from:

- [Australian Fisheries Management Authority, Management Advisory Committees and Resource Assessment Groups](#)
- [Australian Recreational Fishing Foundation \(ARFF\) and the Australian Fishing Trade Association](#)
- [Combined submission from WWF-Australia, TRAFFIC, Australian Marine Conservation Society, and Humane Society International](#)
- [Commonwealth Fisheries Association](#)

- [CSIRO](#)
- [Department of Agriculture, Fisheries and Forestry Queensland](#)
- [Department of Primary Industries Northern Territory](#)
- [Fishwell Consulting](#)
- A confidential submission due to unpublished research.

Issues raised in submissions

Submissions covered a broad range of bycatch matters. The issues raised in consultations and submissions were consistent. While the range of proposed solutions was diverse, there was consensus about both the areas in which improvements could be made to bycatch management and the policy. Stakeholders felt that a revised bycatch policy should be more clearly articulated, and more coherently and consistently managed.

While considerable overlap was evident in the issues respondents raised, the main issues were:

- the paucity of data and lack of baseline data
- definitions of bycatch and byproduct and their application within the bycatch and harvest strategy policies
- the cumulative effects of bycatch across Commonwealth and state fisheries
- the use of reference points for protected species
- the need for better monitoring and data collection of bycatch species
- the need for an analysis and reporting framework in future bycatch management.

This summary reflects information received from submissions and does not necessarily represent the government's position on any of the matters raised.

Scope and purpose of current bycatch policy

Many submissions expressed concern about current policy objectives. Respondents were concerned about current objectives not being well developed in Commonwealth fisheries. Issues included the paucity of information in the public domain to measure the achievement of objectives; the importance of the sustainable management of species most at risk; minimising overall changes to species composition; and relative abundance at an ecosystem level.

Respondents expressed strong support for reviewed objectives and general rephrasing of the issues. Some were keen to emphasise that the intention is to manage bycatch to ensure sustainable fisheries and species while avoiding high costs, which may affect the economic viability of Australia's fisheries.

Interaction with EPBC Act

Discussion on application of the EPBC Act varied. Some submissions asked that the Act be amended to be better aligned, avoid duplication and provide consistent combined management measures. However, a number of submissions supported reference to the EPBC Act, but said specific requirements could conflict with overarching objectives and that the EPBC Act should be a policy driver.

Current bycatch management

A theme submissions consistently raised was the definitions of bycatch and byproduct, and implementation of these definitions under the harvest strategy policy and the bycatch policy; that is, the same species being subject to two different policies.

Many submissions discussed amending the objectives to address the gaps between the policies. Alternatively, most submissions agreed that the policy would require clarification for moving species between policies or grouping bycatch and byproduct under one overarching policy.

Approaches to bycatch management

A consistent issue a number of submissions raised was lack of performance measures, paucity of data and monitoring of current bycatch management. Many respondents identified the need to further emphasise the ERM and ERA framework within the policy and to further quantify and monitor the extent of the problem over time.

Many submissions stated that the precautionary principle is paramount in the approach to bycatch management. With much discussion relating to the need for a comprehensive and quantitative characterisation of bycatch for all fisheries to ensure all components of catch are effectively managed. Respondents also highlighted the importance of accurate logbook data.

Some submissions supported the policy objective of determining the cumulative effects for all fisheries and sectors on species under its mandate. However, other submissions were concerned that the implementation could then be impractical for AFMA.

Submissions expressed support for developing appropriate reference points and performance measures for bycatch management. However, they noted the need for guidelines on setting reference and trigger points. In particular the catch–cost-risk trade-off needed to be considered before collecting high levels of information for all bycatch species, and it was argued that this approach should apply mainly to high risk and protected species where collection of additional data could be justified.

Implementing, reporting and evaluating

Various submissions emphasised the importance of obtaining high quality data, to assess implementation and ensure performance could be monitored. Submissions also discussed banning of discards, implementation of stronger penalties for non-compliance and forming an independent expertise-based body to oversee implementation of a revised bycatch policy.

However, many submissions also discussed the potential cost implications of implementing an independent expertise-based body into bycatch management, while identifying the complications behind establishing a broad range of experts to form an independent body. Most submissions agreed that these options would have to be further researched to gain an understanding of their viability within bycatch management. Conversely, respondents raised the ideas of incentives rather than penalties and implementation of public education programs.

Most submissions supported the idea of developing draft policy guidelines, similar to the harvest strategy policy, which would need to be developed in a considered and transparent way. Guidelines would need to suggest things such as reviews of strategies every three to five years, encourage effective communication with stakeholders and possibly address the gap between the harvest strategy and bycatch policies.

Key stakeholder suggestions for future bycatch management

This summary provides a snapshot of key stakeholder suggestions made during the public consultation period on the issues paper.

Environmental non-government organisations

Submissions from eNGOs suggested development of a Commonwealth fisheries discard management policy, which would aid understanding of which part of the catch the policy deals with. Similarly, eNGOs support the overarching objective relating to bycatch, being stated as, 'the reduction in discards of all species regardless of their risk profile and nature'. Further, minimisation of all discards would ideally be managed under a discard management policy.

The eNGOs said a process must be established to provide regular reporting on bycatch trends, on a fishery basis, and data published must reflect changes in the rate of bycatch as well as the quantum. They also expressed support for developing implementation guidelines to ensure actions taken under any new policy reflect best practice in bycatch management.

Industry representatives

The Commonwealth Fisheries Association supports development of a revised bycatch policy with the objective to 'minimise, to the extent practicable, bycatch and the mortality of bycatch that cannot be avoided'. The Commonwealth Fisheries Association also supports a revised policy that recognises it is the responsibility of industry, government and other stakeholders to be better educated about and understand the status of bycatch species.

The Commonwealth Fisheries Association said emphasis should be placed on managing bycatch and not on reducing bycatch at the expense of otherwise sustainable fisheries and a sustainable fishing industry.

Recreational fishing sector

The recreational fishing sector said it would support a future policy on bycatch that quantifies and minimises the socio-economic effects of the commercial industry on the recreational sector, from indirect and direct interactions.

Research sector

The CSIRO raised the issue of inadequacy of data in current bycatch management and lack of explicit performance measures. The research sector supports use of comprehensive and quantitative characterisation of bycatch for all fisheries.

The CSIRO also stated that for the bycatch policy to be effective it needed increased observer coverage, improved data management, explicit reference points, data collection strategies and programs, annual reporting, and clearer identification of bycatch issues and data requirements for appropriate, robust assessments of high-risk species. The CSIRO supports development of one policy for bycatch and byproduct, while key commercial species are grouped under the harvest strategy policy to address the gaps between policies. Many submissions agreed.

Management advisory committees, resource assessment groups and Fishwell Consulting

While submissions from AFMA, MACs and RAGs largely focused on the harvest strategy policy review, they acknowledged the importance of including clear definitions of commercial, bycatch and byproduct species and how a species would transition between categories. They support clarifying definitions so species are not simultaneously subject to both policies.

MACs and RAGs said it was important to recognise that in some cases risk is necessarily managed, in the absence of information, on the basis of expert opinion; and that in those cases suitable levels of precaution to reduce risk should apply. They also highlighted the importance of observer coverage (or electronic monitoring) in managing bycatch, but noted the importance of cost effective implementation.

Fishwell Consulting said no species should fall between gaps of both policies. It suggested that the proposed division into 'commercial' and 'non-commercial' species had the potential to lead to problems in practical implementation (such as applying harvest strategies to byproduct species) and recommended keeping byproduct and bycatch together and for the harvest strategy to focus on key commercial species.

4 Outcomes of commissioned and other relevant research

Three research projects were directly commissioned for input to the review:

- A CSIRO study assessing the effect of introducing the current policy on bycatch rates and to measure any trends in total bycatch capture and composition.
 - An ABARES Technical Review for the Commonwealth Policy on Fisheries Bycatch: risk-based approaches, reference points and decisions rules for bycatch and byproduct species.
 - A DAFF desktop study to review international approaches to bycatch management.
- Discussions on the outcomes of this review are in Chapter 1.

ABARES completed a fourth study on standards for bycatch mitigation that provided valuable input into revised management strategies for bycatch and development of a revised policy.

Copies of the research reports will be posted on the DAFF website once they are publicly released.

The CSIRO study, *Informing the review of the Commonwealth Policy on Fisheries Bycatch through assessing trends in bycatch of key Commonwealth fisheries* (Tuck et al, in press), identified the limited nature of available data to accurately assess bycatch catch rates over time. Because of this it is difficult to compare (except in some circumstances) trends in catch rates or to accurately measure the effectiveness of mitigation measures in place. It is clear that drivers of bycatch monitoring objectives need to be well understood when reviewing the data so as not to make assumptions about changes in capture rates.

Anecdotal evidence and incomplete data suggested that sectors which introduced mitigation measures had generally experienced successful outcomes. This was acknowledged but it was noted that the ability to detect changes in catch and/or catch rates was difficult due to the often broad confidence intervals around estimates from observer data. The difficulties in interpreting trends in bycatch and assessing management performance were noted.

The CSIRO research (Tuck et al, in press) found that:

Due to differences in the magnitude of annual observation effort by gear, season, area, or even species focus, trends in the numbers of raw observations of bycatch can be misleading. In addition, scaling up of bycatch observations to a fishery-wide estimate of total bycatch should only be done using appropriate statistical methods. Fishery indicators such as a bycatch rate should also be interpreted with caution, as a decrease in bycatch rate may either be due to a decrease in susceptibility to the gear or a decrease in population abundance. These two interpretations of changes in bycatch rate have dramatically different implications for management. An example of this has occurred in the SESSF where increases in discarding in the mid 1990s and early 2000s were related to large and episodic increases in the population of small blue grenadier and did not reflect a change in fishing practices. Similarly, recent increases in bycatch of unicorn icefish and grey rock cod in the Heard Island and McDonald Islands Fishery are believed to be due to increases in the population size of these fish. While full quantitative assessments of the impact of fisheries related mortality on non-target species are generally impractical for all but the most data-rich species, alternative methods and indicators, such as those proposed by the ERA process, have been adopted to assess data poor non-target species and these continue to be utilised by AFMA to assess the environmental credentials of their fisheries.

The ABARES study, *Technical Review for the Commonwealth Policy on Fisheries Bycatch: risk-based approaches, reference points and decisions rules for bycatch and byproduct species* (Penny et al. 2013), found that although the information needs for monitoring fishery effects on target, byproduct or bycatch species are the same, the cost of monitoring them is different. Generally available

information upon which to assess bycatch species is sparse and requires a tiered approach to assessing fishery effects.

Generally, industry participants prefer their levy contributions within cost recovered fisheries research to be prioritised to the study of the commercial fish stocks from which they derive their livelihoods and the capacity to pay levies. Species listed under the EPBC Act will require priority action where issues of conservation require a response under legislation. Studies into the wider variety of species that make up the bycatch are likely to be addressed on a risk needs basis according to the invariably limited resources available. In many fisheries the level of resourcing will be related to the value of the fishery and the competing demands for research resources.

There are also unavoidable limits to the reliability and scope of monitoring and reporting methods such as log books and observer reports.

It was generally acknowledged that there needed to be different objectives and assessment approaches for protected species than for other fish and invertebrate bycatch. Lower level qualitative assessments under the ERA framework were not able to deliver outputs which could be used to report on the performance of management programs.

The ABARES study, *Improving the management of bycatch: development and testing of standards for the effective mitigation of bycatch in Commonwealth fisheries* (Kirby and Ward, 2013), was funded by FRDC and predates the bycatch policy review. It was developed in response to outcomes of Bensley et al, 2010. The study suggested that adoption of standards would provide a more systematic approach to dealing with bycatch. The standards could be used as a benchmark for measuring performance and a checklist of actions for managing fishery bycatch. It was proposed that this would improve fishery management performance and perhaps the efficiency of fishing operations, increase demand for seafood products through consumers recognising the fishing industry's environmental credentials and ensure that the reputation of Australia's seafood is clearly demonstrated and documented.

The study shows how the proposed bycatch standards might have been applied to a measure to mitigate shark bycatch in the Eastern Tuna and Billfish Fishery. It shows that implementation of this measure would have met many of the proposed standards.

The challenge is defining standards that have the flexibility to cope with a wide range of circumstances across fisheries. It would be difficult, for example, to apply standards appropriate for dealing with species listed under the EPBC Act or the Bonn Convention for migratory species compared with those appropriate for any of the hundreds of small fish or invertebrate species that might be caught in a trawl fishery.

5 Main findings from the review

The main findings of the review were informed through consideration of public submissions to the issues paper, outcomes of stakeholder workshops, commissioned research and discussion at steering and advisory committee meetings. These forums contributed to forming the preferred approach for future management of bycatch species (see Chapter 6). In particular, these findings address the use of risk-based approaches, reference points, structured decision rules and the impact of cumulative effects as possible methods for consideration for future management of bycatch in Commonwealth managed fisheries.

Review participants agreed that measuring the impact and success of bycatch mitigation actions has proven difficult with many bycatch species characterised as data poor. This is an area that needs thoughtful consideration and further study in order to see improvements in the capacity to monitor and measure trends in bycatch rates and mitigations responses.

Bycatch policy within an ecosystem-based fisheries management approach

The Commonwealth is committed to an ecosystem-based fisheries management approach and the bycatch policy and harvest strategy policy form part of that approach. It is anticipated that further work will be needed on fisheries policies to address more systematically indirect effects on the wider marine environment, including communities and habitats, in order to provide an all encompassing ecosystem-based approach to fisheries management. The review acknowledges, but does not seek to complete, this necessary third element.

International requirements to adopt an ecosystem approach to bycatch reduction and conservation of endangered species can be traced back to Agenda 21 of the 1992 United Nations Conference on Environment and Development (the Earth Summit). These actions emphasise the role of ecosystems in producing services supporting sustainable development, and call upon member states to ‘promote the development and use of selective fishing gear and practices that minimise waste in the catch of target species and minimise bycatch of non-target species’.

These requirements were elaborated in decisions under the United Nations Convention on Biodiversity which entered into force in 1992. In 2000 the Convention on Biodiversity formally adopted the ecosystem approach as the fundamental basis for its activities. Participants considered the purpose of an ecosystem approach to be ‘to meet human requirements to use natural resources, while maintaining the biological richness and ecological processes necessary to sustain the composition, structure and function of the habitats or ecosystems concerned’. The *FAO Code of conduct for responsible fisheries* includes measures to protect endangered species, reduce bycatch and protect ecosystems.

Ecosystems, habitats and communities are necessary elements to be considered for future fisheries policy development. However, while outside the scope of this review they will be considered by government through broader fisheries legislative reviews.

Domestic and international bycatch regulation

Domestic regulation around bycatch management in Commonwealth fisheries is discussed in Chapter 2. Management of bycatch in Commonwealth fisheries is largely implemented under the FM Act and subject to environmental assessment under EPBC Act.

The current policy was implemented as a high-level policy statement. The review has concluded that this policy can be further elaborated and expanded without necessarily amending fisheries legislation. Although largely outside the remit of this review, this is not to suggest there are no

legislative amendments that could improve the Commonwealth's performance of fisheries management, including for example around transparency of decision making and public confidence.

A range of stakeholders suggested that EPBC Act requirements should not be explicit in any revised bycatch policy, but should help guide the policy. In addition, species afforded protection under the EPBC Act should be managed under a revised bycatch policy different to other bycatch species. The term 'protected species' means all species listed under Part 13 of the EPBC Act, including whales and other cetaceans and listed threatened, marine and migratory species. This also includes species listed under the international conventions and agreements, to which Australia is party, and are also protected under the EPBC Act.

The review concluded that whether EPBC Act requirements are included in fisheries regulation or not, their basic effect is the same. Placing these requirements in fisheries regulation could provide one place for regulation and could make monitoring and enforcement simpler.

Assessment of current definitions of bycatch, byproduct and discards

Definitions of bycatch, byproduct and discards have been interpreted differently under current policy, with sometimes poorly defined and interchangeable terms. This has caused confusion, contributes to possible management gaps and is not conducive to building public confidence in the industry. Discards can apply to both fish of a commercial species that are not retained (because they are undersize, or the fishers could not obtain quota, or trip limits apply) and to disposal of species commercial fishers do not usually keep but are taken incidentally during fishing operations. The current bycatch policy states bycatch is:

- i) that part of a fisher's catch which is returned to the sea either because it has no commercial value or because regulations preclude it being retained
- ii) that part of the 'catch' that does not reach the deck of the fishing vessel but is affected by interaction with the fishing gear.

A revised approach has been proposed:

Commercial species were defined as:

Species that commercial fishers usually keep

Non-commercial species, those not usually kept by fishers, are classified as:

Species taken incidentally in a fishery and which are usually discarded because they have no commercial value.

The definition uses high-level division based on whether commercial fishers usually keep particular species. As the proposed definition refers to explicit species, consideration could be given to further classifying commercial species as 'key commercial' and 'byproduct' to distinguish them.

An alternative approach considered, based on management of discards, would lead to a Commonwealth discard management policy. Such an approach would need to clarify the meaning of discards which in some contexts is simply a synonym for bycatch but can also include returning to the sea of commercial species. It was considered that this would make for unduly complicated policy harmonisation.

The key issue under any classification system is that it should encompass all species that come into contact with the fishing gear and systematically and consistently determine their status. How commercial operators take those species would be differentiated (Figure 1) and therefore managed under either the bycatch or harvest strategy policy. It also describes how species taken by both commercial and recreational fishers would be managed using the revised definition. A consistently

applied risk based, tiered management approach would need to be applied irrespective of which policy a species was managed under.

