

## **The implementation of the National Plan of Action for the Conservation and Management of Sharks – Australia**

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### **Abstract**

The Australian Department of Agriculture, Fisheries and Forestry (DAFF) coordinated the national response to the *FAO International Plan of Action for the Conservation and Management of Sharks* and the development of Australia's *National Plan of action for the Conservation and Management of Sharks (Shark-plan)*. The *Shark-plan* was released in 2004 following development by a Shark Advisory Group comprised of interested parties. The Shark Implementation and Review Committee (SIRC) have the responsibility to develop strategies for implementation and review of the *Shark-plan*.

### **Introduction**

This paper provides an update on the progress of Australia's *National Plan of Action for the Conservation and Management of Sharks (Shark-plan)*. The focus is on the implementation and particularly the role of Australia's Shark Implementation and Review Committee. The scheduled review of Australia's *Shark-plan* is highlighted.

Australia is not a major shark fishing nation. About 300 species of sharks and rays are found in Australian waters and over half of these are endemic. Approximately 175 species have been recorded as retained target catch or as non-target catch of fisheries in Australian waters.

The Australian Department of Agriculture, Fisheries and Forestry (DAFF) coordinated the national response to the *FAO International Plan of Action for the Conservation and Management of Sharks* and the development of Australia's *Shark-plan*. A national Shark Assessment Report and the *Shark-plan* were developed by a Shark Advisory Group comprising of representatives from: relevant government agencies, the commercial fishing industry, recreational fishing groups, indigenous groups, scientific agencies and conservation groups. The plan identifies six key themes and 43 actions to improve conservation and management of Australia's shark stocks.

The six key themes of the *Shark-plan* are to:

1. Review existing conservation and management measures;
2. Improve management and conservation measures;
3. Improve data collection and handling;
4. Undertake education and awareness raising;
5. Targeted research and development;
6. Improve coordination and consultation.

The details of the specific actions within these themes were provided to ERSWG 6 within CCSBT-ERS/0602/Info01.

Management of Australia's fisheries is a complex mix of Australian Government, State and Territory responsibility and these bodies have the responsibility under the *Shark-plan* to address the identified actions.

The Shark Implementation and Review Committee (SIRC) was established in 2004 by the Natural Resource Management Marine and Coastal Committee (MACC), reporting through Australia's Fisheries Management Forum (AFMF), to oversee the implementation of the *Shark-plan*.

### **The Shark Implementation and Review Committee (SIRC)**

The primary responsibility of SIRC is to oversee the implementation of Australia's *National Plan of action for the Conservation and Management of Sharks (Shark-plan)*.

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 - Committee on Fisheries (FAO-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 review of the *Shark-plan* and timed for submission to a FAO COFI meeting.

The SIRC has met five times since 2004. The SIRC has developed four regional operational plans to assist implementation of the *Shark-plan* at regional levels. These plans cover Northern Australia, Southern Australia, Western Australia and Eastern Queensland and Northern New South Wales. These operational plans provide additional detail on how and by whom the *Shark-plan* actions are being implemented at a regional level. The Northern Australia regional plan is attached as an indication of the action items and progress against them (Attachment 1).

Significant progress has been made with the management of shark stocks in Australia since the release of the *Shark-plan*, including:

- A strong focus on the need for improved shark management and greater public awareness of the need for shark conservation;

- Implementation of improved measures to specifically prevent shark-finning, all jurisdictions prohibit finning as it refers to the onboard removal of shark fins and disposing the carcasses at sea.
- Specific protection under Australian environmental law for a number of shark species.
- Measures to reduce bycatch of sharks, including catch limits on the number of sharks that can be taken and minimising the use of wire traces in tuna longline fisheries;
- Research to improve understanding of shark biology;
- Enhanced observer coverage and reporting mechanisms to improve logbook data collection, including the production of species guides to improve reporting.

### **Review of Australia's *Shark-plan***

The SIRC is responsible for initiating and overseeing a review and update of the Shark Assessment Report and the four-yearly review of the *Shark-plan*. The review of the *Shark-plan* will assess the plan's success on the extent to which the *Shark-plan* has achieved its objectives and on the outcomes of the *Shark-plan*. Performance indicators are included in the *Shark-plan* to assist the review.

