

The implementation of the National Plan of Action for the Conservation and Management of Sharks - Australia

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ABSTRACT

The Shark-plan Implementation and Review Committee (SIRC) was established in 2004 to oversee the implementation of Australia's *National Plan of Action for the Conservation and Management of Sharks (Shark-plan)*. Four regional operational plans are being developed to facilitate the implementation of the Shark-plan.

The SIRC membership includes one representative from each State and the Northern Territory fisheries agencies, and members of the Australian Government Departments of Agriculture, Fisheries and Forestry (including the Bureau of Rural Sciences), Environment and Heritage, and the Australian Fisheries Management Authority. The SIRC is a co-ordinating committee with the role of monitoring Shark-plan actions and ensuring that commitments are met.

The Shark-plan is not intended to be overly prescriptive about how responsibilities under the Shark-plan are met and provides guidance and advice on how Shark-plan actions can be integrated into fisheries and conservation management arrangements for target and non-target shark species. The cooperation of stakeholders will be a critical determinant of the Shark-plan's success.

CONTENT

Following the adoption of an International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) by the 23rd session of the United Nations Food and Agriculture Organisation's (UN FAO) Committee on Fisheries, Australia developed its National Plan of Action (Shark-plan). The Australian Department of Agriculture, Fisheries and Forestry (DAFF) has had responsibility for overseeing the development and implementation of the Shark-plan and it was formally endorsed and released in April 2004. The plan identifies 43 actions under six major themes to improve conservation and management of Australia's shark stocks.

The development of the Shark-plan was only the first step in addressing shark conservation and fisheries management concerns in Australia. The implementation of Shark-plan actions is the key to the success of the Shark-plan. Fisheries in Australia are managed through a complex mix of Federal and State Government responsibilities. Responsibility for implementation of actions identified in the Shark-plan lies with the relevant government agency or agencies that are ultimately accountable for ensuring ecologically sustainable shark populations. The nature and extent of that responsibility and the priority of specific actions inevitably varies across jurisdictions.

To oversee the implementation of the plan and to address the complex jurisdictional issues, the Shark-plan Implementation and Review Committee (SIRC) was established in 2004. The SIRC membership includes one representative from each State and the Northern Territory fisheries agencies, and members of the Australian Government departments of Agriculture, Fisheries and Forestry (including the Bureau of Rural Sciences), Environment and Heritage, and the Australian Fisheries Management Authority. The SIRC is a coordinating committee with the role of monitoring Shark-plan actions and ensuring that commitments are met. Stakeholder engagement is an important responsibility for the SIRC and a communication strategy is being developed to provide information on progress with the plan. The terms of reference for SIRC are at Attachment A.

The SIRC agreed that four regional operational plans be developed to facilitate the implementation of the Shark-plan. Drafts plans are due to be completed in mid-2006. The four regional plans will cover the following areas (Figure 1):

1. Northern Australia (Gulf of Carpentaria, Northern Territory and northern Western Australia) (from the Torres Strait to the southern border of the Pilbara Trawl Fishery)
2. Western Australia (from the southern border of the Pilbara Trawl Fishery to the Western Australia/South Australia border)
3. Southern Australia (South Australia, Victoria, Tasmania and Southern New South Wales) (from the Western Australia/South Australia border to Barrenjoey Head in New South Wales)
4. Eastern Queensland and northern New South Wales. (from Barrenjoey Head to the Torres Strait).