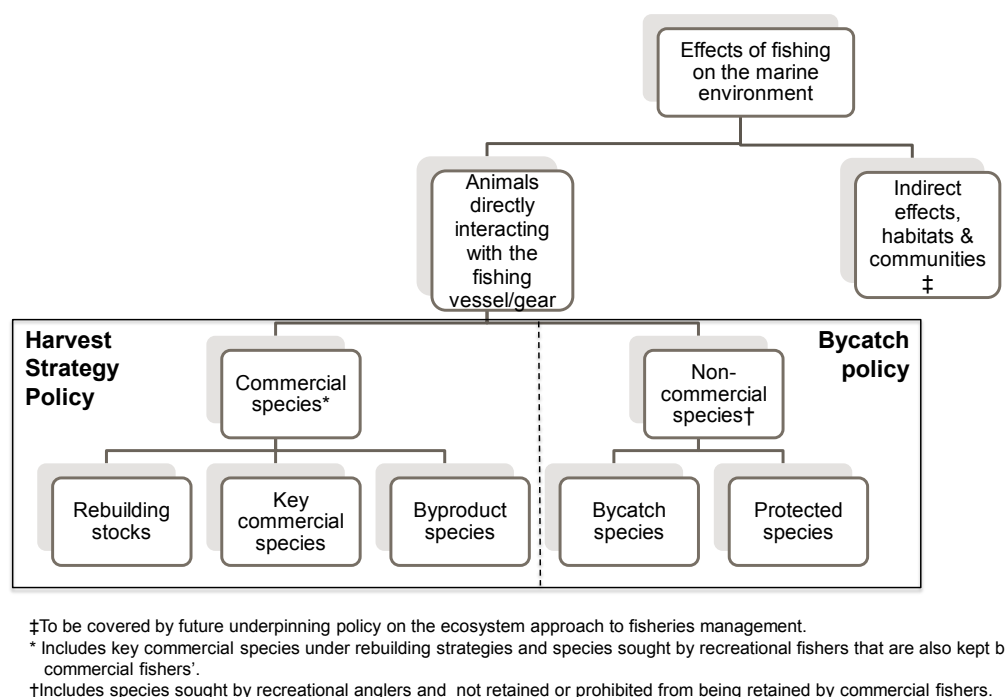


Figure 1: Potential catch component classifications and policy applications

In response to concerns the current policy was relatively silent on how to account for and reduce cryptic mortality a definition of bycatch with support is proposed:

Species that physically interact with fishing vessels and/or fishing gear and which are not usually kept by commercial fishers.

Where: 'Interact(ion)' includes any physical contact with a species and includes all catches (for example, hooked, netted, entangled), discards and releases and collisions with these species.

'Not usually kept' will be applied on a fishery-by-fishery basis. Guidance on how this will be assessed and determined will be developed and provided in implementation guidelines for the bycatch policy.

'Physically interact with' excludes attached sessile organisms. These will be managed under a future ecosystem policy.

This definition does not include discards of commercial species.

Notwithstanding the appropriate classification of different marine species that come into contact with the fishing gear, additional layers of policy are needed to address the treatment of species under the different classifications. Discussion on management approaches to target and/or byproduct species (that is, those species with commercial value) were outside scope of this review. They are considered as part of the review of the harvest strategy policy. The discarding of commercial species, for whatever reason, while outside the scope of the bycatch policy is on the edge of the necessary continuum between the bycatch and harvest strategy policies.

Applicability of risk-based approaches

As part of the review ABARES undertook an FRDC-funded research project *Technical Review for the Commonwealth Policy on Fisheries Bycatch: risk-based approaches, reference points and decisions rules for bycatch and byproduct species* (Penny et al. 2013). ABARES reviewed current risk-based approaches for bycatch management, risk management approaches, use of reference points, and low information analytical approaches; it considered approaches to assess and manage cumulative effects of fishing impacts (see Chapter 4 for results of the project).

Risk-based approaches recognise that decisions need to be taken in the absence of quantitative sustainability assessments and use whatever information is available to arrive at a risk-ranking for species groups in various fisheries, including evaluating the risk relating to uncertainty resulting from low levels of information. Given that information on bycatch interactions is often scarce, management of bycatch is often risk based. Use of such risk-based methods acknowledge the costs associated with data collection, monitoring and analysis are often prohibitive and best directed toward outcomes anticipated to have a high risk of an adverse effect.

The ERA that AFMA and CSIRO developed covers a range of techniques for evaluating the risk of negative effects on various components of the environment and has been applied to Commonwealth fisheries (Hobday et al. 2011). The ERA includes assessment of the sources of risk, their consequences and the likelihood that those consequences may occur. This approach involves a tiered/hierarchical process with three levels: a qualitative analysis at Level 1, an indicator-based analysis at Level 2, and a model-based analysis at Level 3 ([Figure 2](#)).

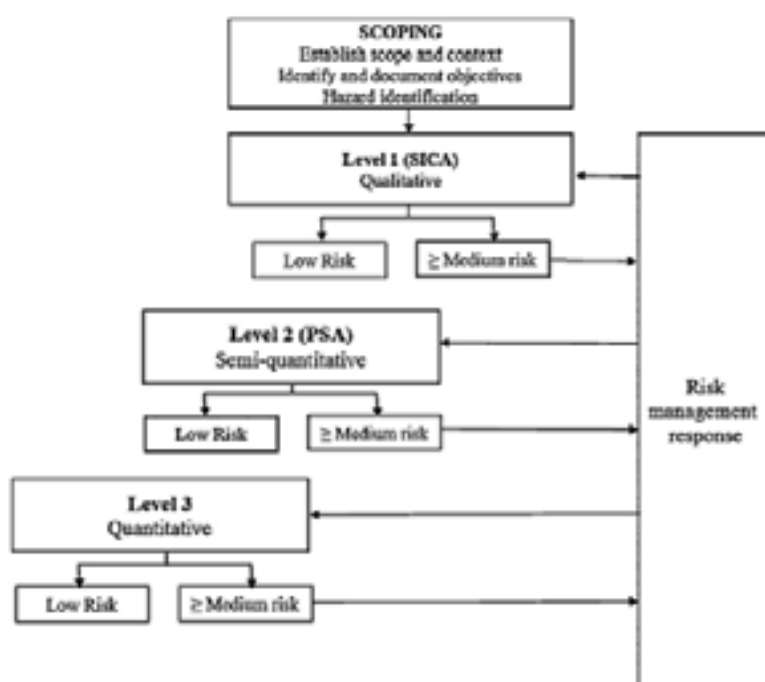


Figure 2: Overview of ecological risk assessment for effects of fishing, ecological risk assessment/ecological risk management framework

Note: Level 1 (SICA) (Scale x intensity) x Consequence Analysis; Level 2 (PSA) multi-species Productivity-Susceptibility Analysis; Level 3 (SAFE) multi-species Sustainability Assessment for Fishing Effects, or single species population/stock assessment.

Source: Hobday et al. 2011

ERAs have been carried out for each Commonwealth fishery and have produced priority lists identifying key species that need attention in each fishery. As part of AFMA's ERM process, management responses have been developed to address these, with bycatch species being managed using a variety of management responses under bycatch and discard work plans.

AFMA's ERM process aims to integrate the assessment of risk (from ERAs) with the cost effective application of measures to minimise, monitor and control identified risks by minimising either the likelihood or consequence of fisheries interactions. ERM provides information to managers on the risk to each species being affected by the fishery, and whether such effects may endanger those populations, allowing measures to be developed to reduce the risks. ERM is therefore a formalised approach to systematically addressing the results of ERAs, including monitoring risks to reduce uncertainty in the risk assessment and implementation of effective management or mitigation measures to reduce risks to acceptable levels.

When applied to fisheries, an implicit management objective is embedded in the Ecological Risk Assessment for Effects of Fishing Productivity Susceptibility Analysis (PSA) and Sustainability Assessment for Fishing Effects (SAFE) methodologies, to ensure fisheries do not contribute to the decline of populations of bycatch species to levels at which their reproduction may become threatened.

The ABARES study found that there is an explicit catch-cost-risk trade-off underlying the range of choices of assessment method, between management costs, level of precaution (level of effort or catch) and the risk of not achieving management objectives. Management costs generally increase as catch increases, with more information being needed to allow larger catches while ensuring acceptable risk (Penny et al. 2013). Reducing the risks either requires fishing intensity to be reduced (precautionary management), or uncertainty to be reduced by collecting the additional data needed to support a more certain, higher information, assessment. The net economic returns (profit) to a fishery will determine what data a fishery can afford to collect to inform management decisions. In some cases, it may be more cost effective to address an issue by immediate, precautionary management action based on current information, rather than invest in additional data collection and improved understanding of the issue.

Information on fisheries effects on bycatch species is typically sparse and often not spatially representative. Scandol et al (2009) reviewed risk-based approaches for data-poor fisheries, highlighting the substantial investment many fisheries agencies make into risk-based management. They noted that, while implementing risk assessments is a fundamental part of the process, policy and legislative frameworks supporting effective risk management must exist to respond to the outcomes of those assessments. Scandol et al. (2009) list a number of useful guiding principles for designing effective risk management in data-poor situations, such as bycatch species:

- Recognise there are minimum standards of data for species that are subject to some type of risk or stock assessment.
- Acknowledge the best response to data-poor fisheries is not always to collect more data, in some situations it is better to implement management strategies that are robust to uncertainty and able to achieve acceptable levels of risk.
- Acknowledge when interpreting risk assessments, adoption of the precautionary approach implies that when the likelihood of an outcome is uncertain and the environmental consequence of this outcome is serious or irreversible, the interpretation of this likelihood should be the higher (more conservative) plausible estimate.

- Recognise within a multi-species fishery (in this context, a group of bycatch species), directed management of an indicator species is an effective strategy to manage species at equal or lower risk than the indicator species.
- Recognise harvest strategy frameworks with explicit decision rules provide an effective risk management framework for fisheries.
- The use of a risk-based toolkit seems both practicable and unavoidable if the intention is to provide a consistent and comprehensive approach to managing data-poor bycatch species.

Reference points and performance measures

Reference points in fisheries management are indicators that are used as a benchmark against which to evaluate fisheries performance, and to prompt appropriate fishery management decisions for example, reference points in relation to the level of fishery or stock size can prompt fishery management decisions to change fishing pressure in relation to agreed reference levels.

Under the harvest strategy policy, harvest strategies and decision/control rules are developed for key commercial species in each fishery in relation to target and limit reference points. Similarly, the bycatch policy states that:

Decisions and actions to address bycatch will ... use robust and practical biological reference points relating to bycatch, where possible, to make decisions on bycatch management.

In the same way, reference points may be a useful tool in managing some bycatch species. For instance, bycatch trigger limits have been used in some fisheries to help manage and limit interactions with some protected species.

Fisheries management approaches using reference points generally envisage two classes of reference points: target and limit. Target reference points are those levels (such as biomass of a stock, or a bycatch rate) that management approaches or strategies should aim to achieve. Limit reference points are those levels that should be avoided, with management intervention being needed to move the resource back toward target levels if limit reference levels are breached.

Reference point approaches can be data intensive and need adequate data to determine appropriate reference points, and to monitor performance against them. Such approaches may be applicable to certain high-risk species, with limit reference points being set at levels (such as in bycatch rate, or estimates of mortality) that then trigger some appropriate active management to reduce risk, interaction or mortality back toward target levels. An indicator can be tracked over time and its value compared with both target and limit reference points (Figure 3).

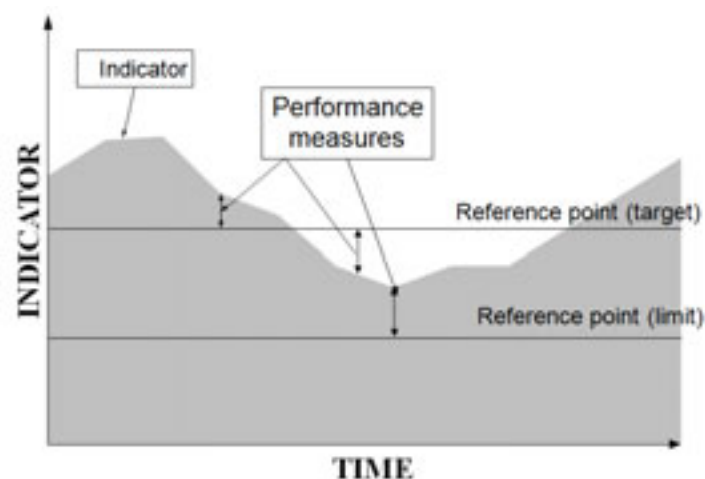


Figure 3: Indicators and performance measures relating to limit and target reference points

Use of reference points is broadly recognised as an important fisheries management tool and applicable to bycatch management if applied in a species appropriate manner, noting this may include species-specific and overriding requirements. The ability to apply reference points will be constrained in many cases by lack of data and the high cost of obtaining it, and will likely only be applied where the cost of obtaining the information (for example, for high risk species) can be justified. Policy guidelines would provide further guidance on using reference points for bycatch species.

Addressing cumulative effects

One of the challenges resulting from focusing at the fishery level, such as using ERAs conducted for individual fisheries, is the difficulty of evaluating cumulative effects across fisheries or jurisdictions. The ERAs for individual fisheries may each indicate low or medium risks for a particular impact, whereas the combined impacts across a number of fisheries may actually be high. Qualitative ERAs for individual fisheries do not lend themselves to subsequent determination of cumulative effects across fisheries. Where only qualitative assessments are possible and where there is no intention of collecting additional information, assessment of cumulative effects essentially requires that risk assessment be redone across the fisheries or jurisdictions, focusing on medium-risk species for which cumulative effects may be of concern.

The most reliable way to evaluate cumulative effects across fisheries, using methods already in place, is to generate quantitative mortality rate estimates that can be summed across fisheries or jurisdictions to generate cumulative assessments of total fisheries mortality rates. These can then be summed and compared with sustainability benchmarks to determine whether the cumulative mortality exceeds sustainable levels. This is the approach taken in AFMA's ERA Level 3 SAFE assessments (as described on page 20), in which fishing mortality rates are estimated. Alternatively, low-information analytical approaches generate quantitative measures that can be summed across fisheries. The costs of collecting the additional data needed for these higher-level quantitative approaches may be justified if there are concerns that cumulative effects may be unsustainable for a species group identified as being at medium or high risk.

The review concluded that low information risk assessment approaches (scale intensity consequence analysis and productivity susceptibility analysis) applied to separate fisheries are not suited to evaluation of cumulative effects across these fisheries. The lack of information that usually dictates the need to restrict assessment to low level ERAs does not support estimation of reference points, or

assessment of stock status performance against such reference points. Where there is a requirement to implement reference points, develop harvest strategies, track performance trends or evaluate cumulative effects, it is therefore necessary to collect the data needed to move to some level of analytical approach by which these quantitative measures can be estimated.

The CSIRO is finalising an FRDC and AFMA funded research project 'ERA extension to assess cumulative effects of fishing on species', outcomes of which may provide further guidance on developing appropriate responses to this issue.

Further work is required at the Commonwealth and state/territory levels to consider options for better assessing and managing cumulative impacts. Fisheries management agencies will need to have regard to impacts in other fisheries including fisheries in other jurisdictions when undertaking assessment of impacts on bycatch species.

Strengthening existing management approaches

Outcomes from the ABARES study, *Improving the management of bycatch: standards for the effective mitigation of fisheries bycatch*, provides guidance in developing strengthened tools for bycatch management. The developed standards provide a systematic approach to bycatch issues including guidance on implementation strategies, reflecting the theme of avoiding, minimising and managing bycatch (Kirby and Ward, 2013).

The project concluded that clearly stated standards, with accompanying technical guidelines, would be useful for identifying, verifying, quantifying, mitigating and managing bycatch in Commonwealth fisheries. It recommends use of a systematic, standardised approach in dealing with fishery bycatch issues. This approach could result in improved performance against fishery management objectives (such as reducing bycatch, sustaining the populations of bycatch species), improved efficiency of fishing operations (such as bycatch mitigation measures that do not depress the catch rates of target species), reduced fishery management costs (such as data collection, analysis and compliance) and increased demand for seafood products through consumer recognition of the fishing industry's environmental credentials.

While a range of bycatch management tools has been developed since implementation of the bycatch policy, few including the AFMA ERA/ERM approach, management strategies for protected species and bycatch and discard work plans, are currently reflected in the bycatch policy. A revised policy could include reference to these approaches with details about their use provided in implementation guidelines. The ABARES project report would aid their development.

Use of guidelines with a revised policy

The harvest strategy policy is supported by guidelines for its implementation. The policy focuses on high level objectives, principles and obligations, whereas the guidelines provide detailed practical assistance, much of it technical in nature, for developing and implementing effective harvest strategies under the policy.

Throughout the bycatch review support has been expressed for developing technical guidelines, similar to the harvest strategy policy. Such guidelines for a future revised bycatch policy would be used to improve implementation of the revised bycatch policy and associated management strategies. Guidelines would provide clear advice on applicability of assessment methods corresponding to the level of identified risk and available data for individual species or species groups.

Technical aspects of the bycatch policy that could be expanded upon in associated implementation guidelines could include:

- Development of appropriate reference points for bycatch management and performance evaluation.
- Guidance on application of ERAs, methodology to be used in different situations, dealing with uncertainty and evaluation of cumulative effects.
- Approaches to conducting quantitative sustainability assessments and implementation of formal bycatch management strategies, for fisheries with adequate information.
- Development of cost-effective ERM approaches to addressing risk identified in risk or sustainability assessments.
- Appropriate approaches to estimating bycatch interaction rates and mortality estimates.
- Guidance of performance evaluation, to measure the effectiveness of bycatch management plans and mitigation measures in achieving objectives.
- Guidance on assessment of cumulative impacts.

The FRDC-funded ABARES study, *Improving the management of bycatch: standards for the effective mitigation of fisheries bycatch* could be a useful starting point for developing bycatch implementation guidelines. The project identified a range of standards intended to help fishery managers take a structured and cost-effective approach to identifying emerging bycatch issues, assessing options to manage bycatch (including mitigation measures) and assessing the performance of those measures (Kirby and Ward, 2013). Guidelines associated with each standard provide practical implementation assistance.

The review found that implementation of appropriate guidelines would address many concerns about the current lack of performance monitoring and reporting to evaluate the effectiveness of bycatch mitigation measures and management strategies.

Increased transparency for stakeholders

Stakeholder engagement on bycatch management issues currently occurs mainly within AFMA management advisory committees and resource assessment groups with general recognition that reporting needs improvement and often there is no time to focus on bycatch issues.