The review will commence in 2007/08, so that recommendations can be provided to the Natural Resource Management Ministerial Council by the end of 2008. The process for review of the *Shark-plan* has already been initiated by the Australian Government Department of Agriculture, Fisheries and Forestry with plans underway for the Bureau of Rural Sciences to coordinate the review and update of the Shark Assessment Report.

### **References**

Australia's National Plan of Action for the Conservation and Management of Sharks  
<http://www.daff.gov.au/fisheries/environment/bycatch/sharkplan>

Australian Shark Assessment Report  
[http://www.daff.gov.au/\\_\\_data/assets/pdf\\_file/0018/17721/shark\\_assess\\_report.pdf](http://www.daff.gov.au/__data/assets/pdf_file/0018/17721/shark_assess_report.pdf)

## Attachment 1

## Operational Plan for the Sustainable Use of Northern Australian Shark Resources (Region 1)

	Action	Priority	Responsible/ Interested Agency <sup>1</sup>	Response	Current Status in NT April 2007	Link to NAFM
<b>THEME 1 REVIEW EXISTING CONSERVATION AND MANAGEMENT MEASURES</b>						
1.	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. <b>(Issue 7)</b>	1A	All fisheries agencies DEH  State/NT conservation agencies	A single operational plan to be formulated for northern Australian shark fisheries in Western Australian, Northern Territory, Queensland and Commonwealth areas.  Commercial export and Commonwealth-managed shark fisheries to be assessed against the Commonwealth Guidelines for the Ecologically Sustainable Management of Fisheries under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).  Any recommendations made as part of fishery assessments under the EPBC Act to be implemented within agreed timeframes.  AFMA is currently conducting a desktop review of the effectiveness of all Commonwealth fisheries management arrangements relevant to the Shark-plan, and will address any gaps. This review includes Northern fisheries: NPF, WTBF and IUU shark fishing operations.	Completed  Completed  Ongoing  In progress	1,4  1  1,3
2.	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.	1A	<b>All fisheries agencies</b> DEH State/NT conservation agencies	Through involvement in the Department of the Environment and Heritage's National Shark Recovery Group (NSRG), assist in the development of recovery plans as required under the EPBC Act for listed threatened species. Consider management need of Glyphis spp. and sawfish through involvement in the NSRG.	On target for completion within timeframe specified  On target for completion within timeframe specified	1,2,3,5  1,3  3

	<b>(Issue 7)</b>			Promote biological investigation of life cycle characteristics and habitat requirements for these species.	On target for completion within timeframe specified  AFMA is currently conducting a desktop review of ERA results and the management arrangements for listed and threatened species in Commonwealth fisheries, including shark species.	
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"> <li>the effectiveness of limits and bans on retention of shark byproduct;</li> <li>the effectiveness of “generic” limits on shark byproduct in non-target fisheries; and</li> <li>address any deficiencies identified in these assessments;</li> </ul> <p>Encourage the adoption of effective shark bycatch reduction measures.</p> <p><b>(Issues 7, 14)</b></p>	1A	<p><b>All fisheries agencies</b> Commercial fishers Recreational fishers</p>	<p>Implement appropriate bycatch/byproduct 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/byproduct measures by December 2006</p> <p>Develop a single bycatch action plan for northern Australian shark fisheries by December 2006</p>	<p>Completed</p> <p>On target for completion within timeframe specified</p> <p>On target for completion within timeframe specified</p> <p>On target for completion within timeframe specified</p> <p>Minimum mesh sizes and the fishbox excluder device may have also reduced shark and ray bycatch in AFMA fisheries.</p>	<p>1,2,3,4</p> <p>1,3,5</p> <p>1,2,3</p> <p>1,2,4,5</p>