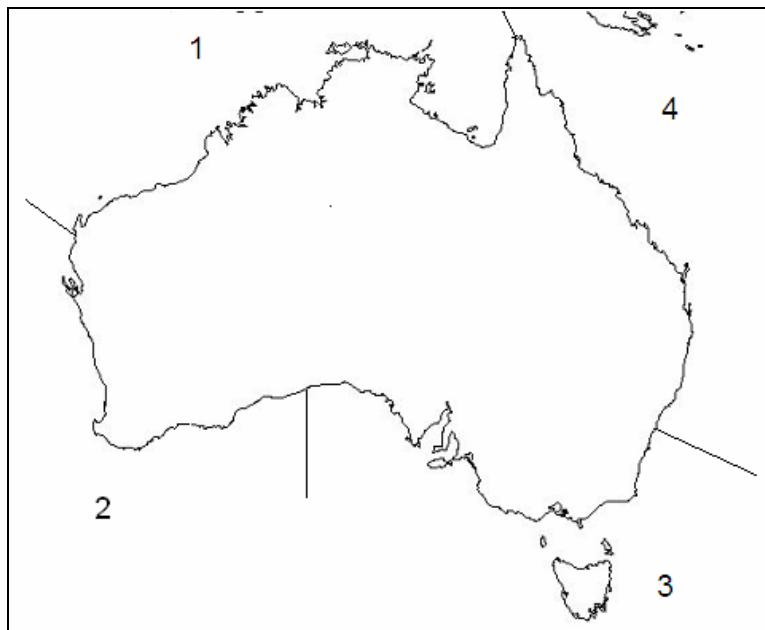


Figure 1. Coverage of each Operational Plan: 1. Northern Australia, 2. Western Australia, 3. Southern Australia, 4. Eastern Queensland and Northern New South Wales.

Most progress to date has been on draft *Northern Australia's Operational Plan for the Sustainable Use of Shark Resources* (see Attachment B). This operational plan has been largely developed through annual Northern Australia Fisheries Management workshops, involving representatives from the Australian, Queensland, the Northern Territory and Western Australian governments. The operational plan presents the actions and priorities of the Shark-plan and provides responses to these actions from

a northern Australian perspective. The operational plan is a living document and subject to regular review. A number of the responses outlined in the operational plan are subject to funding.

The Shark-plan is not intended to be overly prescriptive about how responsibilities under the Shark-plan are met but it provides guidance and advice on how Shark-plan actions can be integrated into fisheries and conservation management arrangements for target and non-target shark species. In this regard, discussions of the SIRC are proving to be an important priority setting and technical forum.

The cooperation of stakeholders will be a critical determinant of the Shark-plan's success. The primary stakeholders associated with each action (commercial, Indigenous, recreational fishers, conservation agencies and other government agencies) are identified in the Shark-plan but it is not intended that the list of interested stakeholders be restrictive. Stakeholder engagement is a responsibility of the SIRC.

The focus on sharks brought about by the IPOA-Sharks and the development of Australia's Shark-plan has led to a number of changes to the management of fisheries that take sharks and to the development of a number of research projects to improve information on shark populations.

Australia's Shark-plan can be found at:

<http://www.daff.gov.au/content/publications.cfm?ObjectID=4914EFAD-E68A-4614-A2A8096C1E824C7A>

Terms of Reference

Shark-plan Implementation and Review Committee

The primary responsibility of the Shark-plan implementation and Review Committee (SIRC) will be to oversee the implementation of Australia's National Plan of action for the Conservation and Management of Sharks (Shark-plan). The SIRC will be established as a sub-committee under the Marine and Coastal Committee (MACC). Membership may be broader than the jurisdictions represented on the MACC and may include representatives from the commercial fishing industry, recreational fishing organisations, indigenous sectors, conservation groups and scientific organisations. The SIRC will meet annually.

The role of the SIRC is to:

1. Develop a strategy for the implementation of actions in the Shark-plan;
2. Monitor the implementation of actions against the timeframes and priorities as set out in the Shark-plan;
3. Provide the MACC with an annual report on progress in the implementation of actions;
4. Identify gaps in shark management and conservation issues and provide advice on strategies to address these;
5. Disseminate to all interested stakeholders an annual update on progress and any other information relevant to the conservation and management of sharks;
6. Oversee the preparation of reports to the Food and Agriculture, Organisation's Committee on Fisheries (COFI) on progress in the implementation of the Shark-plan;
7. Act as a steering committee for a nationally coordinated shark research body (once this body is established);
8. Initiate and oversee updating of the Shark Assessment Report for publication in line with the four yearly reviews of the Shark-plan and timed for submission to a FAO COFI meeting.

Operational Plan for the Sustainable Use of Northern Australian Shark Resources (June 2005)