AFMA's Environment Committee provided advice on strategies to address environmental issues, including minimising the impact of fishing on bycatch species.

To date, there has not been regular stakeholder engagement on bycatch of all species across Commonwealth fisheries. This is partly due to an emphasis on assessing key commercial species and monitoring protected species interactions and lack of information, including observer coverage, and lack of spatial representation of observer data for bycatch species. Some protected and high risk species have been subject to additional stakeholder engagement over the last few years, especially where nominated for listing under the EPBC Act, this includes the Australian Sea Lion working group (renamed the Marine Mammal Working Group) and the Gulper Shark (dogfish) stakeholder group. Noting that some of these groups are formed to solve a problem rather than provide ongoing monitoring of bycatch at the fisheries level.

Overall bycatch management processes, through the revised policy, should be open and transparent for all stakeholders to engage and understand. This could be done through regular reporting on bycatch management, and dedicated MAC and RAG consideration of bycatch matters. And through implementing a revised policy and guidelines which would aim to increase stakeholder understanding, provide regular reporting and circumvent the need for dedicated working groups.

Guidelines in particular would help stakeholders better engage in and understand the process.

Mechanisms for considering social and economic objectives of ecologically sustainable development

ABARES reported to the second stakeholder workshop, held 4 February 2013, that the contemporary social context in which a revised bycatch policy could operate included the public understanding of fisheries bycatch, the social effects of bycatch policy, management and mitigation strategies, and what motivates fishers to adopt sustainable management practices.

It was noted that industry and government experience was that the concept of 'social licence' was an emerging reality for fisheries, particularly in relation to market access.

Public perception can drive issues. In relation to fisheries bycatch, it is a goal of the FAO Code of Conduct for Responsible Fishing and a longstanding public expectation to reduce waste in fisheries. This is reflected in the existing bycatch policy despite 'wastage' not being directly linked to sustainability provided other fishery settings were sound. Recent surveys suggest a large proportion of the Australian public is doubtful about the sustainability of Commonwealth managed fisheries (FRDC, 2011).

An improved bycatch policy would ensure public confidence in fisheries management providing government and industry with a stronger basis upon which to increase the confidence of fish buyers and consumers. It could be confidently claimed that a lot of improvements have been made in fisheries bycatch and that Commonwealth fisheries are generally operating at much higher standards than international competitors.

Any proposed principles and/or methods for future management and assessment of bycatch in Commonwealth fisheries would need to consider the trade-off between cost of implementation and possible return. Where the risk to a species has been assessed as low and the level of fishing activity has not changed, there is little reason to apply complex and costly management arrangements. Likewise where a species is assessed as at high risk from interaction, consideration should be given to the cost of management arrangements versus the likely return to industry and the Australian public. In many cases, the decision to continue fishing will need to be weighed against the cost of implementing management arrangements, mitigation measures and an enhanced reporting framework.

6 Preferred approach to managing bycatch species—a tiered approach

The review considers that future management of bycatch species may be best implemented using a tiered approach to monitoring, assessment and management. Depending on data availability, a range of assessment methods can be applied, ranging from low information, qualitative risk assessments, through moderate information quantitative risk assessment or analytical approaches, to complex quantitative population assessments. This range of assessment methods can, in turn, support a tiered range of management approaches from simple, precautionary catch triggers, through establishment of increasingly robust reference points and performance measures, to operational management procedures and decisions rules designed to achieve specified objectives with high certainty. This is the basis for the tiered assessment approach applied to harvest strategies developed under the harvest strategy policy. However, the harvest strategy policy tiered approach would need to be extended to include low-information analytical and risk assessment approaches for bycatch species.

There are increasing costs associated with collecting increasing amounts or complexity of information. Data availability is usually related to the degree to which a species is retained in catches, with comprehensive data being collected on a regular basis for key commercial species that are usually retained. Fewer data are collected for occasionally retained byproduct species and little information is usually available for discarded bycatch species. This is related to the economic returns generated by retained catches, with more complex data collection programs for landed species able to be funded using levies or cost-recovery. This range in typical data availability is what creates the requirement for a tiered approach to monitoring and assessment. Figure 4 summarises how data availability, assessment approaches, management responses and costs increase with the level of assessment chosen for each species.

This tiered approach to assessment and management is not necessarily related solely to levels of risk. Risks to a species can range from low to high at any level of information availability. There may, for example, be low risks to some species for which little information is available, and for which only qualitative ERAs can be conducted. Conversely, there may be high risks to some species for which substantial information is available and for which robust, quantitative population assessments are conducted. However, the less information that is available, the higher the uncertainty in assessments conducted using that information. Low information assessments will tend to be highly uncertain, with certainty increasing as the amount of information, and the complexity of the assessment approach, increases.

Uncertainty does contribute to risk and, using a precautionary approach, the more uncertain an assessment is, the more precautionary management needs to be to compensate for that uncertainty. At any information level, management has a choice: to apply appropriately precautionary management, compensating for the uncertainty resulting from limited data availability at that level; or to implement further monitoring and data collection programmes to collect the data required to apply a more complex, more certain assessment approach. For example, additional data collection programmes may be implemented for bycatch species found to be at medium or high risk using a low level qualitative (Scale Intensity Consequence Analysis (SICA)) risk assessment, to allow application of quantitative (Productivity Susceptibility Analysis (PSA) or Sustainability Assessment of Fishing Effects (SAFE)) risk assessments, or to conduct population assessments to estimate safe biological limits.

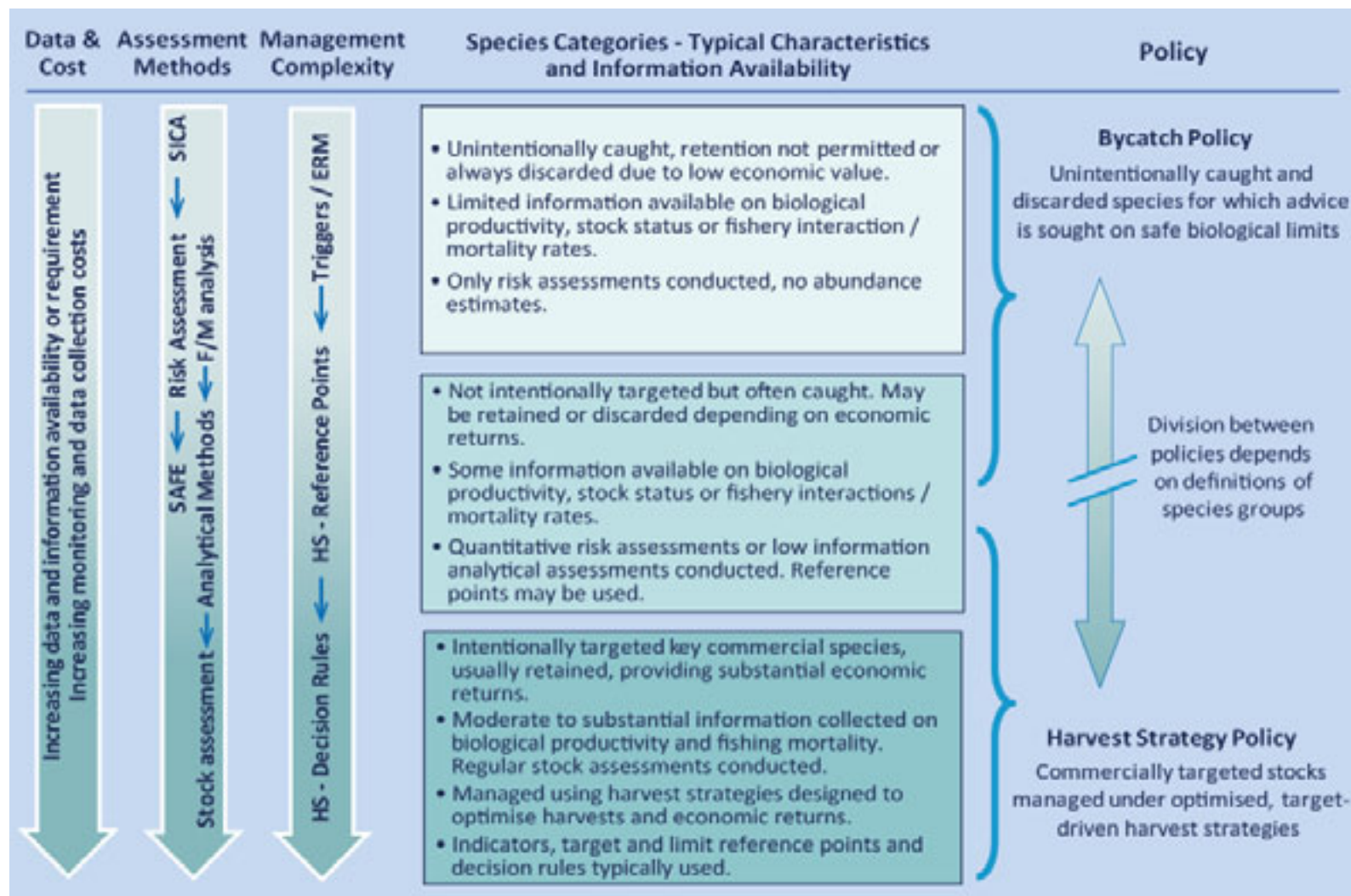


Figure 4: Tiered assessment methods and management approaches that may be applied to different species, depending on information availability.

Different species categories are typically associated with differing levels of data availability, depending on the degree to which they are retained in catches. Increasingly complex monitoring and management approaches have increasing costs. (Penney, et al 2013)

In some cases, management of bycatch species may require a higher level of response than might usually be expected to be applied to bycatch. Decisions on the assessment and management approach to take should be guided by the catch-cost-risk trade-off, where high risks or the desire to take higher catches results in collection of additional data and the application of more assessment methods to reduce uncertainty and more responsive management approaches to reduce risk to acceptable levels. The investment in additional data collection may be justifiable for some high risk species such as some marine mammals and reptiles. Lower information approaches and more precautionary management may be the affordable and preferred choice for other bycatch species, particularly those at lower risk.

This approach is applicable to bycatch, byproduct and commercially retained species and provides for a continuum of monitoring and management where increased data collection and complexity of assessments is justified by a management choice to reduce the uncertainty and associated risk from commercial fishing for a particular species or species group. This is illustrated in Table 1 below, which shows different assessment methods, possible management approaches, transition mechanisms for species moving between categories and describes some of the issues for consideration in their assessment and management.

Table 1: Schematic of Harvest Strategy and ByCatch Policy Components and Processes

Harvest Strategy Policy - Species with commercial value, retained and sold to some extent

	Species Category	Description	Assessment Method	Management Approach	Transition Mechanism	Considerations
Increasing data collection, assessment level and management requirements	Primary Commercial Species	Species that are under TACs or TAEs, are actively targeted; provide 'most' of the catch and generate 'most' of the revenue in each particular fishery; ¹ all or most of the catch is retained.	High information stock assessments - Tiers 0 – 1	Species should be managed using harvest strategies and decision rules; quantitative limit and target reference points established; usually actively managed towards single species MEY-based target; performance measures and projections used to assess current biomass status in relation to targets and limits; discards of these species should be minimised.	↓ Could move to being a secondary species if they cease to contribute significantly to catch and revenue for an extended period of time.	Species to be identified on the basis of current fishing practices and targeting analyses; retain all existing monitoring and data collection requirements, reference points, performance measures, assessment methods and management approaches.
					↓↓ Could become listed as conservation dependent or higher level threatened species under the EPBC Act if depleted below limits.	


¹ The division between primary and secondary commercial species will depend on the catch weight and revenue thresholds chosen to distinguish secondary species from primary commercial species for each fishery.

	Species Category	Description	Assessment Method	Management Approach	Transition Mechanism	Considerations
Increasing data collection, assessment level and management requirements ↑	Secondary Commercial Species	Species that are under TACs or TAEs; do not contribute substantially to economic revenues and have a low level of active targeting; catch often retained but may be discarded at times, depending on profitability;	Usually low information analytical assessments – Tiers 2 – 7, depending on data availability; ERA - Level 3 (SAFE) assessments applied to stocks moved up from minor commercial species determined in Level 1 or 2 ERAs to be at unacceptable risk of being overfished.	Proportional ² or proxy limit and target reference points established; may be managed to an alternative reference point above or below single species B_{MEY} to achieve fishery MEY in multi-species fisheries; low information assessments used to assess proportional status (CPUE, F, catch) against chosen targets and limits; efforts should be made to reduce discards.	<p>↑ Could move to being primary commercial species if commercial interest and landed catch increases, such that they become significant contributors to catch and revenue, and actively targeted.¹</p> <p>↓ Could move to being minor commercial species if catches decline below some defined level, and stocks are shown not to be at unacceptable risk at current catch and F levels.</p> <p>↓↓ Could become listed as conservation dependent or higher level threatened species under the EPBC Act if depleted below limits.</p>	Species currently contribute to landings and revenue, but fall below the catch and revenue contribution thresholds for primary commercial species; retain existing monitoring requirements, assessment methods and limit reference points; targets may be revised; species should be managed using appropriate low-information harvest strategies and decision rules.

² Proportional reference points are used where biomass is not assessed using a stock assessment, and current status in terms of e.g. CPUE is expressed as a proportion of the CPUE over some chosen historical reference period.

	Species Category	Description	Assessment Method	Management Approach	Transition Mechanism	Considerations
Increasing data collection, assessment level and management requirements →	Minor Commercial Species	Species that make occasional and minor contributions to commercial catch and little contribution to revenue; do not affect fishery MEY; catches or retained catches are low; discarding may often occur.	ERA - Level 1 (SICA) and Level 2 (PSA) used to ensure these species are not at unacceptable risk of overfishing.	Shown by ERAs not to be at unacceptable risk of being fished to below safe biological limit at current catch and fishing mortality levels; may not have specified targets, limits or performance measures; catch triggers used to determine whether ERA re-assessment, data collection/analysis and/or management actions to reduce risk to stock are required, or whether species would move directly to being secondary commercial species based on increased catch contribution; efforts should be made to constrain unwanted catches.	<p>↑ Would move to being secondary commercial species if ERAs indicate unacceptable risk at current catch, effort or F levels, or if catches increase to qualify as secondary commercial species.</p> <p>↓ Could move to being bycatch species if catches are no longer retained, there is no commercial value and species do not require rebuilding.</p> <p>↓↓ Could become protected species due to being listed under the EPBC Act, or adoption of international conservation measures.</p>	Species currently not clearly managed under either policy would be apportioned between this category and Other Bycatch Species under the Bycatch Policy depending on market value and retention; commercial species may need to be listed to clarify that they resort under the HSP; ERAs may need to be updated for some of these species; some level of monitoring (of catch at least) will be required to respond to catch triggers and to ensure that risk remains low; may include exploratory fisheries.

Bycatch Policy – Species with no commercial value, usually discarded, or not permitted to be retained

	Species Category	Description	Assessment Method	Management Approach	Transition Mechanism	Considerations
 Increasing level of protection	Bycatch Species	Species that interact with fishing vessels or gear but are usually discarded due to having no commercial value; are not listed as protected under the EPBC Act.	ERA – Levels 1, 2 and 3.	Focus on measures to minimise bycatch; requires some representative index of catch rate to evaluate performance of bycatch minimisation/mitigation measures.	<p>↑ Could transition to being minor commercial species if markets and commercial interest in retaining the species develop.</p> <p>↓ Could become protected species due to being listed under the EPBC Act, or adoption of international conservation measures.</p>	<p>Species currently not clearly managed under either policy would be apportioned as other bycatch minor commercial species under the HSP depending on market value and retention; would include all species not listed under the Harvest Strategy Policy or not listed as protected under the EPBC Act.</p> <p>Will require some level of monitoring to ensure that risk remains medium/low.</p>
	Protected Species (other than 'Conservation Dependent').	Species listed under the EPBC Act; species / groups listed in international UN, FAO or RFMO conservation measures or policies.	<p>ERA – Level 3;</p> <p>Quantitative population assessments.</p> <p>Other quantitative risk assessment methods (seabirds and mammals);</p> <p>Individual species</p>	Species-specific monitoring and assessment requirements developed as part of active conservation and rebuilding and recovery plans; focus on measures to minimise bycatch; provisions of previously applied harvest strategies for species being rebuilt under such strategies may be retained; will	<p>↑ Could transition to being other bycatch species, or to being commercial species, if recovered above specified rebuilding target and no longer require protection under the EPBC Act or international</p>	Will require recognition within the Bycatch Policy of the definition of this group, and principles to ensure compatibility and integration with EPBC Act requirements.

		population assessments.	require additional data to evaluate performance against rebuilding objectives and bycatch minimisation measures.	measures.
--	--	----------------------------	--	-----------

7 Bycatch policy future framework

A range of explicit improvements could be made to the bycatch policy and its implementation:

- Explicit recognition that as part of an ecosystem-based approach, encompassing the fishing industry's impact on the entire marine environment, bycatch policy forms an essential element of the overall fisheries policy approach by addressing all interactions between living creatures and fishing operations.
- A continuous and comprehensive classification scheme that ensures all elements of the marine environment are addressed either through the bycatch policy, harvest strategy policy or an ecosystems policy/approach.
- The defining of catch components, especially commercial species, bycatch, byproduct and discards.
- Recognition that the resources to address bycatch policy are necessarily constrained, and a risk-based approach is unavoidable. Recognition that this is particularly so in fisheries where the costs of management are cost recovered from the fishers. This further recognises use of the AFMA ecological risk assessment and risk management framework and enhancing this in a revised policy and associated guidelines.
- Use of quantitative reference points and performance measures encourages consistency of treatment across fisheries and potentially jurisdictions and places science at the forefront of the decision-making process.
- Assessment of the cumulative impact on species to be assessed to the extent possible and practicable. Recognition that cumulative assessments and subsequent management responses are challenged by cross-jurisdictional management.
- Establishment of detailed implementation guidelines to aid consistent implementation of the policy.
- Recognition that initiatives that increase transparency and public confidence in the decision-making processes associated with Commonwealth fisheries will benefit the industry (by an improved consumer response) and potentially increase the resources available for fisheries management.
- Recognition that a major element of the bycatch policy is monitoring the effectiveness of different initiatives and the need to address the high cost of collecting reliable performance data.
- Species protected under the EPBC Act to be managed differently to other bycatch species.