<b>THEME 1 CONT.</b>						
	Action	Priority	Responsible/ Interested Agency	Response	Current Status in NT <b>July 2006</b>	Link to NAFM
4.	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 Assess the impact of bycatch reduction measures for other species on shark bycatch.  <b>(Issue 15)</b>	3	<b>All fisheries agencies</b> Commercial fishers	Review the impact of current shark bycatch limits by December 2006	On target for completion within timeframe specified	1,2,3,4
5.	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 Identify any deficiencies and address these.  <b>(Issues 1,7, 10)</b>	1A	<b>AFMA</b> All relevant fisheries agencies Commercial fishers	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.  Undertake annual reviews for shark finning legislation.	Annual review, On target for completion within timeframe specified  On target for completion within timeframe specified	1,2,4,5  1,2,4,5
6.	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.  <b>(Issue 7)</b>	2	<b>DAFF</b> All fisheries agencies Commercial fishers	Review of OCS arrangements for northern Australia to commence in April 2004.  Assess management of target shark species and bycatch species.  ACIAR project for shark fisheries of Indonesia (potential for internationally shared stocks)	On target for completion within timeframe specified  On target for completion within timeframe specified  ?	1,4,5  1,3  1,3,4,7
7.	Initiate an assessment of the ecological impacts of shark control programs for	2	Fisheries & relevant	Not applicable to northern Australia/Gulf of Carpentaria	N/A	

	bather protection (including drum lines and nets) and review the need for these programs weighing up the ecological impacts against the level of risk to bathers. <b>(Issue 14)</b>		agencies in Qld/NSW Conservation groups			
8.	Review the effectiveness of management measures for recreational and game fishing in achieving ecological sustainability of shark species. <b>(Issue 8)</b>	2	<b>All fisheries agencies</b> 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.	Recommendation to Minister to introduce shark possession limit to 2 sharks.	1,3,4,5 1,3,4,5
9.	Assess the impact of existing management measures for sharks on Indigenous fishing.  <b>(Issue 11)</b>	1C	<b>All fisheries agencies</b> 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 shark harvest.  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.	On target for completion within timeframe specified  Indigenous representation on SharkMAC 2005	1,3,4,5 1,4,5

<b>THEME 2: IMPROVE MANAGEMENT AND CONSERVATION MEASURES</b>						
	Action	Priority	Responsible/ Interested Agency	Response	Current Status in NT <b>July 2006</b>	Link to NAFM
10.	<p>Ensure that management arrangements for target shark species include precautionary management triggers and pre-determined management processes, including timeframes, should these triggers be reached.</p> <p style="text-align: center;"><b>(Issue 7)</b></p>	1C	<b>All fisheries agencies</b>	<p>Northern Shark Research Program to apply rapid risk assessment process for shark species.</p> <p>Encourage focused research that will provide necessary biological information that can be used to review the status of target shark species.</p> <p>Each jurisdiction to develop management triggers, responses and prescribed response time.</p>	<p>On target for completion within timeframe specified, completion due June 2006. Draft report to FRDC.</p> <p>On target for completion within timeframe specified</p> <p>On target for completion within timeframe specified</p>	<p>1,3</p> <p>1,3</p> <p>1-5</p>
11.	<p>Ensure that, where a species is taken in two or more fisheries within a jurisdiction or in two or more jurisdictions:</p> <ul style="list-style-type: none"> <li>• 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;</li> <li>(a) the potential of multi-jurisdictional or 'across-fishery' approaches to shark management have been assessed and introduced where possible;</li> <li>(b) effective communication and consultation mechanisms between all stakeholders are in place; and</li> <li>(c) management measures are complementary and consistent with an ESD approach.</li> </ul>	1C	<b>All fisheries agencies</b> Commercial fishers	<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 licences for the</p>	<p>On target for completion within timeframe specified, have revised logbook standards.</p> <p>On target for completion within timeframe specified</p> <p>On target for completion within timeframe specified</p>	<p>1,2,3,5,6.</p> <p>1,6,7</p> <p>1,4,5</p> <p>1,3,5,6</p>