	Action	Priority	Responsible/ Interested Agency ¹	Response
THEME 1 REVIEW EXISTING CONSERVATION AND MANAGEMENT MEASURES				
1.	<p>Assess current management arrangements for sharks against the objectives of this Plan and the issues that this Plan seeks to address; in particular, assess whether these arrangements are consistent with ecological sustainability of sharks and a precautionary approach, and are enforceable; and Address any deficiencies within 12 months of that assessment.</p> <p>(Issue 7)²</p>	1A	<p>All fisheries agencies DEH State/NT conservation agencies</p>	<p>A single operational plan to be formulated for northern Australian shark fisheries for Western Australia, Northern Territory, Queensland and the Commonwealth.</p> <p>Assessment of shark fisheries to be undertaken in preparing submissions seeking export certification under the EPBC Act.</p> <p>Any deficiencies, and appropriate timelines, to be identified in the ecological assessment under the EPBC ACT.</p>
2.	<p>Assess current management arrangements for listed threatened shark species against the requirements of recovery plans for those species; and Address any deficiencies within 12 months of that assessment.</p> <p>(Issue 7)</p>	1A	<p>All fisheries agencies DEH State/NT conservation agencies</p>	<p>Assist in the development of recovery plans, as required under the EPBC for critically endangered species via DEH National Shark Working Group.</p> <p>Consider management need of <i>Glyphis</i> spp. and sawfish through the DEH Shark Working Group.</p> <p>Promote biological investigation of life cycle characteristics and habitat requirements for these species.</p>
3.	<p>Assess the effectiveness of current shark bycatch reduction measures in reducing shark mortality, paying particular attention to:</p> <ul style="list-style-type: none"> the effectiveness of limits and bans on retention of shark by-product; the effectiveness of “generic” limits on shark by-product in non-target fisheries; 	1A	<p>All fisheries agencies Commercial fishers Recreational fishers</p>	<p>Implement appropriate bycatch/by-product limits for all commercial and recreational fisheries.</p> <p>Encourage investigation and adoption of alternative harvest methods to reduce shark bycatch in non-target fisheries.</p> <p>Review the appropriateness of shark bycatch/by-product measures by December 2006</p>

¹ Agencies with major responsibility for implementation of each action are indicated in bold type.

² Issues referred to are described in the Shark-plan.

	Action	Priority	Responsible/ Interested Agency1	Response
	<p>and</p> <ul style="list-style-type: none"> • address any deficiencies identified in these assessments; <p>Encourage the adoption of effective shark bycatch reduction measures.</p> <p style="text-align: center;">(Issues 7, 14)</p>			Develop a single bycatch action plan for northern Australian shark fisheries by December 2006.
4.	<p>Initiate an assessment of the impact of current shark bycatch reduction measures in order to detect any unintentional increases in bycatch of any species, particularly threatened species; and</p> <p>Assess the impact of bycatch reduction measures for other species on shark bycatch.</p> <p style="text-align: center;">(Issue 15)</p>	3	<p>All fisheries agencies</p> <p>Commercial fishers</p>	Review the impact of current shark bycatch limits by December 2006.
5.	<p>Assess whether finning bans, requiring fins to be landed either attached to or accompanied by trunks, are being implemented effectively and are achieving their objectives; and</p> <p>Identify any deficiencies and address these.</p> <p style="text-align: center;">(Issues 1,7, 10)</p>	1A	<p>AFMA</p> <p>All relevant fisheries agencies</p> <p>Commercial fishers</p>	<p>Assess effectiveness of current finning legislation in terms of compliance and trends to processing target species, byproduct and bycatch subsequent to the introduction of such legislation.</p> <p>Undertake annual reviews for shark finning legislation.</p>
6.	<p>Review the effectiveness of Offshore Constitutional Settlement arrangements in the management of sharks, identify any deficiencies and take action to develop cooperative management arrangements to address these deficiencies.</p> <p style="text-align: center;">(Issue 7)</p>	2	<p>DAFF</p> <p>All fisheries agencies</p> <p>Commercial fishers</p>	<p>Review of OCS arrangements for northern Australia to commence in April 2004.</p> <p>Assess management of target shark species and bycatch species.</p> <p>ACIAR project for shark fisheries of Indonesia (potential for internationally shared stocks).</p>
7.	<p>Initiate an assessment of the ecological impacts of shark control programs for bather protection (including drum lines and nets) and</p>	2	<p>Fisheries & relevant agencies in Qld/NSW</p>	Not applicable to northern Australia/Gulf of Carpentaria.