Objectives and definitions

The bycatch policy should be revised and the bycatch policy further developed and updated at regular intervals, preferably every five years based on the best available information.

While a range of views about effectiveness of the policy were expressed, all stakeholders agreed the policy provided an important framework to guide management of bycatch in Commonwealth fisheries.

During the review, stakeholders agreed to retain a bycatch policy; however, this policy needed revising to provide clarity on what bycatch is, the objective of the policy and further prescription around managing bycatch in Commonwealth fisheries.

In addition, the bycatch policy would most effectively be revised and further developed within a framework of a continuous set of policy instruments for fisheries management, which address all relevant aspects of fisheries management (including commercially targeted species, byproduct, bycatch, threatened and endangered species and ecosystems) and its impact on the marine environment.

The revised bycatch policy should recognise that it is in Australia's interest to have an efficient, competitive and sustainable fishing industry.

When pursuing and implementing ecologically sustainable development and precautionary approaches, cost impacts on the sector should also be considered, including sources of funding for managing the environment. The cost effectiveness of new measures implemented in a revised policy need to be balanced against the costs the fishing industry already contribute to management and the relative public and private benefits.

A new definition of bycatch

It is proposed that a revised bycatch policy would define bycatch as:

Species that physically interact with fishing vessels and/or fishing gear and which are not usually kept by commercial fishers.

Where: 'Interact(ion)' includes any physical contact with a species and includes all catches (for example, hooked, netted, entangled), discards and releases and collisions with these species.

'Not usually kept' will be applied on a fishery-by-fishery basis. Further guidance on how this will be assessed and determined will be developed and provided in implementation guidelines for the policy.

'Physically interact with' excludes attached sessile organisms. These will be managed under a future ecosystem policy.

This definition of bycatch does not include discards of commercial species.

A revised definition of bycatch gives greater clarity to stakeholders on what components of a commercial fishing catch are managed under the bycatch policy and what would be managed under the harvest strategy policy or the ecosystem policy.

Proposed objectives

The proposed objective for a revised bycatch policy is:

- To ensure the long-term sustainability of bycatch species by managing fishery-related impacts in a manner consistent with the principles of ecologically sustainable development (which includes exercise of the precautionary principle). By reducing risk, and minimising bycatch and the mortality of bycatch that cannot be avoided.

Sub objectives

- Managing the risk to bycatch species from fishing-related impacts, to pursue the maintenance of bycatch populations and rebuilding them where necessary, to levels consistent with maintaining their biological productivity and functional role in the ecosystem.
- Fishing operations are conducted in a manner that avoids the mortality of, or injury to species listed as protected species listed under the EPBC Act and species prohibited from take under the FM Act recognising that there may be a need to recover populations of species listed in these categories.

Where: 'Protected species' are those which under Part 13 of the EPBC Act require a higher degree of protection.

Principles

Principle 1: The policy framework considers the effects of fishing on all species.

The revised bycatch policy should, with the harvest strategy policy, encompass the effects of fishing on all commercial and bycatch species (including protected species) and provide clarity around which policy applies to individual species.

A separate policy statement on managing fisheries related impacts on habitats, communities and ecosystems is proposed to be developed. The combination of these three policies would constitute an ecosystem-based fisheries management approach.

The revised policies should ensure clarity around which species are covered by which policy, that all species are covered by one policy or the other and that an individual species should not be subject to both policies at the same time in the same fishery. There should be transparency and clear criteria around how a species may move between the two policies. A species classified as a commercial species in one fishery will be managed under the harvest strategy policy.

This will recognise that the level of management response or approach would be applied according to the level of identified risk to a species and available information and this management response or approach would not lessen whether it is managed under the bycatch or harvest strategy policy.

Principle 2: EPBC Act listed species will continue to be managed differently under a revised bycatch policy and afforded high levels of protection.

Bycatch species that protected under the EPBC Act will continue, under a revised policy, to be managed under the FM Act separately to other bycatch species consistent with the legislative requirements of the EPBC Act. This aims to make it explicit in the policy for greater clarity.

Some species that fishers may catch as bycatch require different levels of protection under the EPBC Act. The term 'protected species' means all species protected in Part 13 of the EPBC Act, including whales and other cetaceans and listed threatened, marine and migratory species. Species listed as threatened under the EPBC Act may be vulnerable, endangered or critically endangered under the EPBC because they are facing a level of high risk of extinction in the wild. These species need recovery in Australia and should be afforded different protection and consideration than other bycatch species. Species listed under the international conventions and agreements to which Australia is party, are also protected under the EPBC Act in the listed migratory category which includes species such as some sharks, birds and mammals. Interactions with species protected under the EPBC Act are considered in the assessment of individual fisheries undertaken by SEWPaC.

A revised bycatch policy will detail the specific requirements under the EPBC Act, including taking all reasonable steps to avoid the mortality of, or injuries to protected species, reporting obligations and implementation of actions under recovery plans and threat abatement plans.

This also includes species that are prohibited from take by commercial fishers under the FM Act.

Principle 3: A tiered approach should be applied to the assessment and management of bycatch species (excluding protected species).

Bycatch species (excluding those protected under the EPBC Act or FM Act) should be assessed and managed by the level of interaction, and according to the level of understanding and risk of the impact of the interaction. The overriding principle being that the less known about the impact of an interaction, the more precautionary the assessment and management process. This approach could involve using trigger points, explicit and/or quantitative decision rules and reference points that ensure consistency of policy application across species and across fisheries.

A tiered approach should be applied to assessing and managing bycatch species (excluding protected species) in all Commonwealth managed fisheries. This could involve an initial risk-based assessment followed by a continuum of assessment and management approaches, depending on data availability and risk. Selection of appropriate monitoring and management approaches will be commensurate to the risk posed by fishing related impacts; greater levels of management, monitoring and/or assessment would be applied where greater risk to bycatch applies.

This recognises the data-poor nature of most bycatch species, the fact that management should respond to the level of risk to bycatch species populations and the need for cost-effective fisheries management. This will also recognise the need to use the best available science to inform management decisions. The trade-off between catch, cost and risk is implicit in this decision process.

Where collection of required data is considered justifiable and affordable, appropriate reference points and related decision rules could be applied to managing fishery impacts on high risk bycatch species. These may be in the form of trigger limits, which trigger increased data collection or management responses, or risk-based reference points which trigger agreed management responses.

This builds on the experience of the harvest strategy policy, in terms of having pre-agreed performance indicators and management responses. However, it does not suggest the development of management strategy evaluation tested harvest strategies.

Principle 4: The assessment and management of bycatch species should take into account the cumulative impact of all Commonwealth managed commercial fishing activities and the contribution of all management measures.

To align with the harvest strategy policy, assessment of Commonwealth fisheries impacts and risks to bycatch species needs to consider the effect on species of all Commonwealth fisheries, where feasible. AFMA has been moving towards cumulative risk assessments. However, the current fishery-level ERA/ERM approach can underestimate the overall risk to a species; by developing approaches that can consider cumulative effects, management responses also need to consider them.

Similarly, in managing to ensure sustainability of impacts on bycatch species, consideration should be given to the protection provided by all management measures in place, including fisheries closures and marine protected areas. The contribution of bycatch species to recreational or Indigenous fishing should be a consideration when developing management responses within Commonwealth fisheries. The assessment of bycatch species should also consider, where catch information is available, the cumulative effects on bycatch from all commercial, recreational and/or Indigenous fishing operators, both domestic and international.

Commonwealth management of bycatch species will focus on fishing activities in Commonwealth waters.

Consideration should also be given to commercial fishery impacts on bycatch species of importance to the recreational or Indigenous fishing sectors.

Further work will be required across jurisdictions to develop better approaches to assessing cumulative impacts and where necessary developing co-ordinated management responses.

Principle 5: The revised bycatch policy should be underpinned by implementation guidelines.

The experience with the harvest strategy policy shows that implementation guidelines are critical in implementing a policy. Guidelines can also be updated as new information becomes available. The specification of implementation mechanisms, such as using bycatch action plans or bycatch and discard work plans to document fishery responses to bycatch management under the policy (could also be expanded to detail what each fishery classifies as target, byproduct and bycatch), will be considered in the context of the guidelines. Mechanisms for their development and review would also be included.

The harvest strategy policy is supported by guidelines for its implementation. The policy focuses on high-level objectives, principles and obligations, whereas the guidelines provide detailed practical assistance, much of it technical in nature, for developing and implementing effective harvest strategies under the policy.

Consideration of a broader range of objectives, as under an ecosystem-based approach, including social and economic considerations, acceptable impacts, social licence and cost effectiveness, could be considered in the guideline development.

It is considered valuable to develop implementation guidelines for a revised bycatch policy, analogous to those for the harvest strategy policy, they would be developed after adoption of a revised bycatch policy.

The guidelines would provide direction on how to implement the revised bycatch policy and would be intended to support bycatch management across the full range of Commonwealth fisheries. They would also provide important contextual information to help interpret the policy and technical information to support bycatch management in Commonwealth fisheries.

Stakeholders were in strong agreement on developing implementation guidelines, as currently in place for the harvest strategy policy, where guidelines are used to provide clear advice on complex, technical information and processes.

Technical aspects of the bycatch policy that could be dealt with in more detail in implementation guidelines would include:

- guidance on application of the tiered approach to bycatch management, undertaking ERAs, methodology to be used in different situations, dealing with uncertainty and evaluation of cumulative effects
- guidance of performance evaluation, to measure the effectiveness of bycatch management plans and mitigation measures in achieving objectives
- development of appropriate reference points for bycatch management and performance evaluation
- directing the outcomes of ERAs to drive and focus research needs and data collection priorities for each fishery
- approaches to conducting quantitative sustainability assessments and implementation of formal bycatch management strategies, for fisheries with adequate information
- development of cost-effective ERM approaches to addressing risk identified in risk assessments or sustainability assessments
- appropriate approaches to estimating bycatch interaction rates and mortality estimates

- methodologies for assessing cumulative impacts
- stakeholder engagement strategies.

The ABARES FRDC-funded project *Improving the management of bycatch: standards for the effective mitigation of fisheries bycatch* (Kirby and Ward, 2013) could be a useful starting point for developing bycatch implementation guidelines. The project identified seven standards intended to help fishery managers adopt a structured and cost-effective approach to identifying emerging bycatch issues, assessing options to manage bycatch (including mitigation measures) and assessing the performance of those measures. Guidelines could provide practical assistance in implementing the standards.

Substantial technical work is likely to be needed to underpin development of robust guidelines, as well as stakeholder engagement in considering the most appropriate implementation pathways.

Principle 6: Development of a performance monitoring and reporting framework.

Performance monitoring and reporting should be explicit and transparent at both the policy and fishery level. A purpose-designed evaluation strategy will be needed.

The current policy lacks a performance monitoring, reporting and evaluation framework which has created difficulties in measuring the effect of bycatch mitigation measures.

A revised policy performance monitoring strategy should include developing key performance indicators and collecting data and information on bycatch and impacts on species that would be used to measure success of the bycatch policy and associated management measures. This recognises the importance of a strong information base, commensurate with risk, improved data quality and identification of species priorities. It also responds to the need to demonstrate the effectiveness of fisheries management responses more broadly. This approach provides broad accountability to the community on the activities of a public resource.

AFMA's management framework provides points for engagement with the fishing industry and other stakeholders (through MACs) and formulation of scientific advice (through RAGs). These provide potentially useful mechanisms for identifying, managing and monitoring bycatch issues. However, management to date has largely focused on commercial species management under the harvest strategy policy. Evaluation of performance of bycatch mitigation measures has been impeded by a combination of poor information for many bycatch species, the high cost of increasing observer data collection and a lack of reference points and performance measures.

The separate components to performance evaluation are:

- evaluation of progress in developing and implementing management plans and mitigation measures designed to achieve bycatch management objectives
- evaluating performance of these measures in achieving those objectives, and minimising bycatch risk, interaction rates and mortality.

More emphasis has been placed on evaluating and reporting on implementation of management plans than on the impact of mitigation measures, and substantial progress has been made on implementation. Less progress has been made on improving monitoring, and reporting on the performance of mitigation measures in actually reducing bycatch rates.

One option for providing increased emphasis and opportunity for bycatch management performance evaluation is to establish a dedicated technical bycatch working group to provide expert review of draft bycatch action plans (or similar) before they are implemented and to regularly monitor their performance in achieving the objectives established in bycatch action plans (or similar).

Further consideration is required on the question of the degree to which resource constraints arising from the Commonwealth's cost recovery and beneficiary pays policies may constrain the ability to monitor and assess the effectiveness over time of management measures.

Principle 7: Alignment with international obligations.

The revised policy should ensure bycatch management is aligned with Australia's international obligations.

Australia is party to a range of international binding and non-binding agreements. The bycatch policy should ensure alignment with these agreements. Where responses to bycatch management in Commonwealth managed fisheries are higher than international obligations Australia will promote its level and standards internationally as best practice.

8 Further work and research priorities

Implementing a revised policy

Successful implementation of a revised policy is contingent on a clear and decisive implementation strategy that has strong stakeholder ownership. The review identified some implementation limitations of the current policy. The inability to track the impact and measure the success or failure of bycatch management actions in Commonwealth managed fisheries is evident; all stakeholders share the common goal of improving this outcome under a revised bycatch policy. Development of a revised policy will necessarily include ongoing stakeholder engagement and input to deliver enhanced understanding and reporting on the success of assessment, management and mitigation of bycatch measures. Consultative structures will be formed to revise and update the policy and develop performance measure outcomes, and to implement an adaptive management framework around bycatch interactions and mitigation needs. Both actions will take account of considerations of the catch–cost–risk trade-off when recommending management responses.

The net economic returns (profit) to a fishery will, in some cases, determine what decisions a fishery can afford to make. For example, it may be more cost effective to address an issue by immediate, precautionary management action based on current information, than to invest in additional data collection and improved understanding of the issue.

A revised policy would provide both high-level (under legislation and objectives) and implementation-level direction on the implementation framework to stakeholders under guidelines. It would provide advice on ongoing monitoring and obligations; develop ongoing research and development priorities; and develop implementation guidelines to ensure a consistent approach to bycatch management.

Identifying research priorities

This review identified a number of research priorities. These primarily fill gaps in developing a revised policy and associated guidelines which would seek to improve management of bycatch in Commonwealth fisheries. These include:

- developing the application and implementing a tiered approach (including risk-based and analytical) for assessing and managing bycatch
- developing and implementing a method to assess and manage cumulative effects across and within fisheries
- developing the process for classifying species as commercial or non-commercial
- developing guidelines to implement a revised policy
- developing cost effective monitoring, reporting and evaluation effectiveness of management measures.

The review recommends further work on the above priorities, in particular the tiered approach to bycatch management for use in the revised policy and guidelines. This would also provide an improved understanding of the biology and population characteristics of protected species, to reduce risks of such species requiring listing under the EPBC Act.

Developing a performance management and evaluation framework

The review recommends development of a performance evaluation framework to enable the review and evaluation of future bycatch management and the effectiveness of a revised policy. This would form the basis of a performance evaluation framework, of which the separate components are:

- evaluating progress on developing and implementing management plans and mitigation measures designed to achieve bycatch management objectives
- evaluating performance of these measures in achieving those objectives, and minimising bycatch risk, interaction rates and mortality.

More emphasis needs to be placed on evaluating and reporting implementation of management plans and mitigation measures, and substantial progress has been made on implementation. The review noted that to date there has been less progress has been made on improving monitoring and reporting performance of mitigation measures in actually reducing bycatch rates.

Glossary

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
AFMA	Australian Fisheries Management Authority
bycatch policy	<i>Commonwealth Policy on Fisheries Bycatch 2000</i>
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFF	Department of Agriculture, Fisheries and Forestry
SEWPaC	Department of Sustainability, Environment, Water, Population and Communities
eNGOs	environmental non-government organisations
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERA	ecological risk assessment
ERM	ecological risk management
FA Act	<i>Fisheries Administration Act 1991</i>
FAO	Food and Agriculture Organization of the United Nations
FM Act	<i>Fisheries Management Act 1991</i>
FRDC	Fisheries Research and Development Corporation
harvest strategy policy	<i>Commonwealth Fisheries Harvest Strategy Policy and Guidelines</i>
MAC	management advisory committee
national policy	National Policy on Fisheries Bycatch 1999
PSA	productivity susceptibility analysis
RAG	resource assessment group
SAFE	Sustainability Assessment for Fishing Effects
UNCLOS	United Nations Convention on the Law of the Sea 1982
UNFSA	United Nations Fish Stocks Agreement 1995

References

Bensley, N, Stobutzki, I & Begg, G 2010, *An integrated approach to bycatch management: addressing key issues to progress the implementation of national plans of action*, Bureau of Rural Sciences report prepared for the Department of Agriculture, Fisheries and Forestry, Canberra.

FAO 1995, Code of conduct for responsible fisheries, 41 pp, available at fao.org/docrep/005/v9878e/v9878e00.HTM.

FAO 2003, *Technical guidelines for responsible fisheries*, available at fao.org/docrep/005/Y4470E/Y4470E00.HTM.

FRDC 2011, *Fisheries Research & Development Corporation 2011 Stakeholder Tracking Survey Results*, 42pp, available at <http://frdc.com.au/research/Documents/FRDC%20Stakeholder%20Tracking%20Report%20-%202011%20-%20Final.pdf>

Hobday, AJ, Smith, ADM, Stobutzki, IC, Bulman, C, Daley, R, Dambacher, JM, Deng, RA, Dowdney, J, Fuller, M, Furlani, D, Griffiths, SP, Johnson, D, Kenyon, R, Knuckey, IA, Ling, SD, Pitcher, R, Sainsbury, KJ, Sporcic, M, Smith, T, Turnbull, C, Walker, TI, Wayte, SE, Webb, H, Williams, A, Wise, BS & Zhou, S 2011, 'Ecological risk assessment for the effects of fishing', *Fisheries Research*, vol. 108, pp. 372–84.