	<b>(Issues 5, 7)</b>			GoC.  NAFM to canvass complementary management of shark fisheries	On target for completion within timeframe specified	
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 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><b>(Issue 16, 18)</b></p>	1B	<p><b>DEH</b> <b>All fisheries agencies</b> State/NT conservation agencies Conservation NGOs Commercial fishers Indigenous fishers Recreational fishers Game fishers Divers</p>	<p>Review Northern Australian Shark Research project findings as available.</p> <p>Assist in identifying and protecting habitat critical to the survival of shark species outside of Australian waters by supporting the Australian Government's engagement in multilateral fora such as the Convention on Migratory Species of Wild Animals (CMS).</p> <p>Promote research to identify critical habitats</p> <p>Investigate use of spatial closures to protect identified critical habitats.</p>	<p>On target for completion within timeframe specified</p> <p>On target for completion within timeframe specified</p> <p>On target for completion within timeframe specified</p> <p>On target for completion within timeframe specified</p>	<p>1-3,5,6</p> <p>1,6,7</p> <p>1,3,6</p> <p>3</p>

<b>THEME 2: CONT.</b>						
	Action	Priority	Responsible/ Interested Agency	Response	Current Status in NT <b>July 2006</b>	Link to NAFM
13.	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	1C	<p><b>All fisheries agencies</b> DEH State/NT conservation agencies</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 <i>Guidelines for the Ecologically Sustainable Management of Fisheries</i> .	On target for completion within timeframe specified, due for completion June 2006.	1,3,5

	Fisheries (EA 2001).  <b>(Issue 13)</b>		Commercial fishers Conservation NGOs Scientific agencies	Develop criteria (with industry) that can be used to establish the need for rehabilitation.  Ensure management arrangements allow for the implementation of rehabilitation strategies.  Encourage complementary research to improve the quality of risk <i>assessments</i> and assessments of resource status.	On target for completion within timeframe specified  On target for completion within timeframe specified  On target for completion within timeframe specified	1-3,5,6  1,5,6  1,3,5,6
14.	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.  <b>(Issue 6)</b>	1C	<b>All fisheries agencies</b> <b>DEH</b> Commercial fishers Indigenous fishers Recreational fishers Game fishers Scientific agencies	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.  Evaluate management strategies and information requirements to minimize risk.  Encourage complementary research to improve the quality of risk assessments and precautionary management triggers.	On target for completion within timeframe specified, due for completion June 2006.  On target for completion within timeframe specified  On target for completion within timeframe specified	1,3,5,6  1,3,6  1,3,6
15.	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	2	<b>All relevant fisheries agencies</b>	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.	<b>NSAG</b> recently convened to update assessment for Blacktip sharks, triennial	1,3,6  1,3,5

	assessments do not exist, give priority to undertaking them. <b>(Issue 5)</b>			Evaluate management strategies and information requirements to reduce uncertainty.  Develop research priorities for Nth Australian fisheries through the NAFM Workshop.	assessments.  On target for completion within timeframe specified  Research Operational Plan currently being developed	1-5,7
16.	Implement processes to ensure that the scientific research potential of sharks caught in shark control programs is maximised. <b>(Issue 7)</b>		<b>NSW and Qld fisheries agencies</b> <b>Scientific agencies</b>	Not applicable to Northern Australia/Gulf of Carpentaria.	N/A	Na
17.	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':  (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  (b) where "high risk" is identified after the adoption of this Plan, methods should be introduced within 12 months of identification. <b>(Issue 14)</b>	1C	<b>All fisheries agencies</b> Scientific agencies Research funders Commercial fishers	Identify level of bycatch/byproduct under the Nth Australian Shark and Rays Research Project-Phase II.	On target for completion within timeframe specified, final report due December 2005	1,3
18.	Investigate the potential for DNA identification kits for use in identifying shark species. <b>(Issue 1)</b>	1A	<b>DEH</b> AQIS/Customs All fisheries agencies Scientific agencies	Endorse DEH, AFMA and Customs developing DNA identification for sharks and shark products (import, domestic and export).	On target for completion within timeframe specified	1-7