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	review the need for these programs weighing up the ecological impacts against the level of risk to bathers. (Issue 14)		Conservation groups	
8.	Review the effectiveness of management measures for recreational and game fishing in achieving ecological sustainability of shark species. (Issue 8)	2	All fisheries agencies Recreational fishers Charter fishers Game fishers	Review of key recreational controls (possession limits). Investigate the use of closures as an alternative/additional measure of controlling the recreational, charter and game fishing take of shark species.
9.	Assess the impact of existing management measures for sharks on Indigenous fishing. (Issue 11)	1C	All fisheries agencies Indigenous fishers	Consider the findings of the National Recreational and Indigenous fishing survey to identify the level of shark catch as a prerequisite to assessing the impact of existing management measures on indigenous subsistence. Create improved opportunities for indigenous involvement in fisheries management planning processes, viz. Fisheries (GoC Inshore Finfish) Management Plan 1999 (Qld), NT review of aboriginal consultative arrangements, WA consultative process established under the Aboriginal Fishing Strategy.
THEME 2: IMPROVE MANAGEMENT AND CONSERVATION MEASURES				
10.	Ensure that management arrangements for target shark species include precautionary management triggers and pre-determined management processes, including timeframes, should these triggers be reached. (Issue 7)	1C	All fisheries agencies	Northern Shark Research Program to apply rapid risk assessment process for shark species. Encourage focused research that will provide necessary biological information that can be used to review the status of target shark species. Each jurisdiction to develop management triggers, responses and prescribed response time.

	Action	Priority	Responsible/ Interested Agency1	Response
11.	<p>Ensure that, where a species is taken in two or more fisheries within a jurisdiction or in two or more jurisdictions:</p> <p>(a) processes are in place to collect/report data from all fisheries and jurisdictions involved in the management of that species uniformly and are included, when data become available, in subsequent stock assessments or risk assessments conducted for that species;</p> <p>(b) the potential of multi-jurisdictional or 'across-fishery' approaches to shark management have been assessed and introduced where possible;</p> <p>(c) effective communication and consultation mechanisms between all stakeholders are in place; and</p> <p>(d) management measures are complementary and consistent with an ESD approach.</p> <p style="text-align: center;">(Issues 5, 7)</p>	1C	<p>All fisheries agencies Commercial fishers</p>	<p>Standardised catch and effort logbook to be implemented for dedicated shark fisheries throughout northern Australia by July 2006.</p> <p>Commence a review MOU and Joint Statements to ensure continuation of complementary management of shared stocks. Review to be undertaken in association with OCS.</p> <p>Continuation of complementary management of sharks, including the linking of fishery licenses for the GoC.</p> <p>NAFM to canvass complementary management of shark fisheries.</p>
12.	<p>(a) Initiate action to identify habitat critical to the survival of shark species and where identified as necessary take action to protect, and minimise threats, to these habitats; and</p> <p>(b) Within the relevant statutory timeframes protect, and minimise threats to, habitats critical to the survival of species listed</p>	1B	<p>DEH All fisheries agencies State/NT conservation agencies Conservation NGOs Commercial fishers</p>	<p>Review Northern Australian Shark Research project findings as available.</p> <p>Develop international MOU if critical life cycle habitat for a particular species is found to be beyond Australian waters.</p> <p>Promote research to identify critical habitats.</p> <p>Investigate use of spatial closures to protect identified critical</p>

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	<p>under Commonwealth/State/NT legislation.</p> <p>MACs to identify research priorities, including identification of habitat critical to the survival of shark species.</p> <p>(Issue 16, 18)</p>		<p>Indigenous fishers Recreational fishers Game fishers Divers</p>	<p>habitats.</p>
13.	<p>Within 12 months of risk assessments being completed identify those species requiring rehabilitation and develop rehabilitation strategies for these species based on the requirements set out in Guidelines 1.2.1 and 1.2.2 of the Commonwealth Guidelines for the Ecologically Sustainable Management of Fisheries (EA 2001).</p> <p>(Issue 13)</p>	1C	<p>All fisheries agencies DEH State/NT conservation agencies Commercial fishers Conservation NGOs Scientific agencies</p>	<p>Northern Australian shark project seeks to assess methodologies for the rapid assessment of the status of sharks and rays. Rehabilitation strategies for any identified species of concern will be based on the requirements set out in Guidelines 1.2.1 and 1.2.2 of the Commonwealth Guidelines for the Ecologically Sustainable Management of Fisheries.</p> <p>Develop criteria (with industry) that can be used to establish the need for rehabilitation.</p> <p>Ensure management arrangements allow for the implementation of rehabilitation strategies.</p> <p>Encourage complementary research to improve the quality of risk <i>assessments</i> and assessments of resource status.</p>
14.	<p>Within 12 months of a risk assessment finding of “high risk” for a shark species initiate management and research (monitoring) actions to minimise risk including the introduction of precautionary management triggers and pre-determined managed processes, including timeframes, should these triggers be reached.</p> <p>(Issue 6)</p>	1C	<p>All fisheries agencies DEH Commercial fishers Indigenous fishers Recreational fishers Game fishers Scientific agencies</p>	<p>Northern Australian shark project seeks to assess methodologies for the rapid assessment of the status of sharks and rays. Rehabilitation strategies for any identified e species of concern will be based on the requirements set out in Guidelines 1.2.1 and 1.2.2 of the Commonwealth Guidelines for the Ecologically Sustainable Management of Fisheries.</p> <p>Evaluate management strategies and information requirements to minimize risk.</p>