Kirby, DS & Ward, P 2013, Improving the management of bycatch: standards for the effective mitigation of fisheries bycatch, ABARES report to client prepared for the Fisheries Research and Development Corporation, Canberra, May 2013, ABARES project: 43161, FRDC project: 2010/046.

Penney AJ, Kirby DS, Cheshire K, Wilson M & Bray S 2013. Technical review for the Commonwealth Policy on Fisheries Bycatch: risk-based approaches, reference points and decision rules for bycatch and byproduct species, ABARES, Report to client prepared for the Fisheries Research and Development Corporation, Canberra, May 2013, FRDC project: 2011/251.

Scandol, J, Ives, M & Lockett, M 2009, *Development of national guidelines to improve the application of risk-based methods in the scope, implementation and interpretation of stock assessments for data-poor species*, Industry & Investment NSW, Cronulla Fisheries Research Centre of Excellence, FRDC Project 2007/016.

Tuck, GN, Knuckey, I & Klaer, NL in press, *Informing the review of the Commonwealth policy on fisheries bycatch through assessing trends in bycatch of key Commonwealth fisheries*, FRDC Project 2012/046.

UN 1995, *The United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*, 40 pp available at un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm.

UN 1982, *United Nations Convention on the Law of the Sea*, 208 pp available at un.org/depts/los/convention_agreements/texts/unclos/UNCLOS-TOC.htm.

Appendix A – Terms of Reference for the Review

Terms of reference for the review of the Commonwealth Policy on Fisheries Bycatch 2000 were agreed to by the Minister for Agriculture, Fisheries and Forestry and the Minister for Sustainability, Environment, Water, Population and Communities.

A revised Commonwealth policy on fisheries bycatch will respond to key drivers including:

- Review of the harvest strategy policy, noting that a key objective of both policy reviews is ensuring they are aligned and complementary.
- Review of the *Environment Protection and Biodiversity Conservation Act 1999* – amendments giving effect to the government's response to the review will be considered by the Parliament in 2012. Consideration will need to be given to the interaction with fisheries legislation.
- Streamlined and increased efficiency of fisheries regulation, with the aim of reducing the regulatory burden on the fishing industry.
- Activities currently in place in response to bycatch-related objectives of the *Fisheries Management Act 1999*, and the 2005 Ministerial Direction.
- Completion of the marine bioregional planning process.

A revised fisheries bycatch policy may also contribute to:

- Improving the public perception and confidence in Australian fisheries by demonstrating the sustainability of fisheries, particularly in relation to interactions with protected species, other bycatch and the broader marine environment.
- Maintaining and increasing demand and market access for Australian seafood, in response to changing expectations from markets with respect to environmental stewardship.

Objective

To improve the management of bycatch in Commonwealth fisheries by developing an integrated policy and implementation framework that links with the harvest strategy policy and supports current environmental and fisheries legislative requirements.

The objective of the review is also to develop a framework that contributes to greater management certainty for fishers ensures the achievement of the environmental outcomes and increases confidence by the retail sector, consumers and the general public about the sustainability of Australian seafood.

While not limiting its scope, it is intended that the review of the bycatch policy will:

- Clarify the role of the bycatch policy within the context of an ecosystem approach to fisheries management and the implementation of ecologically sustainable development objectives.
- Identify and include reference to the domestic and international bycatch regulations and obligations with which Australian fisheries must comply.
- Review and assess the adequacy and application of existing definitions of bycatch, byproduct and discards, concurrently with the harvest strategy policy review. The current definitions in the policies require clarification to remove uncertainty about the application to byproduct and discards of byproduct or target species. It is anticipated that management of byproduct and discards of byproduct or target species will be primarily addressed by the review of the harvest strategy policy.
- Review the bycatch policy's objectives within the current policy and legislative environment.
- Consider and assess the robustness and applicability of risk based approaches to bycatch management for species or groups of species, taking into account their biological status, data availability and other factors.
- Evaluate the efficacy and appropriateness of reference points and structured decision rules in meeting the legislative and policy objectives for some bycatch species and/or groups.
- Review approaches to incorporating and addressing the potential cumulative impacts of fisheries' interactions with bycatch.
- Strengthen the existing bycatch management tools and arrangements (including bycatch and discard work plans, ecological risk assessment and management and national plans of action) through mechanisms that will enhance benchmarking, performance monitoring and reporting.
- Consider mechanisms to strengthen and streamline inter-agency collaboration, prioritisation and decision-making, to achieve increased transparency and certainty for stakeholders.
- Develop guidelines for stakeholder engagement on bycatch issues and their management.
- Evaluate whether further guidance on mechanisms for considering the social and economic aspects of bycatch management approaches is needed and how these aspects fit within the principles of ecologically sustainable development.
- Identify gaps, needs and priorities for future bycatch research that could be incorporated into strategic research plans.

In addition, the revised bycatch policy will be accompanied by a framework to facilitate implementation, and monitor progress and effectiveness of policy implementation.

The review will also take guidance from the recommendations from the DAFF ABARES 2010 review (Bensley et al, 2010) and the current Fisheries Research and Development Corporation (FRDC)-ABARES-AFMA bycatch standards project.

Scope

The review will provide a more effective and streamlined approach for the management of bycatch in Commonwealth fisheries. It will not extend to state and territories but DAFF will present the outcome at Australian Fisheries Managers Forum (the forum comprises heads/CEOs of the Australian and state and territory government agencies responsible for fisheries). The bycatch policy review will focus primarily on the treatment of bycatch, including threatened, endangered and protected species. It will also have regard to how the management of habitats and communities, which form part of ecosystem-based fisheries management, could be incorporated into Australian fisheries policy in the longer term. It is expected that the new policy will be aligned with, and operate alongside the Commonwealth Fisheries Harvest Strategy Policy.

Appendix B – Advisory Committee Members

Bycatch Review Interagency Steering Committee

Organisation	Nominated Member
Department of Agriculture, Fisheries and Forestry (DAFF)	Mr Ian Thompson (Chair)
Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC)	Mr Stephen Oxley
Australian Fisheries Management Authority (AFMA)	Dr Nick Rayns
Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)	Dr Ilona Stobutzki

Bycatch Review Advisory Committee

Organisation	Nominated Member
Department of Agriculture, Fisheries and Forestry (DAFF)	Mr Ian Thompson (Chair)
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Dr David Smith
Fisheries Research and Development Corporation (FRDC)	Dr Patrick Hone
TRAFFIC	Mr Glenn Sant
Humane Society International (HSI)	Ms Alexia Wellbelove
Recreational Fishing Representative	Mr Grahame Williams
Commercial Fishing Industry	Mr Simon Boag
Commercial Fishing Industry	Mr Stuart Richey
Commonwealth Fisheries Association (CFA)/National Seafood Industry Alliance (NSIA)	Ms Trixi Madon
Australian Fisheries Management Authority (AFMA)	Dr Nick Rayns
Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC)	Mr Geoff Richardson
Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)	Dr Ilona Stobutzki

Secretariat

Organisation	Nominated Member
Department of Agriculture, Fisheries and Forestry (DAFF)	Mr Gordon Neil
Department of Agriculture, Fisheries and Forestry (DAFF)	Ms Shalan Bray
Department of Agriculture, Fisheries and Forestry (DAFF)	Ms Danielle Wills
Department of Agriculture, Fisheries and Forestry (DAFF)	Ms Mandy Goodspeed

Appendix C – First Workshop Report



Australian Government

Department of Agriculture, Fisheries and Forestry

Report Stakeholder Workshop - Review of the Commonwealth Policy on Fisheries Bycatch Rydges Lakeside – Canberra 21 June 2012

Introduction

The Fisheries branch of the Department of Agriculture, Fisheries and Forestry (DAFF) convened a one day stakeholder workshop to facilitate stakeholder engagement and inform an issues paper to be prepared as part of the review of the *Commonwealth Policy on Fisheries Bycatch* (the Bycatch Policy).

The intent of the workshop was to raise and discuss issues to be addressed through the policy review process and not to necessarily obtain agreement on any issue among stakeholders. There was general agreement on a number of issues at the workshop and this report has aimed to capture such agreement when this was evident. Nevertheless, this report does not aim to fully represent all stakeholders' views that were either put forward at the workshop or which may be developed or conveyed during later stages of the policy review process, but to capture a summary of the main issues discussed.

The workshop was attended by representatives from the fishing industry, environmental non-government organisations, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the Fisheries Research and Development Corporation (FRDC), the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC), the Australian Bureau of Agricultural Resource Economics and Sciences (ABARES), the Australian Fisheries Management Authority (AFMA) and DAFF.

Mr Sandy Morison (independent consultant) chaired the meeting. The Chair observed that key stakeholders were well represented with the exception of the recreational fishing sector and noted advice that DAFF had received apologies from two recreational fishing invitees. The administrative aspects of the meeting and the attendance list are reported in Attachment 1.

Overarching principles and approaches broadly discussed during workshop

That DAFF harmonise the Bycatch Policy with the Commonwealth Harvest Strategy Policy and Guidelines (HSP) where possible.

That there should be no gaps between the revised policies and that they address the transition of species between them.

Provisional support for reviewing definitions for catch components to provide consistency across the policies, noting that the revised definitions will need 'testing' later in the context of revising both policies.

That the Bycatch Policy reviews and seeks to confirm whether risk-based approaches such as the Ecological Risk Assessment (ERA) process are preferred for identifying bycatch management priorities.

That the Bycatch Policy be updated to reflect current obligations under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)⁵, and international fisheries and conservation conventions.

That the revised Bycatch Policy acknowledges reductions in bycatch across Commonwealth fisheries since the initial policy was implemented (where appropriate).

That a process be established for bycatch species that are also listed under the EPBC Act to facilitate a more consistent and transparent transition to successful mitigation outcomes.

Workshop outline

The workshop was broken into five main sessions that covered

1. Stakeholder identification of issues
2. What is fisheries bycatch?
3. Review of bycatch policy's objectives and principles
4. Approaches to bycatch management and recent technical reviews and
5. Risk-based approaches to bycatch management (see Attachment 1 for the agenda).

Within each session there was a mix of brief presentations followed by discussion in groups and concluding with a brief reporting back from each group.

An initial list of issues was presented to the workshop which included issues that had been previously identified during a meeting of the Bycatch Policy's Advisory Committee; two background papers provided by environmental non-government organisations (including Humane Society International, TRAFFIC, World Wildlife Fund and the Australian Marine Conservation Society) and from discussions with some invited participants. Background papers were also provided for sessions 2 to 5.

Unsurprisingly, given the inter-related nature of the topics, issues were raised in some sessions which were also relevant to topics of other sessions. The report below has attempted to collate these issues regardless of the session in which they were raised. A summary of the issues raised during the workshop's breakout sessions is provided in point form in Attachment 2.

SESSION 1 allowed a representative of each of the main groups represented to provide an overview of what they saw as the main issues concerning bycatch that they thought should be addressed through the review of the Bycatch Policy. Any new issues were added to the initial list of issues as they were raised. At the end of this session all workshop participants were then invited to identify their most important issues or general areas of interest by placing three priority markers on the lists of issues. This process indicated the preliminary list of issues was relatively comprehensive and all the proposed workshop sessions covered issues of importance to stakeholders. The process also identified that Environmental Offsets was an issue of interest to the group and time was therefore allocated during the day to allow those who were interested to explore this issue. A representative

⁵ The EPBC Act is being reviewed and obligations under the revised Act may differ from those under the current Act.

from DSEWPac agreed to provide this group with some background to how offsets were used in a terrestrial setting. A list of issues identified and the priorities assigned to them is attached using the headings under which they were presented to the workshop (Attachment 3).

SESSION 2 began with a brief introductory presentation by ABARES on potential principles and definitions for the revised Bycatch Policy. This included a proposal for a basic distinction between commercial species (species that are caught and kept by commercial fishers) and non-commercial species (those that are not kept by commercial fishers) with bycatch a subcomponent of this category (species taken incidentally in a fishery, and which are always discarded). Commercial species was proposed as a collective term to cover key commercial species (a term used in the HSP), rebuilding stocks and byproduct species.

The workshop appreciated work by DAFF and ABARES in reviewing the definitions for categories of catch impacted by fishing operations including how these might be simplified to suit contemporary settings. Participants observed that it was more about categorising operator behaviour which applied across the continuum from commercial species which were almost always retained to bycatch species which were always discarded. The workshop recognised that industry and managers were cautious about this given that management obligations and workload might change depending on which policy a species or species group fell under and noting that species may move between categories over time. Participants at the workshop, however, generally accepted that standardisation and possible rationalisation of definitions would be an important step in establishing consistency across the Bycatch Policy and the HSP. Some participants indicated provisional support for the proposed terminology but recognised that the revised definitions would need to be 'tested' with real examples and against the proposed management responses of both draft policies particularly with respect to cost effective management.

Environmental non-government representatives, however, reiterated the views they had expressed in their background paper that the Policy be renamed as the Commonwealth Discard Management Policy, that catch should be characterised as either "retained" (whether it be always or sometimes) or "discarded", that this terminology, rather than target, byproduct and bycatch, should be used to delineate the respective responsibilities of the HSP and Bycatch Policies, and that all retained species be subject to the policy settings of the revised HSP and that management of discards of all components of the catch be guided by the revised Commonwealth Bycatch Policy.

It was also noted that the proposed definitions did not explicitly deal with catches by the recreational sector other than to say that management (whether of commercial species or bycatch) must consider all sources of fishing mortality and that this may include recreational catches. Several workshop participants considered that recreational fish species required explicit recognition in the review of the Bycatch Policy. State and Territory governments are generally responsible for the day-to-day management of recreational fisheries, nevertheless, the Australian Government is responsible for managing several species that recreational anglers catch (i.e. retain or release). These include species that might be considered bycatch in commercial fisheries (e.g. sailfish) or species that commercial fishers are not permitted to keep (e.g. black marlin) and shared species, like striped marlin, which are sought by recreational anglers and are also retained by commercial fishers.

The background report suggested the term 'threatened or otherwise protected species' as an alternative to the previously used 'threatened, endangered and protected species'. It was then suggested that the term 'protected species' would be sufficient to cover both 'threatened' and 'endangered' species as these were types of protected species.

SESSION 3 considered the context for the Bycatch Policy including potential general principles. These discussions were aided by a background paper that outlined the range of domestic and international instruments and contexts that are relevant to the proposed revised policy.

It was suggested that it would be valuable to aim for a level of consistency among the obligations and actions required for species listed under the EPBC Act and those required by the revised versions of the Harvest Strategy and Bycatch Policies.. A number of participants cautioned that measuring performance against bycatch management actions would often be characterised by uncertainty given our limited understanding of the biology of bycatch species, time series data limitations and assessment capacity (resourcing).

It was suggested that the Bycatch Policy would also need to be updated to reflect the Australian Government's obligations, both under domestic legislation and international fisheries and conservation conventions. The workshop considered that a more contemporary policy would strengthen the Australian Government's input to the FAO (Committee on Fisheries (COFI) and to Regional Fisheries Management Organisations (RFMOs). Participants suggested that the Bycatch Policy should also try and anticipate any domestic implications of changes in the status of species arising from decisions made in accordance with international conventions to which Australia is a signatory i.e. Bonn (Migratory Species) Convention and RFMOs.

A number of stakeholders encouraged DAFF to place a greater emphasis on outcomes in the revised Bycatch Policy. The workshop was generally comfortable with a focus on outcomes (and performance criteria) however this prompted consideration of whether the revised policy's objectives needed to be clarified. Participants suggested resolving the following would help define the revised policy:

- was the reduction in the amount of bycatch the main objective?; or
- was the aim to reduce bycatch rates? (noting fishing effort and hence total bycatch may vary over time); or
- was the aim to reduce the risk to bycatch species to acceptable levels? (i.e. low risk in an ERA)

It was suggested that the management responses required by a revised Bycatch Policy should be consistent with any revised HSP approach to data poor byproduct species.

It was noted that maximising net economic returns to the community was a legislative objective and part of the HSP and this objective could also be recognised in the bycatch policy. It was suggested that, particularly in the case of multi-species fisheries, any overriding objective for bycatch reduction could be contrary to the net economic returns.

There was concern expressed that the Bycatch Policy shouldn't be just about reduction as we were now in a situation where marine reserves could be implemented and these and other policy and management advances need to be taken into account when assessing risk to bycatch species.

The workshop noted mixed support for maintaining an emphasis on reducing what was characterised as waste by the better utilisation and market development for bycatch species. Some participants, however, considered that avoiding, minimising and managing bycatch should be the primary objectives of the Bycatch Policy. Others were comfortable with better utilisation within sustainable parameters supported by risk assessments.

The workshop recognised however that the social perception of waste, particularly of iconic species, had the potential to compromise the handling of these matters if adverse publicity or lobbying ensued. The workshop noted that having a robust evidence base would assist in informing public debate on such matters.

Industry participants expressed concern that the revised Bycatch Policy had the potential to increase imposts for domestic operations while having no influence on market access or product labelling requirements for imported product from countries with lower environmental standards. The workshop noted that trade issues were a matter for the Department of Foreign Affairs and Trade but acknowledged industry concern about processes which could create 'higher hurdles' for local industry but which could only be promulgated internationally through Australia's advocacy in RFMOs.

SESSION 4 was introduced by a background paper that provided a brief overview of some recent technical reviews of fisheries bycatch. The session focussed on issues around management approaches to dealing with bycatch and whether a management strategy approach would be appropriate for bycatch.

SESSION 5 examined the use of risk-based approaches to bycatch management.

Issues raised in these sessions are presented together because of the extensive overlap between them.

The workshop noted that DAFF was also reviewing the HSP and there was support for the harmonisation of these policies where possible. It was suggested that it was important that policy principles, high level statements of intent, should be consistent across both the HSP and Bycatch policy. Some participants supported maintaining separate policies and indicated that it was important to maintain a clear policy spotlight on bycatch reduction. Participants noted that a level of consistency at the national level would also assist with the development and periodic review of National Plans of Action (NPOAs) which applied to all jurisdictions.