<b>THEME 3: IMPROVE DATA COLLECTION AND HANDLING</b>						
	Action	Priority	Responsible/ Interested Agency	Response	Current Status in NT <b>July 2006</b>	Link to NAFM
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. <b>(Issue 2)</b>	1A	<b>DAFF</b> All fisheries agencies ASIC	Standardise logbooks for collection of commercial shark catch and effort information for data capability for management, research and compliance purposes.	On target for completion within timeframe specified, Data Working Group meeting held. NT has introduced revised logbooks July 2005.	1-4,7
20.	Assess the findings (with respect to sharks) of the 2000 National Recreational and Indigenous Fishing Survey (to: (a) identify gaps in existing monitoring and data collection programs for recreational, charter and Indigenous fishing; (b) determine the nature (focus) and frequency of future national surveys; (c) 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 collection mechanisms to ensure adequate information on recreational, charter and Indigenous fishing is collected for management purposes <b>(Issues 2, 8, 11)</b>	2	<b>DAFF</b> 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.	On target for completion within timeframe specified On target for completion within timeframe specified  On target for completion within timeframe specified	1,4  1,4  1,3,4
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	1A	<b>All fisheries agencies</b> Commercial fishers Indigenous fishers Recreational fishers	Northern Australian Shark Research Project (Phase 1) identified catch species composition and utility of on-board observers as a data	Completed	1,3  1,3

	or other appropriate methods have been initiated.  <b>(Issue 2)</b>		Game fishers Shark control programs	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.	On target for completion within timeframe specified, due for completion Dec 2005  On target for completion within timeframe specified	1,3,5
22.	Ensure that processes for the collection of data necessary for risk assessments of shark species (including availability, catchability, productivity, distribution) have been implemented.  <b>(Issues 2, 12)</b>	1C	<b>All fisheries agencies</b>	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.	On target for completion within timeframe specified, due for completion Dec 2005 On target for completion within timeframe specified	3 1,4,5,7
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.  <b>(Issue 2)</b>	2	<b>All fisheries agencies</b> DAFF Commercial fishers Indigenous fishers	Protocols (Joint Statements) to be developed for Northern Australia	On target for completion within timeframe specified	4-6
<b>THEME 3: CONT.</b>						
	<b>Action</b>	<b>Priority</b>	<b>Responsible/ Interested Agency</b>	<b>Response</b>	<b>Current Status in NT July 2006</b>	<b>Link to NAFM</b>
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, exchange and summarisation.  <b>(Issue 2)</b>	2	<b>All fisheries agencies</b>	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 human capital for ongoing management of the	On target for completion within timeframe specified, first logbook standardization meeting held. Data Working Group meeting held. NT has introduced revised logbooks July 2005.	1,3,4,5 1,3 1,3,4,6

				database resource. Seek agreed protocols for summarising catch and effort		
25.	<p>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</p> <p>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.</p> <p><b>(Issue 2, 9)</b></p>	3	<p><b>All fisheries agencies</b> CSIRO DEH State/NT conservation agencies Rec./game fishers Research funders</p>	<p>Incidence of incidental mortality to be included in commercial fishery observer data collection programmes (eg., net fall-out and companion baiting)</p> <p>Conduct an assessment to identify if incidental fishing mortality is an issue in recreational, charter and/or game fishing.</p>	<p>On target for completion within timeframe specified</p> <p>On target for completion within timeframe specified</p>	<p>1,3,7</p> <p>1,3</p>
26.	<p>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</p> <p>Identify deficiencies and address these.</p> <p><b>(Issue 3)</b></p>	1B	<p><b>DAFF</b> Conservation NGOs AQIS/Customs Australian Bureau of Statistics Importers/Exporters Commercial fishers</p>	<p>Consider outcomes of DAFF's review, particularly any deficiencies identified</p>	<p>On target for completion within timeframe specified</p>	2,5-7