	Action	Priority	Responsible/ Interested Agency ¹	Response
				Encourage complementary research to improve the quality of risk assessments and precautionary management triggers.
15.	<p>Identify areas of uncertainty in current stock assessments for target shark species in target shark fisheries and ensure that research efforts for these species are focused on reducing this uncertainty, or where stock assessments do not exist, give priority to undertaking them.</p> <p style="text-align: center;">(Issue 5)</p>	2	All relevant fisheries agencies	<p>The Northern Australian sharks and rays: the sustainability of target and by-catch fisheries seeks to identify and address areas of uncertainty in current stock assessment.</p> <p>Evaluate management strategies and information requirements to reduce uncertainty.</p> <p>Develop research priorities for Nth Australian fisheries through the NAFM Workshop.</p>
16.	<p>Implement processes to ensure that the scientific research potential of sharks caught in shark control programs is maximised.</p> <p style="text-align: center;">(Issue 7)</p>		NSW and Qld fisheries agencies Scientific agencies	Not applicable to Northern Australia/Gulf of Carpentaria.
17.	<p>Initiate action to ensure effective bycatch reduction methods are developed and introduced in all fisheries in which shark are caught as bycatch giving significant priority to species identified as ‘high risk’:</p> <p>(a) in fisheries taking species currently identified by risk assessments or other processes as being at “high risk” methods should be introduced by 2003; and</p> <p>(b) where “high risk” is identified after the adoption of this Plan, methods should be introduced within 12 months of identification.</p> <p style="text-align: center;">(Issue 14)</p>	1C	All fisheries agencies Scientific agencies Research funders Commercial fishers	Identify level of bycatch/byproduct under the Nth Australian Shark and Rays Research Project- Phase II.

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18.	Investigate the potential for DNA identification kits for use in identifying shark species. (Issue 1)	1A	DEH AQIS/Customs All fisheries agencies Scientific agencies	Endorse DEH and Customs developing DNA identification for shark s and shark products (import, domestic and export).
THEME 3: IMPROVE DATA COLLECTION AND HANDLING				
19.	Within 6 months of this Plan being adopted prepare a submission to all fisheries agencies seeking commitment to and proposing a process to achieve inter-jurisdictional data compatibility at the level recommended by FAO (2000) and including consideration of the recommendations in Appendix D of this Plan. (Issue 2)	1A	DAFF All fisheries agencies ASIC	Standardise logbooks for collection of commercial shark catch and effort information for data capability for management, research and compliance purposes.
20.	Assess the findings (with respect to sharks) of the 2000 National Recreational and Indigenous Fishing Survey (to: <ul style="list-style-type: none"> • identify gaps in existing monitoring and data collection programs for recreational, charter and Indigenous fishing; • determine the nature (focus) and frequency of future national surveys; • determine the nature and role of State/Northern Territory recreational fishing surveys; • determine its adequacy for reporting on the issues for the whole of Australia; and • where necessary introduce appropriate and effective supplementary or alternative data 	2	DAFF State/NT fisheries agencies Indigenous fishers Recreational fishers Game fishers	Review findings of the National Recreational Fishing Survey. Future surveys of recreational fishers to be determined on a national/jurisdictional basis, rather than specifically for sharks. Ensure that requirements at State/Territory level are met by either the NRFS or by research within jurisdictions.