There were strong views expressed that both reviews need to ensure there were no gaps between the revised policies and that they provide explicit advice on the transition of species between them. It was recognised that there were significant scientific and economic reasons for not elevating the management of bycatch to standards set out in the HSP given it relied on stock assessment models and empirical assessments. It was also suggested, however, that there was scope for improvement and noted that recent reviews of bycatch management had identified the need for management actions to be referenced against quantitative or qualitative benchmarks. A number of participants, while supportive of better specification in the Bycatch Policy cautioned against creating a situation where we couldn't deliver against policy commitments.

The workshop, noting some support for integration of the policies, acknowledged scientific advice that full alignment may not be possible in a technical sense. A quantitative framework (some form of stock assessment) was needed to operate in accordance with HSP whereas more qualitative processes were often used to inform management actions under the Bycatch Policy. Although it is not a formal part of the current Bycatch Policy, CSIRO and AFMA have developed an ERA process which is a evaluation of risk to a wide range of ecological components, including bycatch. The workshop acknowledged that biological reference points had been formally adopted for some bycatch species (Gulper Sharks) and that it was possible that high risk bycatch species could form a basis for policy convergence/similar approaches between policies. The workshop recognised that Gulper Sharks were a complex example which had been driven largely by the nomination of two species for listing under the protected species provisions of the EPBC Act. The workshop also considered that a stand-alone Bycatch Policy may assist more cohesive engagement with state fisheries on bycatch issues which involved both jurisdictions by keeping bycatch elements separate from target species approaches.

The workshop noted that there was broad support for the ERAs⁶ both in the international scientific community, across some Commonwealth agencies and amongst domestic stakeholders. Participants observed the initial Bycatch Policy had driven improvements in approaches to addressing bycatch problems and considered the revised policy would be strengthened by anchoring it to a science based approach. The workshop also recognised that risk assessments are usually qualitative and that the outcomes of management responses for species assessed at higher risk may need to be reconciled against quantitative approaches/data (biological reference points, reduction in bycatch amount and/or rates). The workshop acknowledged that the extension of ERAs through Residual Risk and sustainability assessment for fishing effects (SAFE) assessments had helped further refine risk profiles for higher risk species through a more detailed examination of risk against fisheries' footprints and relevant management safeguards.

The workshop while comfortable with ERA approach noted that these were qualitative snapshots and as such were not linked closely to the level of fishing effort in the relevant sector. The workshop noted that the policy may wish to provide guidance on criteria for their review (time period, changes in the scale of the fishery etc).

Some participants at the workshop expected a revised Bycatch Policy could formalise the role of ERAs with respect to identifying and prioritising bycatch management responses and in this context noted a suggestion that the objectives could be aligned with risk status i.e. if a species is assessed as low risk then there should not be an obligation (or priority) to keep reducing catches. A number of participants considered that the obligation to pursue reductions in bycatch should continue to apply broadly but with effort and resources directed at higher risk species. Such actions should only be pursued to the extent that they are consistent with both the Fisheries Management Act and the EPBC Act.

The workshop understood that CSIRO had recently extended the ERA process to habitats and communities in line with an increased international focus and trend toward Ecosystem Based Fisheries Management. DAFF advised that while they were supportive of this work in terms of moving to ecosystem based fisheries management, the Department's intention was to confine the Bycatch Policy to species that were directly impacted by capture or contact with fishing gears.

It was noted that, since the inaugural Bycatch Policy was implemented, there had been a number of reforms and changes which had, for most fisheries, led to a significant reduction in bycatch. It was suggested that there had been a number of drivers behind this including the Bycatch Policy and bycatch action plans (BAPs) (listed in Attachment 2). It was suggested that the revised Bycatch Policy acknowledge this progress.

The workshop recognised that there had been significant improvements in the way Commonwealth fisheries were managed (including with regard to bycatch) since the current Bycatch Policy was launched in 2000.

The workshop observed that recent improvements in bycatch reduction had generally been achieved incrementally (improved monitoring, analysis, research, consultation and implementation of measures). Participants also recognised that for a number of bycatch situations, particularly in multi-species fisheries, achieving further reductions would require a ramping up of fisheries

⁶ ERAs – includes the suite of Ecological Risk Assessments, Residual Risk assessments and SAFE assessments

management effort and resources but may not produce proportional improvements because of the 'law of diminishing returns'.

The workshop noted that if the Bycatch Policy was to be more outcome focused then its objectives and performance criteria would need to be specified appropriately. A number of participants noted that the *Guidelines* to the Commonwealth Harvest Strategy had provided a valuable link between higher order policy and fishery settings and suggested a similar approach might help operationalise the revised Bycatch Policy.

In this context the workshop recognised calls for supporting the review with an analysis of trends in the volume and catch rates for bycatch species since the implementation of the current Policy. The workshop was broadly supportive of this in principle however noted differing views about such an exercise:

- That establishing robust trends for some fisheries or sectors, or some species categories (e.g. protected species) may be difficult based on data limitations, variations in fishing practices or gear, and changes in observer coverage and recording protocols.
- That there were substantial observer and survey datasets for a number of Commonwealth fisheries which contained reliable information on catch composition over much of this period.

A number of participants expressed support for a benchmarking analysis and considered it would help establish a basis and framework for measuring future progress on bycatch management.

The workshop noted that the initial policy required all Commonwealth fisheries to have an approved BAP and that AFMA had since expanded their scope to one of 'Bycatch and Discarding Work Plans'. The workshop noted that over this period that the BAPs had been supported with AFMA giving effect to a number of key bycatch related management measures in statutory instruments. The workshop noted a range of views on whether the revised Bycatch Policy should continue to mandate Bycatch and Discarding Work Plans. Industry participants noted that some fisheries with low bycatch levels really did not need Bycatch and Discarding Work Plans i.e. scallop fishery and Squid Jig sector. Other participants emphasised that it was important (for most fisheries) to have a tangible vehicle to get traction on bycatch issues.

There was general support for the use of risk based approaches such as ERAs to underpin the Bycatch Policy and for identifying priorities at the fishery level. Industry participants also noted that the Bycatch Policy, HSP, specific measures adopted in the individual fisheries and in particular the anticipated implementation of Marine Reserves could further reduce risks to many bycatch species and to the broader ecosystem and that it was important that policy settings and management was recalibrated against the current reality.

The workshop identified a number of circumstances where social factors could override the risk based framework normally relied upon to prioritise fishery specific responses to their obligations under the Bycatch Policy.

Other issues raised

Protected species

The workshop noted advice from DSEWPaC that the EPBC Act requires fishers to take all reasonable steps to avoid the killing or injuring of protected species, and for a fishery as a whole to not affect the conservation status of a protected species. The workshop recognised that the EPBC Act did have the capacity to allow fishing operations to continue provided an effective mitigation/management strategy was approved by the Minister for the Environment as part of a decision to maintain the

listing of a species as conservation dependent. Some participants at the workshop noted that the intent of the legislation was that impacts on protected species be avoided and minimised but suggested that, in the case of Australian Sea Lions, complexities associated with discrete sub-populations had now effectively changed the approach from one of continued bycatch reduction to one that was effectively based on an estimate of the maximum potential biological removal. The workshop noted that when issues became this acute the 'combined uncertainty' associated with estimating fishing impacts on a protected species population (whose population status may be also be uncertain) tended to drive highly precautionary management responses. The AFMA fishery managers added that this made it difficult to maintain industry access in these sort of situations and therefore harder to manage a transition to a future with much lower impacts.

The workshop encouraged DAFF and DSEWPaC, through the policy, to commit to the development of a 'whole of government position' on a risk based approach for protected species in order to provide a more transparent framework for improving statutory management arrangements in order to reduce mortalities to an acceptable minimal level.

The workshop also noted that public reaction in response to mortalities of some protected species also had the capacity to overwhelm policy and legislative responses.

Research /allied initiatives

The workshop noted advice that there was an emerging area of scientific investigation examining whether ecological impacts from highly selective fishing methods were in fact, as has previously been believed, lower than those methods which tended to take a slice of species across trophic levels (being termed a 'balanced harvest' approach⁷). It was suggested that the current Bycatch Policy was premised on the paradigm that a selective harvest approach was preferable and that any reduction in bycatch was a positive environmental outcome. Developments in this area may have an important bearing on policy in the future but accepted that the broader scientific and social acceptability of this approach, necessary for its use as a base for new policy, wouldn't be achieved in the short term. Participants noted that DAFF may want to consult more closely with relevant scientists with respect to when there might be some resolution and if this might coincide with next review period for the Bycatch Policy.

Use of Environmental Offsets

The workshop welcomed advice from DSEWPaC officers on the Department's consideration of environmental offsets⁸ (for terrestrial settings). Participants noted that the potential for such approaches had been canvassed (there are published papers on the approach) in relation to fishery interactions with seabirds. Participants were interested in the potential for such offsets to recognise the variety of ways that risks to bycatch may be mitigated. The workshop also noted that in some circumstances further investment/regulation in mitigation could threaten industry viability whereas similar amounts spend on other activities (for example on eradicating feral pests from seabird rookeries) could deliver better conservation outcomes. Although the issue of environmental offsets may fall outside the remit of the Bycatch Policy it was suggested that the policy might incorporate

⁷ Garcia, S.M. et al. (2012). Reconsidering the Consequences of Selective Fisheries. Science 335 2 March 2012 1045-1047.

⁸ The Australian Government defines environmental offsets as 'actions taken outside a development site that compensate for the impacts of that development - including direct, indirect or consequential impacts'.

some flexibility to recognise such arrangements if they were implemented under other mechanisms or through the marine bioregional planning process.

Other principles and approaches to be further discussed

Objectives – clarifying the overarching objective of the Policy on Fisheries Bycatch, is it to:

- reduce the amount of bycatch;
- reduce the catch rate of bycatch species;
- and/or reduce the risk to bycatch species

There was some support for an outcomes focused Bycatch Policy *but* it was suggested that, if the revised Bycatch Policy required that quantitative performance criteria be adopted at the fishery/sector level, then there also was a need for an analysis to benchmark:

- improvements made during the term of the inaugural Bycatch Policy; and
- a basis for measuring future trends (and effectiveness of bycatch management measures).

Next steps

The Chair advised that the draft report of this meeting would be circulated to all participants for comment and once finalised would help DAFF's Fisheries Branch frame an issues paper for public consultation. Ms Bray (DAFF) confirmed that DAFF would develop the issues paper in conjunction with the Bycatch Steering Committee and Advisory Committee and advised that, subject to other consultative processes, DAFF hope to release the revised draft issues paper for public comment in late September or October 2012.

Attachment 1 – Meeting Administration

Mr Morison (Chair) opened the meeting at 9:06 am and welcomed the participants. Mr Morison advised that he was independent to the review process and declared his chairmanship of the Ecologically Related Species Working Group (CCSBT), SESSF RAG and SlopeRAG. All participants introduced themselves and advised their affiliations(s) and three apologies were tabled by DAFF (Table 1). Mr de Fries (facilitator) advised that the meeting would be taped to assist with the record only and that the recordings would be erased once the meeting report was finalised.

The meeting worked through an agreed agenda which involved presentations by DAFF and ABARES officers and three workshop sessions which reported back to the plenary.

Mr Morison acknowledged DAFF's hosting of the meeting and thanked all participants for their energy and contributions. The meeting closed at 4:25 pm.

Table 1. List of attendees DAFF Stakeholder Workshop - Thursday 21 June 2012

Name	Sector/Organisation
Mr Sandy Morison	Facilitator (Chair)
Mr Anthony de Fries	Facilitator
Ms Trixi Madon	Commonwealth Fisheries Association (CFA)
Mr Simon Boag	CFA, South East Trawl Fishing Industry Association (SETFIA)
Mr Brian Jeffriess	CFA, Australian Southern Bluefin Tuna Industry Association (ASBTIA)
Mr Jeff Moore	CFA, Great Australian Bight Industry Association (GABIA)
Mr Stuart Richey	Richey Fishing Company
Mr Crispian Ashby	Fisheries Research and Development Corporation (FRDC)
Dr David Smith	Commonwealth Scientific and Industrial Organisation (CSIRO)
Mr Glenn Sant	TRAFFIC
Ms Alexia Wellbelove	Humane Society International (HSI)
Ms Shalan Bray	Department of Agriculture, Fisheries and Forestry (DAFF)
Mr Stuart Curran	DAFF
Mr Tim Karlov	DAFF
Mr Gordon Neil	DAFF
Mr Ian Thompson	DAFF
Ms Danielle Wills	DAFF
Dr David Kirby	Australian Bureau of Agricultural Resource Economics and Sciences (ABARES)
Dr Ilona Stobutzki	ABARES
Mr Simon Vieira	ABARES
Dr Peter Ward	ABARES
Ms Beth Gibson	Australian Fisheries Management Authority (AFMA)
Dr Nick Rayns	AFMA
Mr Patrick Sachs	AFMA / DAFF
Mr Nathan Hanna	Dept. of Sustainability, Environment, Water, Population and Communities (DSEWPac)
Mr Peter Peterson	DSEWPac
Mr Nigel Routh	DSEWPac
Apologies	Sector
Mr Chris Makepeace	Amateur Fishermen's Association of the Northern Territory (AFANT)
Mr Grahame Williams	Game Fishing Association of Australia (GFAA)
Ms Tooni Mahto	Australian Marine Conservation Society (AMCS)

Stakeholder Workshop

for the review of the Commonwealth Policy on Fisheries Bycatch

Thursday 21 June 2012

9:00 am to 5:00 pm

VENUE: Rydges Lakeside, 1 London Circuit

Canberra City ACT

Purpose: to draw out and discuss issues for the review of the *Commonwealth Policy on Fisheries Bycatch* (bycatch policy) leading to the development of an issues paper for public consultation.

AGENDA

Time	Item
9:00	Welcome / introductions
9:10	Terms of reference for the bycatch policy review and update on progress/process
9:30	Session 1: Stakeholder identification of key issues
10:30	<i>Morning tea</i>
11:00	Session 2: What is fisheries bycatch?
11:30	Session 3: Review of the bycatch policy's objectives and principles
12:30	<i>Lunch</i>
13:30	Session 4: Approaches to bycatch management and recent technical reviews
14:30	<i>Afternoon tea</i>
15:00	Session 5: Risk-based approaches to bycatch management
16:30	Summary on workshop outcomes and next steps
17:00	<i>Close</i>

Session 1: Each stakeholder/stakeholder group to identify their key issues and outline their key priorities/inclusions for a revised bycatch policy.

Session 2: What is fisheries bycatch? Discussion on bycatch definitions and types of bycatch, including protected species.

Session 3: Review and discussion on bycatch policy objectives and principles, including current legislative requirements, and domestic and international bycatch regulations and context.

Session 4: Discussion on approaches to bycatch management including the Natural Heritage Trust projects on wildlife bycatch management, draft bycatch standards, a harvest strategy approach to bycatch, cumulative impacts, reference points and structured decision rules.

Attachment 2. Summary of the workshop sessions

(Working Group presentations amalgamated)

Drivers of improvement of bycatch management

The workshop noted that a range of factors had contributed to improvements in fisheries management in the period since the launch of the Commonwealth Policy on Fisheries Bycatch – June 2000. Most participants considered that it would assist the review process to recognise those factors which had a positive impact on the management of bycatch. The workshop identified the following drivers (the list was not considered exhaustive):

- Implementation and ongoing application of strategic assessments and Wildlife Trade Operations for Commonwealth fisheries under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- Commonwealth Policy on Fisheries Bycatch and its requirement for Bycatch Action Plans, (now Bycatch and Discarding Plans) across Commonwealth fisheries.
- Longline Fishing Seabird Threat Abatement Plan, the National Plan of Action for the Conservation and Management of Sharks (Shark-plan) and the National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries (NPOA-Seabirds).
- Adoption of ecological risk assessments as the key information source for prioritising monitoring, research and management responses in relation to bycatch species.
- Implementation of the Commonwealth Harvest Strategy Policy (HSP) – the workshop noted that improvements in fisheries management arrangements for target species (pursuit of Maximum Economic Yield (MEY)) would also usually reduce impacts for bycatch species (by way of effort reduction).
- Reduction in the number of vessels following the 2007 Australian Government funded structural adjustment program.
- Significant investment by Commonwealth research funding bodies and industry into bycatch reduction strategies and mitigation initiatives for protected species.
- An increasing emphasis in Regional Fisheries Management Organisations (RFMOs) on bycatch management.

The workshop considered that these reforms and changes had, for most fisheries, led to a significant reduction in bycatch (both directly and indirectly).

The workshop also noted the recent announcement of the final Commonwealth Marine Reserves Networks Proposals by the Commonwealth Minister for the Environment.

Guiding Principles

Consistent definitions and understanding of policy apply between all Australian Government agencies.

The Bycatch Policy needs to be linked / harmonised with the Commonwealth Harvest Strategy Policy.

The Bycatch Policy needs to include performance evaluation and reference points.

Tone of the Bycatch Policy - query the use of “to maintain and improve” and suggest consideration of “ensure and where appropriate / necessary”.

Consideration needs to be given to reconciling the HSP’s approach to byproduct (can be managed below B_{MEY} in multi-species situations), the outputs of bycatch risk assessments with respect to ESD and the application of the precautionary approach.

An interpretation regarding the application of the precautionary approach in bycatch settings is important and needs to be a ‘reasonable’.

The Bycatch Policy should support a risk management framework but avoid over specification.

Consistency with the FM Act and the EPBC Act is important.

Appropriate consideration needs to be given cost implications.

A variety of objectives were proposed – suggesting there is some divergence amongst stakeholders:

- Core objective should be to manage fishery impacts on bycatch (not to maintain populations)
- To reduce bycatch to minimal acceptable levels.
- Suggest keeping the overall objective simple “reduce the risk to bycatch species”
- Even once the risk-based approach is applied, other bycatch policy objectives can still apply, for example: even if the risk is low minimising bycatch might still be a valid management response.

Risk based approaches

The specification of risk is important (risk of extinction, probability of going below a reference point etc).