<b>THEME 4: TARGETED RESEARCH AND DEVELOPMENT</b>						
	<b>Action</b>	<b>Priority</b>	<b>Responsible/ Interested Agency</b>	<b>Response</b>	<b>Current Status in NT July 2006</b>	<b>Link to NAFM</b>
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.  <b>(Issues 6,12)</b>	1A	<b>All fisheries agencies</b> 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.	On target for completion within timeframe specified, due for completion Dec 2005	3,5
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  <b>(Issues 2, 6, 12, 17,18)</b>	1C	<b>All fisheries agencies</b> Scientific agencies Research funders EA 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.	On target for completion within timeframe specified, due for completion Dec 2005	1,3
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.  <b>(Issue 3)</b>	1A	<b>Commercial fishers</b> Seafood Services Australia ASIC Scientific agencies Research funders All fisheries agencies	Commercial industry to consider.	On target for completion within timeframe specified, shark export steadily increasing as markets develop.	1,3
30.	Initiate research to determine the impact on the biology and behaviour of sharks of electromagnetic fields including personal shark protection devices.  <b>(Issue 18)</b>	2	<b>DEH</b> DISR All fisheries agencies Research funders	Promote research into such devices.	On target for completion within timeframe specified	1,3

			Tourism operators			
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. <b>(Issue 15)</b>	3	<b>DAFF DEH</b> All fisheries agencies Research funders GBRMPA	Desktop study of ecosystem assessments to be undertaken using agreed methodology.	On target for completion within timeframe specified	1,3
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. <b>(Issue 11)</b>	1A	<b>DAFF ATSIC</b> 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.	On target for completion within timeframe specified  On target for completion within timeframe specified	1,3,5
33.	Identify gaps in knowledge about Indigenous shark fishing and, where the need is identified, develop research proposals to address these gaps. <b>(Issue 11)</b>	1C	<b>All fisheries agencies ATSIC</b> Indigenous fishers Scientific agencies Research funders	Review findings of the National Recreational and Indigenous Fishing Survey  Identify information needs on Indigenous shark fishing	On target for completion within timeframe specified	1,3

<b>THEME 4: CONT.</b>						
Action	Priority	Responsible/ Interested Agency	Response	Current Status in NT July 2006	Link to NAFM	
34. Aim to initiate development of appropriate methods for modeling 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	3	<b>All fisheries agencies DEH Scientific</b>	Evaluate findings of the Northern Australian Shark and Ray Research Project –Phase II and other recent international research.	On target for completion within timeframe specified	1,3	



	population status, rates of recovery, population structure and distribution. <b>(Issue 5, 6 15)</b>		agencies Research funders	Review monitoring/assessment procedures for data poor fisheries that are appropriate for tropical shark.	On target for completion within timeframe specified	
35.	Develop a quantitative framework to assess the recovery of listed threatened species. <b>(Issue 13)</b>	2	<b>DEH</b> Scientific agencies Research funders All fisheries agencies State/NT conservation agencies	Assist DEH to develop quantitative frameworks to assess the recovery of listed threatened species through involvement in the NSRG.	On target for completion within timeframe specified	1,2,5
36.	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: (d) the chase of the shark common in game fishing; (e) the issue of finning of live sharks; (f) the issue of towing live sharks back to shore; and (g) the keeping of live shark in aquaria either for display or for restaurant use. <b>(Issue 10)</b>	2	<b>DEH</b> <b>HSI</b> Scientific agencies Commercial fishers Recreational fishers Game fishers Australian Seafood Services	Review of shark handling practices, where appropriate, to be undertaken within agreed timeframes.  Industry to develop Codes of Conduct.	Completed. No issues found to be relevant  Draft Code of Practice developed 2005	1,2,5