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	collection mechanisms to ensure adequate information on recreational, charter and Indigenous fishing is collected for management purposes (Issues 2, 8, 11)			
21.	Ensure that where possible processes for the validation of shark catch data from commercial fisheries and charter operations, using observer, monitoring, fishery-independent research programs or other appropriate methods have been initiated. (Issue 2)	1A	All fisheries agencies Commercial fishers Indigenous fishers Recreational fishers Game fishers Shark control programs	Northern Australian Shark Research Project (Phase 1) identified catch species composition and utility of on-board observers as a data collection/validation tool. Northern Australian Shark and Research Project (Phase II) validated shark catch and shark bycatch data. Establish and fund long term monitoring programs for northern sharks.
22.	Ensure that processes for the collection of data necessary for risk assessments of shark species (including availability, catchability, productivity, distribution) have been implemented. (Issues 2, 12)	1C	All fisheries agencies	Northern Australia Shark Research Project to produce and provide rapid risk assessments for sharks. Review risk assessment as new life history and fishery information becomes available.
23.	Develop protocols whereby data can be shared between relevant agencies, yet remain secure through appropriate confidentiality agreements that protect commercially sensitive information and intellectual property rights. (Issue 2)	2	All fisheries agencies DAFF Commercial fishers Indigenous fishers	Protocols (Joint Statements) to be developed for Northern Australia.
24.	Ensure data are well managed in databases such that data are secure, have automated internal verification and validation checks, are corrected for double reporting and have procedures for efficient data extraction,	2	All fisheries agencies	Internal validations developed for Northern Australia shark fisheries given standardised reporting of catch and effort. Seek funds to develop a central database on sharks for efficient data storage, extraction, exchange and summarization, and seek external funds (eg FRDC) to develop

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	exchange and summarisation. (Issue 2)			human capital for ongoing management of the database resource. Seek agreed protocols for summarising catch and effort.
25.	Ensure, where feasible, that appropriate data is collected on quantifiable aspects of cryptic fishing mortality as an input to stock assessments and risk assessments; and Evaluate the sub-lethal effects of game fishing, the scientific benefits of targeted/permitted tag and release activities and, where possible, the extent of cryptic fishing mortality arising from recreational and game fishing. (Issue 2, 9)	3	All fisheries agencies CSIRO DEH State/NT conservation agencies Rec./game fishers Research funders	Incidence of incidental mortality to be included in commercial fishery observer data collection programmes (eg., net fall-out and companion baiting). Conduct an assessment to identify if incidental fishing mortality is an issue in recreational, charter and/or game fishing.
26.	Assess availability of Australian export and import data for shark products against the recommendations of the FAO (FAO, 2000) and CITES decisions on trade codes Identify deficiencies and address these. (Issue 3)	1B	DAFF Conservation NGOs AQIS/Customs Australian Bureau of Statistics Importers/Exporters Commercial fishers	Consider outcomes of DAFF's review, particularly any deficiencies identified.
THEME 4: TARGETED RESEARCH AND DEVELOPMENT				
27.	Evaluate the methodologies for risk assessment and adopt a single national risk assessment framework (see Appendix E), consistent across species, fisheries and other impacts, for shark species and a timetable for carrying out risk assessments. (Issues 6,12)	1A	All fisheries agencies Scientific agencies Research funders DEH State/NT conservation agencies	Northern Australian Sharks and Rays Project – Phase 2 – using currently available methodologies for rapid risk assessment.

	Action	Priority	Responsible/ Interested Agency1	Response
28	Based on the methodology developed under Action 27 initiate risk assessments for all target, byproduct and bycatch shark species including, as far as possible, the risks associated with all impacts on these species, in accordance with the agreed national risk assessment framework and risk assessment timetable and ensure that the data necessary to undertake these risk assessments is collected (Issues 2, 6, 12, 17,18)	1C	All fisheries agencies Scientific agencies Research funders DEH State/NT conservation agencies	Relies on initiative 27. Undertake risk assessment once methodology has been developed, recognising that assessment methodologies are dynamic and will be improved with better data.
29.	Initiate an assessment of opportunities for increasing utilisation/value adding of shark products from currently harvested species and encourage commercial fisheries to evaluate these opportunities subject to the long-term ecologically sustainable harvest of shark species. (Issue 3)	1A	Commercial fishers Seafood Services Australia ASIC Scientific agencies Research funders All fisheries agencies	Commercial industry to consider.
30.	Initiate research to determine the impact on the biology and behaviour of sharks of electromagnetic fields including personal shark protection devices. (Issue 18)	2	DEH DISR All fisheries agencies Research funders Tourism operators	Promote research into such devices.
31.	Initiate an evaluation of the methodology, and where possible apply the methodology, to assess the impact of shark management and conservation measures on ecosystem structure and function. (Issue 15)	3	DAFF DEH All fisheries agencies Research funders GBRMPA	Desktop study of ecosystem assessments to be undertaken using agreed methodology.