Awareness of different risk assessment approaches *Productivity Susceptibility Analysis (PSA)* versus *Likelihood x Consequences*.

Experience has shown that the quality of information available will vary and note that the current ERA methodology (PSA), when faced with information gaps, adopts a precautionary approach.

- That, noting the above point, recognising that risk assessments in multi-species fisheries can generate lots of higher risk results – however practicalities and resources rule out resorting to research to add certainty so mechanisms are needed to avoid having to resort to a widespread application of precautionary management measures (expert override, residual risk etc).
- Consideration may need to be given to where precaution is most sensibly applied - in the assessment or by managers.

PSA used in ERAs is not scaled by effort (size of fishery) but relies more on the relative spatial overlap of the area of operation of the fishery with the known distribution of the species. These analyses may need to be redone to take into account the anticipated marine reserves network.

Note that ERA toolkit includes Residual Risk and SAFE assessments.

Recognise there will be limits for monitoring systems - statistical power to detect trends – reality check!

Cost implications need to be weighed up against risk, noting that there may be significant costs associated with:

- monitoring to obtain sufficient reliable data (observers, e-monitoring);
- analysis of data; and
- developing management responses.

Recognition that for some questions increasing monitoring (coverage) will not significantly improve your chance of determining if there is a trend in catches over time.

Risk will never be fully known, we can try to reduce uncertainty but this must be cost-effective.

Recognise that ERAs also cover target species, bycatch and are being extended to habitats and communities.

Ecological risk management response needs to be flexible.

The Bycatch Policy may wish to identify rationale for validation/cross-checking of risk assessment methodologies.

Need for recognition in the Bycatch Policy that there are processes that can bypass a risk-based approach, i.e. CITES listings, bycatch resolutions by RFMOs etc.

There are a limited range of feasible responses – intervention for a particular species can be difficult without scaling back the whole fishery.

Research initiatives might be best developed for species groupings (FRDC has already initiated this approach).

Multi-species analysis may be required for multi-species fisheries.

Different levels of acceptable risk (trade-offs).

Suggest that the Bycatch Policy recognise (and take into account) that the network of proposed marine reserves (currently out for public comment) and other closures implemented since 2000 will provide varying levels of protection to bycatch species.

Policy and risk assessment approaches need to be cognisant of cumulative impacts across fisheries and jurisdictions.

Biological risk versus social concern (another type of risk).

A robust evidence base will inform public debate.

Reference points / indicators

Range from model derived outputs i.e. B_{48} , to empirical proxies (CPUE) for biological reference points to empirical data (i.e. catch) through to qualitative indicators (high, medium and low risk).

Productivity based defaults B_{LIM} – may need to be varied for particular species or species groups (sharks).

Hard versus soft limits will influence data needs and monitoring and analysis costs.

ERAs provide a snapshot and measuring progress against higher risk issues will require ongoing monitoring and periodic analysis – to establish a feedback loop.

Importance of spatial measures needs to be taken into account.

Attachment 3. List of Workshop issues & priorities assigned by the workshop participants

Topic 1: Context for the Bycatch Policy ●●●●●●●●

Contribution to ESD

Demonstration of an ecosystem approach

Domestic obligations (some shared with the States)

Fisheries Management Act ●

EPBC Act ●

Harvest Strategy Policy

Recreational catch

Marine Bioregional planning

International Obligations ●

Regional Fisheries Management Organisations

Convention on Biodiversity

International Plans Of Action

National Plans Of Action

CITES

Convention on Migratory Species

Revised Objectives for new Bycatch Policy

Trade issues regarding imports & bycatch in overseas fisheries.

How will new Bycatch Policy guide the Australian position in negotiations?

Topic 2: Definitions ●●●●

Catch

Commercial species

Bycatch

Threatened or otherwise protected species

Discards ●

Topic 3: A Management Strategy Approach to Bycatch? ●

Reference points and decisions rules ●●●●●●●●

Monitoring and assessment requirements (is it technically feasible) ●●

Performance measures ●

Cumulative impacts ● ● ●

Mitigations vs Management

Cost attribution ●

Cost effectiveness ● ● ● ●

Topic 4: A risk-based approach to bycatch ● ● ● ● ● ● ● ● ● ●

How to put into a management framework? ● ●

Strengths and limitations of the ERAEF.

How far can a risk-based approach take us? ● ● ●

How should the policy deal with the remainder?

Risk vs social concerns (what are the acceptable impacts?) ● ● ●

High risk species

Rates vs amounts

Levels of confidence & uncertainty ●

Topic 5: Other issues

What has worked?

What are the problem species?

Test case examples for solving problems & avoiding unintended consequences

Environment offsets (do they have a role?) ● ● ● ● ● ●

Bycatch as a waste issue ●

A 'Balanced Harvest' approach ●

Topic 6: Future work needed

Trends in bycatch across fisheries ● ● ● ● ●

Future R & D ● ●

Appendix D – Second Workshop Report



Australian Government

Department of Agriculture, Fisheries and Forestry



Review of the Commonwealth Policy on Fisheries Bycatch Second Stakeholder Workshop Report

**This report summarises discussions at a
stakeholder workshop convened by the
Department of Agriculture, Fisheries and
Forestry (DAFF)
on 4 February 2013 in Canberra**

Summary

The second stakeholder workshop held on 4 February 2013 considered public submissions in response to the department's issues paper for the review of the Commonwealth Policy on Fisheries Bycatch (bycatch policy). The workshop also considered a range of research commissioned by the Department of Agriculture, Fisheries and Forestry (DAFF) and FRDC to inform the review and discussed draft key principles for a revised bycatch policy.

Workshop participants agreed that one key recommendation of the review would be the revision of the bycatch policy. This view was consistent with the sentiment of the public submissions received. The workshop recognised that the decision is vested jointly with the Minister for Agriculture, Fisheries and the Forestry and the Minister for Sustainability, Environment, Water, Population and Communities.

It was noted that the review is being conducted concurrent with the review of the Commonwealth Fisheries Harvest Strategy Policy (harvest strategy policy) and that DAFF had, since the first workshop, further clarified the likely scope of the two policies and given consideration to mechanisms for the transition of species between them. The need for there to be no gaps in the coverage of all species taken under these policies has been emphasised.

Participants held some differing views about the aims and objectives for a revised bycatch policy but there was general agreement by most on a set of draft key principles to be used in the drafting of a revised Bycatch Policy.

There was general support (with some reservations) for the definition of bycatch proposed by DAFF to cover all non-commercial species. Environmental non government organisation representatives favoured a definition that incorporated discards to focus on the need to reduce discarding. Some of the scientists present expressed reservations about the technical obstacles that may arise if decision rules were required to be implemented broadly across suites of bycatch species for which little information was ever likely to be available. There were also concerns expressed about the capacity of both industry and government to fund additional obligations or initiatives in the current economic climate. There was also some reservation around byproduct falling under the harvest strategy policy and any implications this may have.

There was support for a hierarchical approach to the assessment and management of bycatch and for the use of the Ecological Risk Assessment toolkit as a basis for assessing priorities and informing research and management responses.

The use of standards for the effective mitigation of fisheries bycatch was recognised as having some merit but they may require further investigation before their implementation was attempted, possibly through guidelines to the bycatch policy.

Participants agreed that better reporting of bycatch was needed to allow improved evaluation of the effectiveness of bycatch management measures. There were challenges, however, in reporting trends in a way that could ensure that this information was not misinterpreted. Workshop participants also supported the need for improved performance monitoring.

The workshop participants noted that an overview of international progress on bycatch issues indicated that Australia was, by international standards, well advanced in its progression of bycatch management.

Social aspects to bycatch issues were noted as being of importance to the social licence of fisheries and public perceptions about the sustainability of fisheries.

DAFF gratefully acknowledge the input and ideas from individuals who attended the workshop (see Appendix 1 for a full listing of workshop participants) and the work of the facilitator Mr Sandy Morison, and scribe Mr Anthony de Fries in the preparation of the draft workshop report.

1. Background

Introduction

In March 2012, the Minister for Agriculture, Fisheries and Forestry, Senator the Hon. Joe Ludwig announced a review of the Commonwealth Policy on Fisheries Bycatch (bycatch policy), and of the Commonwealth Fisheries Harvest Strategy Policy and Guidelines (harvest strategy policy) —both of which will run concurrently.

In June 2012, the Department of Agriculture, Fisheries and Forestry (DAFF) hosted a stakeholder workshop to engage with a range of stakeholders including government officers, the commercial fishing industry, environmental non-government organisations and research agencies, to assist in the review of the bycatch policy.

On 9 November 2012 DAFF released the bycatch policy review's issues paper for public consultation. The issues paper was developed to promote discussion and feedback on issues relevant to the bycatch policy that may require refinement, elaboration or further development. Interested members of the public were invited to contribute by providing a submission on issues canvassed in the issues paper or other matters relevant to the review. The public consultation period closed on 21 December 2012.

A second stakeholder workshop held was convened on 4 February 2013 to further consider issues relevant to the review and to consider public submissions received in response to the department's issues paper.

Mr Sandy Morison chaired the workshop and Mr Anthony de Fries acted as scribe.

A list of workshop participants is provided in Appendix 1.

Workshop objectives

The objectives of the workshop were to draw out and discuss issues for the review of the bycatch policy to aid DAFF in its subsequent development of a review report for the Minister of Agriculture, Fisheries and Forestry.

The workshop drew on both the submissions received and scientific advice in providing stakeholder views on a range of matters including proposed definitions and a draft set of key principles that may be used when drafting a revised bycatch policy.

Workshop agenda

The workshop agreed to adopt the revised draft agenda circulated by DAFF on 1 February 2013 with the following amendments:

- No presentation was provided on the review of international bycatch policies (to be considered under Session 2) but DAFF welcomed feedback on the report provided.
- Sessions 4 and 5 were replaced with a single Session 4 that considered all the draft key principles sequentially rather than under the headings suggested for Sessions 4 and 5.

The draft agenda provided at the start of the workshop is provided at Appendix 2.

Presentations by scientists from the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) and CSIRO on draft reports from research that was either commissioned by DAFF to assist the review or was otherwise relevant to the review of the bycatch policy were provided. These presentations were:

- Dr Peter Ward (ABARES): Improving the Management of Bycatch: Standards for the Effective Mitigation of Fisheries Bycatch (Report authors, David Kirby & Peter Ward)
- Mr Andrew Penney (ABARES): Risk-based approaches, reference points and decisions rules for managing fisheries bycatch and bycatch species (Report authors, David Kirby, Andrew Penney & Katherine Cheshire).
- Dr Neil Klaer (CSIRO): Informing the review of the Commonwealth Policy on Fisheries Bycatch through assessing trends in bycatch of key Commonwealth fisheries (Report authors, Geoff Tuck, Ian Knuckey and Neil Klaer)
- Mr Robert Kancans (ABARES): A review of Commonwealth policy on fisheries bycatch — social and economic dimensions.

In addition to the above draft reports, workshop participants were provided with background papers for each of the proposed sessions including:

- The draft report from the first workshop (Canberra, 21 June 2012)
- A summary of responses received to the issues paper for the review of the bycatch policy
- A draft report reviewing international bycatch policies
- Agenda papers the on aims and objectives of a Commonwealth Policy on Fisheries Bycatch
- Performance monitoring and reporting
- The use of a hierarchical approach to bycatch management, and
- Draft key principles for discussion.

2. Summary of workshop sessions

Mr Ian Thompson (DAFF) briefed workshop participants on the status of the review of the bycatch policy and how the department envisaged it would fit in with the review of the harvest strategy policy and the independent review into the legislation governing the Commonwealth's fisheries management system (Borthwick review).

Session 1: Summary of issues paper submissions received

DAFF's summary and analysis of the eight public submissions received (a ninth submission was marked confidential by its author and not released) by the department was noted but, rather than work through each one, the workshop participants were invited to identify any areas where participants thought the summary would benefit from amendments or additions. The following suggestions were noted:

- That the attributions in the report for various quotes be reviewed
- Response: DAFF advised that the summary of public submissions provided to the workshop was a draft and the department would vet the attributions carefully when finalising the public version.
- Provide clearer recognition of the view from a number of respondents that bycatch should be minimised.
- Clarify CSIRO's position that key commercial species (target and major byproduct) should be covered by the harvest strategy policy and all others (namely bycatch and minor byproduct species that are mostly discarded) are covered by the bycatch policy.
- Clarify the scope of the bycatch policy in relation to cumulative impacts given the understanding it can not apply to state managed fisheries or other users that impact on Commonwealth bycatch species that are not regulated by the Commonwealth.
- Acknowledge stakeholder concerns that obtaining access to bycatch data held by fisheries agencies is difficult. The workshop also noted that access to bycatch data from within or between government agencies is often complicated by technical barriers.

The workshop noted that the submissions were now available on the DAFF website.

Session 2: Presentations and summary of key outcomes of commissioned bycatch research by ABARES and CSIRO

Improving the Management of Bycatch: Standards for the Effective Mitigation of Fisheries Bycatch

Dr David Kirby and Dr Peter Ward (presenter) (ABARES).

Dr Ward advised that although the report was commissioned prior to the review of the bycatch policy was announced the findings were pertinent to the review. Dr Ward noted that a recurring theme with bycatch problems had been a tendency to develop fishery specific responses when a new issue emerged.

Dr Ward suggested that the adoption of the proposed standards would provide a more systematic approach to bycatch issues. He suggested that this would help promote more cost effective approaches to managing problems, assist with third party fishery certification and help maintain a social license for fisheries by facilitating performance assessment and reporting to stakeholders.

Dr Ward explained that the standards had been tested by applying them to the Australian Fisheries Management Authority's (AFMA's) efforts to manage shark bycatch in the Eastern Tuna and Billfish Fishery. Testing suggested that the management measures showed reasonable alignment with the report's standards except in relation to reviewing to see if the measures had been effective and then communicating the outcomes.

Dr Ward suggested that the report's standards might also provide a useful starting point for developing guidelines for the bycatch policy.

Responses from workshop participants:

- The report would be a useful tool for scientists and managers confronted with bycatch problems which were potentially significant.
- Concerns were expressed about specifying standards that could be meaningfully applied across whole suites of bycatch species. The challenge is defining standards that have the flexibility to cope with a wide range of circumstances across fisheries.
- There will be difficulties in applying standards that would be appropriate for dealing with species listed under the EPBC Act or the Bonn Convention for migratory species compared to those that, for example, would be appropriate for any of the hundreds of small fish or invertebrate species that might be caught in a trawl fishery.
- Concern about the costs and capability of applying an adaptive loop approach which would require decision rules being developed and imposed across a whole suite of bycatch species.

Noting these concerns, the workshop provided cautious support for using the standards to inform the overarching bycatch policy guidelines given the breadth of species to which the policy would apply.

Risk-based approaches, reference points and decisions rules for managing fisheries bycatch and byproduct species

Dr David Kirby, Mr Andrew Penney (presenter) and Ms Katherine Cheshire (ABARES).

Mr Penney indicated that the research was intended to review current risk based approaches used to assess and manage bycatch and evaluate if the development of reference points and decision rules would assist in dealing with bycatch species taking into account their status under legislation, biological status and the amount of information available.

The project had been expanded to include byproduct species and Mr Penney observed that, although byproduct species may fall under a revised harvest strategy policy, there were similarities with bycatch species in that there was usually a limited amount of data available on which to base an assessment of species in either group.

Mr Penney described a hierarchy of assessment methods commonly employed in fisheries that extended from qualitative Ecological Risk Assessments (ERAs) through to quantitative models. Mr Penney noted that the choice of the most appropriate assessment approach should be driven less by the category in which a species was placed than by the level and type of information that was available.

Mr Penney suggested that, although the definitions of target, byproduct and bycatch would define the bounds of the harvest strategy and bycatch policies, this did not mean there could not be overlap in the assessment approaches applied to species under both policies. Mr Penney anticipated that the same risk based approaches or low information analytical methods might be applied to both data poor byproduct species and data poor bycatch species.

Mr Penney noted that the ERAs were now established across AFMA managed fisheries and were used internationally and that they provided an accepted way of prioritising risk.

Mr Penney concluded by noting that the research project's main influence on a revised bycatch policy would be to inform the preparation of the proposed set of guidelines to accompany the policy.

Responses from workshop participants:

- Concern was expressed over the frequent references in the public submissions to the necessity of having observers or e-monitoring approaches to gather this information and the related concern that industry was not in a position to fund additional at-sea monitoring in the current economic circumstances.
- A view was expressed that there is an issue around a lack of confidence in the logbook data and the reliability of this data source should be improved. There needed to be recognition in the bycatch policy that it is the responsibility of operators to furnish honest and reliable logbook returns given they are licensed to harvest a public resource.
- In some fisheries, like the Northern Prawn Fishery (NPF) there were a range of uncertainties associated with the assessment and interpretation of data from monitoring bycatch. Even with 100% observer coverage there would still be uncertainty associated with any species that the fishery only caught very rarely.
- There needed to be different objectives and assessment approaches for protected species than for other fish and invertebrate bycatch.
- It was reasonable to think of the range of assessment approaches described by Mr Penney as a continuum and desirable that the transition of a species from coverage by the bycatch policy to harvest strategy policy (or vice versa) might not involve a great jump in data or assessment requirements.
- Level 1 and 2 ERAs were not able to deliver outputs which could be used to report on the performance of management programs.
- The application of indicators and performance measures does require the ongoing collection of additional data and the resourcing implications of this needs to be considered.

Informing the review of the Commonwealth Policy on Fisheries Bycatch through assessing trends in bycatch of key Commonwealth Fisheries

Dr Geoff Tuck (CSIRO), Dr Ian Knuckey (Fishwell Consulting) and Dr Neil Klaer (CSIRO, presenter)

Dr Klaer explained that CSIRO had analysed bycatch trends across a range of Commonwealth fisheries to assist the review process. Dr Klaer emphasised that interpreting trends in bycatch data needed to be done carefully to account for changes in management arrangements, fishing method and variation in observer coverage over time. Dr Klaer noted for example that a decline in a discard rate might mean either that mitigation measures were reducing impacts or that the population of the species in question was declining.