<b>THEME 5: UNDERTAKE EDUCATION AND AWARENESS RAISING</b>						
	Action	Priority	Responsible/ Interested Agency	Response	Current Status in NT July 2006	Link to NAFM
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>(c) 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>(d) educate resource users about the rationale for and use of recorded shark catch data;</p> <p>(e) raise national awareness of the cultural significance of shark to Indigenous peoples based on the outcomes of relevant research as they become available;</p> <p>(f) develop an awareness amongst all resource users of the threatened species provisions, reporting requirements and penalties;</p> <p>(a) 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>(b) Encourage recreational, game fishing and tourist sectors to address specific issues relevant to those sectors. <b>(Issues 1, 8,9)</b></p>	1A	<p><b>DAFF</b> <b>DEH</b> <b>All fisheries agencies</b> 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>Identify existing education strategies and evaluation of its intended outcomes (objectives) and success (effectiveness) – in association with initiative 38.</p> <p>Include in instructions to fishers (logbooks, industry newsletters) consider on receipt of catch and effort information from National Recreational and Indigenous fishing survey see (b) above annual fishermen’s workshop and identification guide Address, where applicable.</p> <p>Ensure wide dissemination of Final Report for FRDC Sharks 2 project plus other publications that the project generates.</p> <p>Investigate the development of a national website for information dissemination for sharks.</p>	On target for completion within timeframe specified	1,5,6
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</p>	1A	<p><b>All fisheries agencies</b> Scientific agencies Commercial fishers</p>	<p>(g) See initiative 37 (h) Implemented, where appropriate (i) Complementary approach implemented for northern Australia</p>	On target for completion within timeframe specified	1,3,6,7

	<p>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> <p>(e) Develop measures to monitor the effectiveness of the guides.</p> <p style="text-align: center;"><b>(Issue 1)</b></p>		<p>Indigenous fishers Recreational fishers Game fishers</p>	<p>(j) See initiative 37 (k) Refer initiative 37</p> <p>Ensure supply of suitable guides as required.</p>		
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<b>THEME 6: IMPROVE COORDINATION AND CONSULTATION</b>						
	Action	Priority	Responsible/ Interested Agency	Response	Current Status in NT <b>July 2006</b>	Link to NAFM
39.	<p>Within 6 months of this plan being adopted:</p> <ul style="list-style-type: none"> <li>establish a national sub-program for shark research in the Fisheries Research and Development Corporation (FRDC);or</li> <li>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.</li> </ul> <p style="text-align: center;"><b>(Issue 4)</b></p>	1A	<p><b>DAFF FRDC Scientific agencies Indigenous researchers</b> All fisheries agencies Commercial fishers Indigenous fishers Recreational fishers Game fishers</p>	Encourage and contribute (in kind) to DAFF submission seeking the establishment of an FRDC subprogram.	On target for completion within timeframe specified	3,6
40.	<p>Identify and incorporate appropriate sources of advice on fishing for sharks by Indigenous people into shark management decision-making processes where relevant.</p> <p style="text-align: center;"><b>(Issues 7, 11, 12)</b></p>	1A	<p><b>All fisheries agencies ATSIC Indigenous researchers</b> Indigenous fishers</p>	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.	On target for completion within timeframe specified, Indigenous representation on SharkMAC 2005	1,6
41.	<p>Seek the advice of Indigenous representatives to identify and implement where necessary effective mechanisms for obtaining reliable catch information and advice from Indigenous communities.</p> <p style="text-align: center;"><b>(Issues 2, 11)</b></p>	2	<p><b>All fisheries agencies ATSIC Indigenous researchers</b> Indigenous fishers</p>	See initiative 40.	On target for completion within timeframe specified, Indigenous representation on SharkMAC 2005	1,3
42.	<p>Actively promote the implementation of the IPOA-Sharks and improved regional management of shark stocks, particularly shared stocks, and protection of</p>	1B	<p><b>DAFF AFMA DEH</b></p>	Encourage cooperative management of northern Australian shark stocks achieved through MOU and Joint Statements agreed	On target for completion within	1-7

	threatened species in relevant regional fisheries management organisations and under other relevant international conventions e.g. CITES and the Convention on Migratory Species. <b>(Issue 7)</b>		Conservation NGOs	between Western Australia, Northern Territory, Queensland and the Commonwealth.	timeframe specified	
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. <b>(Issue 7)</b>	1B	<b>DAFF</b> <b>DEH</b> <b>AFMA</b>	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.	On target for completion within timeframe specified	1,3,7
44	Each jurisdiction to report annually on the implementation of the operational plan.	1A	<b>All fisheries agencies</b>	Tabulated report to be produced by the NAFC Secretariat for NAFM consideration and subsequent referral to NAFC.	On target for completion within timeframe specified	6