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32.	Produce an information paper on Indigenous shark fishing highlighting the traditional, cultural and spiritual significance of sharks to Indigenous people so as to better accommodate these issues in the development of management arrangements. (Issue 11)	1A	DAFF ATSIC Indigenous fishers/researchers Research funders All fisheries agencies	DAFF to coordinate the preparation of the information paper. Ensure information paper includes indigenous knowledge of shark species and possible declines in abundance of at risk species (eg. sawfish). Jurisdictions to contribute information as appropriate.
33.	Identify gaps in knowledge about Indigenous shark fishing and, where the need is identified, develop research proposals to address these gaps. (Issue 11)	1C	All fisheries agencies ATSIC Indigenous fishers Scientific agencies Research funders	Review findings of the National Recreational and Indigenous Fishing Survey. Identify information needs on indigenous shark fishing.
34.	Aim to initiate development of appropriate methods for modelling the population dynamics of chondrichthyans in the ecosystem and develop a basis for distinguishing between natural variation and trends (impacts) in the system so as to assist in understanding population status, rates of recovery, population structure and distribution. (Issue 5, 6 15)	3	All fisheries agencies DEH Scientific agencies Research funders	Evaluate findings of the Northern Australian Shark and Ray Research Project –Phase II and other recent international research. Review monitoring/assessment procedures for data poor fisheries that are appropriate for tropical shark.
35.	Develop a quantitative framework to assess the recovery of listed threatened species. (Issue 13)	2	DEH Scientific agencies Research funders All fisheries agencies State/NT conservation agencies	To be developed in association with the formulation of recovery plans for any listed threatened species.

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36.	<p>Initiate a review of shark handling practices to identify any areas of concern and possible solutions where the need is identified for the conservation and management of sharks. This review could include:</p> <p>(a) the chase of the shark common in game fishing;</p> <p>(b) the issue of finning of live sharks;</p> <p>(c) the issue of towing live sharks back to shore; and</p> <p>(d) the keeping of live shark in aquaria either for display or for restaurant use.</p> <p style="text-align: center;">(Issue 10)</p>	2	<p>DEH HSI Scientific agencies Commercial fishers Recreational fishers Game fishers Australian Seafood Services</p>	<p>Review of shark handling practices, where appropriate, to be undertaken within agreed timeframes.</p> <p>Industry to develop Codes of Conduct.</p>
THEME 5: UNDERTAKE EDUCATION AND AWARENESS RAISING				
37.	<p>Introduce a community education strategy aimed at the general public, commercial, recreational, Indigenous and game fishers. The strategy should aim to</p> <p>(a) raise national awareness of the vulnerability of particular shark species and in particular their role in the marine ecosystem, current threats and status, the cumulative impact of shark bycatch, the need to return sharks to the sea and to maximise their chances of survival and of safe swimming and safe diving guidelines;</p> <p>(b) educate resource users about the rationale for and use of recorded shark catch data;</p> <p>(c) raise national awareness of the cultural significance of shark to Indigenous peoples</p>	1A	<p>DAFF DEH All fisheries agencies Conservation groups Commercial fishers Indigenous fishers Indigenous researchers Recreational fishers Game fishers GBRMPA Tourism operators, eg cage divers, scuba operators</p>	<p>Undertake audit of existing education strategies with a view to:</p> <p>(a) Identify existing education strategies and evaluation of its intended outcomes (objectives) and success (effectiveness) – in association with initiative 38.</p> <p>(b) Include in instructions to fishers (logbooks, industry newsletters).</p> <p>(c) consider on receipt of catch and effort information from National Recreational and Indigenous fishing survey;</p> <p>(d) see (b) above.</p> <p>(e) annual fishermen’s workshop and identification guide.</p> <p>(f) Address, where applicable.</p> <p>Ensure wide dissemination of Final Report for FRDC Sharks 2 project plus other publications that the project generates.</p>