Dr Klaer noted that both logbook and observer recording protocols often required information be collected on interactions including those where no injury or death occurred. Dr Klaer indicated it was also very important to distinguish these in reports and summaries.

Dr Klaer noted that a thorough statistical analysis was needed to get a handle on bycatch issues and identified work done on seabird bycatch by Japanese longline vessels fishing in the AFZ under Bilateral and joint venture arrangements (concluded in 1997) and analysis of sea turtle bycatch with regard to use of Turtle Excluder Devices (TEDS) in the NPF as two of the few examples where full statistical rigour had been applied to bycatch issues.

Dr Klaer then provided summaries of the bycatch trends in the following fisheries:

- Macquarie Island Toothfish Fishery (full observer coverage and strict bycatch management)
- Heard and McDonald Island Toothfish and Mackerel Icefish Fishery (full observer coverage and strict bycatch management)
- Coral Sea Fishery (small fishery with many sectors and patchy observers coverage)
- Eastern Tuna and Billfish Fishery (good observer coverage - bycatch of seabirds has come down significantly since 2007, some marine turtle interactions)
- Northern Prawn Fishery (achieved a 50% reduction in the volume of bycatch since 1998, significant reduction in sea turtle bycatch since the 1990s).
- Small Pelagic Fishery (noted a reduction in interactions with dolphins with mid-water trawl gear following introduction of mitigation strategies in 2005)
- Southern and Eastern Scalefish and Shark Fishery (bycatch measures and issues varied by gear type).

Dr Klaer concluded that although the data generally indicated there had been improvements in bycatch, in some cases the data were insufficient to assess if mitigation strategies had been effective and in others it was too early to tell.

Responses from workshop participants:

- Observation that those sectors that embraced engineering solutions had generally experienced successful outcomes. Dr Klaer acknowledged this but noted that for many bycatch issues the ability to detect changes in catch and/or catch rates was difficult due to the often broad confidence intervals around estimates from observer data.
- Participants noted the difficulties of reviewing trends in bycatch management and that this would need to be addressed in a new policy.

Mr Morison thanked the presenters and encouraged those present to provide any additional comments on the reports to the authors or to DAFF.

Session 3: Discussion of aims and objectives of a revised Commonwealth Policy on Fisheries Bycatch

Definition of Bycatch

The workshop again considered the definition of bycatch proposed by DAFF at the first stakeholder workshop.

Species that interact with fishing gear but which are not kept by commercial fishers

Comments from participants:

- Question rose as to whether species that interact with the fishing gear but which are not kept by commercial fishers were included.
- Suggestion that the word 'interact' was inconsistent with 'bycatch' noting a range of species may come into contact with the gear (seabirds alighting on codends, fish entering and leaving traps etc) as distinct from animals that might be caught by gear but then excluded (mesh size, excluder devices) and a suggestions that the policy should concentrate on animals that are caught or impacted by fishing gear was preferable.
- The view was expressed that the bycatch policy should not apply to discards of commercial species.
- There was general (but not universal) support for a species based approach for the policy that excluded all byproduct species from a revised bycatch policy.
- The workshop agreed that the definition decided on should ensure that there are no gaps in the coverage of species between the revised bycatch and harvest strategy policies even though there were challenges for implementation.

Overarching objectives

The proposed overarching objectives for the revised bycatch policy were:

- *To ensure the long-term sustainability of bycatch species and the marine environment by managing fishery-related impacts in a manner consistent with the principles of ecologically sustainable development (which includes the exercise of the precautionary principle).*
 - *minimising, to the extent practicable, bycatch and the mortality of bycatch that cannot be avoided*
 - *managing the risk to bycatch species from fishing-relative impacts, to ensure that populations of bycatch species are maintained, and rebuilt where necessary, to levels consistent with maintaining their biological productivity and functional role in the ecosystem*
 - *consideration of the expectations of efficient and cost effective fisheries management*
- *To ensure that fishing operations are conducted in a manner that avoids mortality of, or injury to species listed as threatened under the EPBC Act, (i.e., those listed as vulnerable, endangered or critically endangered). This recognises the need to recover populations of species listed in those categories.*

Comments from participants:

- It was emphasised it was important to recognise that simply managing fishery impacts could not secure the long term sustainability of bycatch species and the marine environment firstly because it was a dynamic system and secondly because they are other non fishery impacts.

- The reference to fishery-related impacts suggested that the policy would extend past the direct impacts of capture to include broader ecosystem impacts and clarification was needed on whether this was intended.
- AFMA and the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) seemed to have established an operational agreement with respect to what was meant by 'interactions' and that this might assist in tightening up the definition.
- There was general support among participants for separate objectives for protected species and other bycatch species – noting there are also some fish and shark species protected under the FMA Act 1991 (Blue Marlin and Black Marlin, Black Cod) that should also be covered.
- Currently the first of the proposed overarching objectives implies that information is available on the status and trends of populations of concern. While it might be possible to reduce impacts on bycatch species and to demonstrate this it may still not be possible to assess trends in their populations.
- Concern was expressed over the phrase 'to the extent practicable' in the first sub-point and how this might be interpreted. It was noted that similar wording was used) in the EPBC Act with respect to Pt 13 accreditation on management arrangements and the requirement for management arrangements to require fishers to 'take all reasonable steps to avoid the capture or killing or injuring of protected species.
- It was suggested that it was important to note the international context behind some fishery terms noting 'minimise' rather than 'prevent'.
- The second overarching objective was considered to be potentially unnecessary as this objective is an AFMA legislative requirement.

Session 4: Discussion of the draft Key Principles

The workshop found DAFF's discussion paper '*Future bycatch policy considerations – draft key principles*' to be a good platform for discussion of higher order aspects of a revised policy. These were discussed in turn and the following comments provided.

It was noted that some of the principles concerned the process of revising the bycatch policy whereas others needed to be reflected in a revised bycatch policy.

1. *The revised bycatch and harvest strategy policies should encompass the effects of fishing on all commercial and bycatch species (including protected species) and ensure clarity around which policy applies to individual species.*
 - There was general support for this principle.
 - There was a suggested amendment for it to read 'the direct effects of fishing' but also the suggestions that this point did not need to be included in a revised bycatch policy.
 - The workshop suggested that the lifespan of this principle need only extend to when a draft bycatch policy is settled.

2. *Bycatch species that are afforded higher levels of protection under the EPBC Act are managed in accordance with the legislative requirements of the EPBC Act.*
 - It was suggested that this principle was not needed in the policy as it is a legislative requirement (reminder to drafters)
 - The existing policy doesn't explain how it relates to the EPBC Act very well and it was important that a revised bycatch policy (and harvest strategy policy) clarify their relationships with the EPBC Act.
 - It was suggested that this principle be reworded to ensure a revised bycatch policy clarifies its relationship with the EPBC Act.
 - It was noted that the current principles are deliberately silent on Conservation Dependent listings when it appears this is one of the areas where there is overlap between policy and the legislation and there is a need for guidance/clarification.
3. *Recognition that the government aims for efficient, profitable, competitive and sustainable fisheries.*
 - Perhaps reword to reflect that it is in Australia's national interest to have fisheries that are sustainable.
 - It was suggested that it was important that sustainability be given primacy in such a principle but it was also noted that there are multiple (potentially competing) legislative objectives and there is no implied primacy for any one of these objectives.
 - It was also suggested that if the objectives are right then the principles can be more specific.
4. *The policy should be underpinned by implementation guidelines.*
 - This was strongly supported by participants.
5. *A hierarchical approach would be applied to the management of bycatch species (excluding protected species)*
 - Support was expressed for this principle with some concerns about how it would be implemented.
 - It was suggested that it would be important to have options for implementation elaborated in the guidelines.
 - There is a need to clarify when we are talking about the assessment of bycatch and we are referring to the management of bycatch. There was a need to cover both but the requirements of each should be articulated separately.
 - The hierarchal approach described in the principle refers to management approaches whereas prioritisation is based on species (following different but related processes), the guidelines may need to refer to the prioritisation process.

6. *Performance monitoring and reporting should be explicit and transparent at both the policy and fishery level.*
 - Concern was expressed that access to even aggregated information was difficult even when bycatch of certain species may impact on the sustainability of a species valued by another sector.
 - Conversely, it was suggested that Management Advisory Committees and Resource Assessment Groups have been well served with information – but that the main problem has more often been about time constraints to consider bycatch issues.
 - There is an ongoing need for confidentiality relating to an individual's data on bycatch and it is an important safeguard.
 - There was concern that the costs relating to external data requests are cost recovered from industry.
 - It is important that reports provide details about how data are collected to avoid potential misinterpretation.
7. *The assessment and management of bycatch species should take into account the cumulative impact of all Commonwealth commercial fishing activities and the contribution of all management measures.*
 - General support for clarification – noted that the harvest strategy policy already requires catches from other fisheries to be taken into account.
 - It was suggested that the important point was that assessments should take into account all sources of mortality but not necessarily management as it may be unable to address issues beyond jurisdictional boundaries. Therefore there was a need for separate clauses about assessment and management.
 - DAFF informal response – The policy is not a national policy and will only cover Commonwealth managed fisheries. There are Offshore Constitutional Settlement arrangements in place to address the issue of management responsibility.
 - Note CSIRO is working on a cumulative approach for ERAs.
8. *Where appropriate, reference points and related decision rules could be developed to reduce uncertainty.*
 - Note suggested changes to wording of Principle 8.
 - It was suggested that transparency relates to communications and there is no need for reference to a communication strategy in these principles.
9. *Consideration of commercial fishery impacts on bycatch species of importance to the recreational or indigenous fishing sectors.*
 - This principle appears to be a departure from the issues concerning sustainability and relates to the potentially competing interests and allocation issues among stakeholder groups.
 - There was support for a future bycatch policy indicating the need to consider impacts on sectors other than the commercial fishing industry, and particularly the recreational sector, when decisions about management of bycatch were made.

- It was suggested that this is not an appropriate principle for a revised bycatch policy, that it is more a higher order resource sharing objective that is not just about bycatch but could equally apply to species considered under the harvest strategy policy.
- It was noted that some harvest strategies already explicitly respond to any impacts that might arise from other sectors and that this often impacts on commercial catches.
- There was a need for recognition that bycatch in one fishery could be important as byproduct or targeted catch in other fisheries or sectors such as recreational or indigenous fishers.
- There was question as to whether the Commonwealth has an obligation to monitor catches and assess status for recreational-only species such as Black Marlin.
- It was suggested to put this principle in square brackets to indicate that there is currently not general agreement about this being an appropriate principle for a revised bycatch policy or guidelines.

10. Ensure alignment with international obligations with respect to bycatch management.

- There is a need to preserve the ability to respond to any future changes in other relevant policies and mandatory instruments (e.g. Regional Fisheries Management Organisations resolutions, CITES listings, etc).
- It was noted, however, that Australia usually manages to a higher standard than the minimum international requirements.
- The bycatch policy needs to be consistent with those National Plans of Actions that relate to bycatch management i.e.
 - The National Plan of Action for the Conservation and Management of Sharks
 - National Plan of Action for Reducing the Incidental Catch of Seabirds in Australia's Longline Fisheries (under development)

Other issues: including social and economic consideration

Review of Commonwealth policy on fisheries bycatch — social and economic dimensions

Mr Robert Kancans (presenter) (ABARES).

Mr Kancans provided an analysis of the contemporary social context in which a revised bycatch policy would operate including issues of the public perceptions of fisheries bycatch, the social impacts of bycatch policy, management and mitigation strategies, and what motivates fishers in the adoption of sustainable management practices.

He noted that industry and government experience was that the concept of 'social license' was an emerging reality for fisheries particularly in relation to market access.

Mr Kancans explained the public perception can drive issues and referred to the recent case of the fishing vessel Abel Tasman. The workshop also noted that a longstanding public expectation was to reduce waste in fisheries. This is reflected in the existing bycatch policy despite 'wastage' not being directly linked to sustainability provided other fishery settings were sound.

Mr Kancans reported that recent surveys suggested a large proportion of the Australian public were doubtful about the sustainability of Commonwealth managed fisheries.

Comments from participants:

- Participants noted that a more contemporary bycatch policy could provide government and industry with a stronger basis to convince the fish buyers and consumers that a lot of improvements have already been made in relation to fisheries bycatch and that Commonwealth fisheries are generally operating to much higher standards than international competitors.
- It was acknowledged that the government was committed to changing behaviour across a range of natural resource management areas to improve sustainability and environmental outcomes.
- It was recognised that projects to improve fisheries bycatch practices were being actively supported through the government's Caring for our Country program and that much of the focus was on research, training and extension initiatives for skippers and crew.
- The workshop considered that it would be beneficial if a revised bycatch policy recognised the need to keep industry engaged and informed to improve information flows and to encourage innovation in fishing practices in relation to bycatch.

3. Summary of workshop outcomes and next steps

The stakeholder workshops have provided valuable outcomes across a range of issues concerning a possible revised bycatch policy for Commonwealth managed fisheries:

- Information from a range of recent reviews and research projects has been made available to stakeholders
- views of different stakeholders have been aired and discussed
- areas of agreement (or least acceptance) on some important issues have been identified.
- knowledge has been improved about the strengths and weaknesses of different bycatch policy approaches
- the benefits of the development and implementation of improved revised bycatch policy have been identified and acknowledged.

The next steps in the process include:

- Circulation of the draft workshop report to DAFF, the steering committee and workshop participants for comment.
- DAFF to draft a review report to the Minister for Agriculture, Fisheries and Forestry by the end of March.

Participants were advised that, should new policies emerge from these processes, stakeholders would be given the opportunity to consider the merits of the draft policies.

4. Conclusions

The following are general conclusions from the discussions at the workshop but should be read together with the more detailed comments provided above:

1. There is recognition and support of the need for a revised bycatch policy.
2. There is general (but not universal) agreement about the definitions that should apply to bycatch but agreement that there should be no gaps between a revised bycatch policy and a revised harvest strategy policy.
3. The draft overarching objectives may require some rewording and not all of them are considered required in a revised bycatch policy.
4. The proposed draft key principles will provide a useful structure and guidance for the review report.
5. There was general comfort with the proposed hierarchical approach to the assessment and management of bycatch. There are, however, technical challenges for implementation and important implications to consider.
6. Monitoring performance and reporting:
 - a. Both monitoring and reporting need to be substantially improved.
 - b. Proposal that a revised Policy should drive improvement in Logbook reporting as a cost effective source of information on bycatch.
 - c. Concern about the technical and resourcing challenges should the Policy require the more widespread adoption of performance criteria and decision rules

5 Appendices

Appendix 1. List of attendees

Name	Organisation
Mr Sandy Morison	Consultant, Facilitator
Mr Anthony de Fries	Scribe
Mr Craig Ingram	Amateur Fishermen's' Association of the Northern Territory
Mr Brian Jeffriess	AusTuna
Ms Trixi Madon	Commonwealth Fisheries Association
Ms Lowri Pryce	Oceanwatch
Mr Glenn Sant	TRAFFIC
Ms Alexia Wellbelove	Humane Society International
Mr Grahame Williams	Recreational Fishing representative
Mr Crispian Ashby	FRDC
Dr Neil Klaer	CSIRO
Dr David Smith	CSIRO
Dr Cathy Dichmont	CSIRO
Mr Robert Kancans	ABARES
Mr Andrew Penney	ABARES
Dr Ilona Stobutzki	ABARES
Dr Peter Ward	ABARES
Dr Nick Rayns	AFMA
Mr Paul Ryan	AFMA
Ms Beth Gibson	AFMA
Mr Geoff Richardson	DSEWPaC

Mr Nathan Hanna	DSEWPaC
Ms Barbara Ross	DSEWPaC
Mr Ian Thompson	DAFF
Mr Gordon Neil	DAFF
Ms Cadie Artuso	DAFF
Ms Shalan Bray	DAFF
Mr Stuart Curran	DAFF
Ms Mandy Goodspeed	DAFF
Mr Tim Karlov	DAFF
Ms Mariana Nahas	DAFF
Ms Danielle Wills	DAFF
Ms Michelle Wilson	DAFF

Appendix 2. Draft Workshop Agenda

Second Stakeholder Workshop for the review of the Commonwealth Policy on Fisheries Bycatch Monday 4 February 2013 10:00 am to 4:30 pm VENUE: National Conference Centre (DAFF), 7 London Circuit Canberra City ACT	
Purpose: to discuss issues for the review of the <i>Commonwealth Policy on Fisheries Bycatch</i> (bycatch policy) and the development of a response to Minister Ludwig.	
AGENDA	
Time	Item
10:00	Welcome / introductions/ declaration of conflict of interest
10:10	Update on progress of the bycatch policy review and timeline for reporting to Minister Ludwig
10:30	Session 1: Summary of issues paper submissions received
11:00	Session 2: Presentations and summary of key outcomes of commissioned bycatch research by ABARES, CSIRO and desktop study of international approaches
12:00	<i>Lunch</i>
12:45	Session 3: Discussion of aims and objectives of a revised Commonwealth Policy on Fisheries Bycatch
13:45	Session 4: Discussion on a hierarchical approach to bycatch management
14:45	<i>Afternoon tea</i>
15:15	Session 5: Discussion on performance monitoring and reporting
15:45	Other issues: including social and economic consideration
16:15	Summary of workshop outcomes and next steps
16:30	<i>Close</i>
Session 1: Review and discuss submissions received in response to the release of the Commonwealth Policy on Fisheries Bycatch issues paper.	

Session 2: Presentations by authors and discussion on research outcomes and their use in guiding future bycatch management strategies. How can they be applied to future bycatch management strategies?

Session 3: Consider and discuss aims and objectives for a revised bycatch policy and what bycatch is.

Session 4: Discuss the use of a hierarchical approach to bycatch management – different responses, levels of intervention, management and technical solutions attributed to increasing levels of potential risk. How do we measure and manage the cumulative effects of fishing on non-commercial species?

Session 5: Discuss bycatch action plans and how can we better measure the effectiveness of bycatch mitigation/management strategies? What reporting is needed in order to track change over time and trends in catch? What result would trigger a review of individual strategies and mitigation responses?