	Action	Priority	Responsible/ Interested Agency1	Response
	<p>based on the outcomes of relevant research as they become available;</p> <p>(d) develop an awareness amongst all resource users of the threatened species provisions, reporting requirements and penalties;</p> <p>(e) encourage the trial of techniques to improve shark species identification(eg photos taken with disposable cameras retention of unknown species for confirmation of species identification), by user groups; and</p> <p>(f) Encourage recreational, game fishing and tourist sectors to address specific issues relevant to those sectors.</p> <p>(Issues 1, 8,9)</p>			<p>Investigate the development of a national website for information dissemination for sharks.</p>
38.	<p>(a) Undertake an assessment of existing shark species identification guides and those under development;</p> <p>(b) ensure guides are culturally appropriate, including the use of Indigenous species names where appropriate;</p> <p>(c) develop a coordinated approach to production of region specific, waterproof species identification charts using existing species guides;</p> <p>(d) ensure the best available guides have been provided to all user groups, processors, compliance officers, observers and scientists involved in each fishery known to take sharks; and</p>	1A	<p>All fisheries agencies Scientific agencies Commercial fishers Indigenous fishers Recreational fishers Game fishers</p>	<p>(a) See initiative 37. (b) Implemented, where appropriate. (c) Complementary approach implemented for northern Australia. (d) See initiative 37. (e) Refer initiative 37.</p> <p>Ensure supply of suitable guides as required.</p>

	Action	Priority	Responsible/ Interested Agency1	Response
	(e) Develop measures to monitor the effectiveness of the guides. (Issue 1)			
THEME 6: IMPROVE COORDINATION AND CONSULTATION				
39.	Within 6 months of this plan being adopted: (a) establish a national sub-program for shark research in the Fisheries Research and Development Corporation (FRDC);or (b) If, within 6 months of this plan being adopted, an FRDC shark subprogram has not been established form a shark research consultative forum to facilitate coordination and collaboration on shark research and develop a strategic plan that responds to the research needs identified in the NPOA. (Issue 4)	1A	DAFF FRDC Scientific agencies Indigenous researchers All fisheries agencies Commercial fishers Indigenous fishers Recreational fishers Game fishers	Encourage and contribute (in kind) to DAFF submission seeking the establishment of an FRDC subprogram.
40.	Identify and incorporate appropriate sources of advice on fishing for sharks by Indigenous people into shark management decision-making processes where relevant. (Issues 7, 11, 12)	1A	All fisheries agencies ATSIC Indigenous researchers Indigenous fishers	Review findings of the National Recreational and Indigenous fishing survey to identify level and regions of take. Consider whether existing consultative arrangements are appropriate given these results.
41.	Seek the advice of Indigenous representatives to identify and implement where necessary effective mechanisms for obtaining reliable catch information and advice from Indigenous communities. (Issues 2, 11)	2	All fisheries agencies ATSIC Indigenous researchers Indigenous fishers	See initiative 40.
42.	Actively promote the implementation of the IPOA-Sharks and improved regional	1B	DAFF AFMA	Encourage cooperative management of northern Australian shark stocks achieved through MOU and Joint Statements

	Action	Priority	Responsible/ Interested Agency ¹	Response
	management of shark stocks, particularly shared stocks, and protection of threatened species in relevant regional fisheries management organisations and under other relevant international conventions e.g. CITES and the Convention on Migratory Species. (Issue 7)		DEH Conservation NGOs	agreed between Western Australia, Northern Territory, Queensland and the Commonwealth.
43.	Initiate discussions with countries in the region eg. Indonesia, Papua New Guinea, East Timor, New Zealand, in relation to complementary and collaborative management of straddling shark stocks. These discussions should include: the identification and implementation of collaborative measures to enhance the capacity of these countries to collect, analyse and share data on straddling shark stocks and to encourage and assist with the development of national plans of action. (Issue 7)	1B	DAFF DEH AFMA	Encourage and contribute (in kind) to DAFF & ACIAR initiatives for shared stocks of sharks throughout northern Australia and eastern Indonesia to: Identify species and landings (current ACIAR shark project). DAFF to approach relevant international jurisdictions (East Timor, Indonesia) to develop a central straddling shark stocks database for the efficient data storage, extraction, exchange and summarization, and seek external funds (eg ACIAR) to develop human capital for ongoing management of the database resource.

Priority:

1A Action initiated within 12 months and completed within 2 years, if not sooner

1B Action initiated within 12 months and completed in shortest possible timeframe

1C Action initiated within 12 months of completion of prerequisite work completed in shortest possible timeframe

2 Action initiated and completed within 3 years

3 Action initiated within 4 years if not sooner and completed as soon as feasible