Australian Government
Australian Fisheries Management Authority

Ecological Risk Management

REPORT FOR THE NORTH WEST SLOPE FISHERY

April 2010

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Summary of priority issues for managing the ecological effects of fishing in the North West Slope Fishery

The priority list of species to be addressed in the North West Slope Fishery (NWSF) appears below.

Taxonomic Group	Scientific Name	Common Name	Role in Fishery	Highest Level of Assessment	Risk Score for Finfish Trawl
invertebrate	Scarlet Prawn	*Aristaeopsis edwardsiana*	TA	Level 2 PSA RR	High 3.32

The priority list was compiled from the highest level of assessment undertaken for the fishery and includes:

a) all teleost or chondrichthyan species identified as precautionary high risk or above under the Level 3 Assessment (SAFE methodology); and
b) for all other non-protected species identified as high risk under the Level 2 PSA Residual Risk; noting that,
c) no protected (TEP) species thought to occur within the area of the fishery were identified at high risk through these processes.

Under the Level 2 PSA 1 target species was assessed as being at high risk. After the application of the Residual Risk Guidelines it remained at high risk. An additional quantitative Level 3 assessment of the impacts on the fishery identified no teleost or chondrichthyan species at any high risk category under the current level of fishing effort.

Within the waters of the fishery 121 threatened, endangered or protected species are also theoretically found. These include 3 species of sharks/rays, 21 species of seabirds, 30 species of marine mammals, 27 species of marine reptiles and 40 species of bony fish. Although none of these species were assessed as being at high risk (and were eliminated at Level 1), all reasonable steps will be taken through the Ecological Risk Management (ERM) process to minimise future interactions with these species.

Description of the North West Slope Trawl Fishery

The North West Slope Fishery (NWSF) extends from 114ºE to about 125ºE off the Western Australian coast between the 200m isobath and the outer limit of the Australian Fishing Zone, but taking into account Australian- Indonesian maritime boundaries.

Fishing is conducted with demersal crustacean trawls during the day and night along bathometric contours depending upon the target species sought.

Most operators in the fishery also fish in the Northern Prawn Fishery (NPF) and although the NWSF is open all year, fishing effort is only normally applied seasonally during closed periods in the NPF.

Gear:	**Prawn trawl (minimum 50mm cod-end)**
Area:	**North West coast of Western Australia**
Depth range:	**200 to 600 m**
Fleet size:	**7 fishing permits**
Effort:	**Approximately 1,000 shots per year**
Landings:	**Approximately 70 t per year**
Discard rate:	**Unknown**
Main target species:	**3 species of scampi**
Management:	**7 transferable fishing permits**
Observer program:	**AFMA observers on 4 recent trips (2005, 2007(2 trips) & 2009)**

Contents

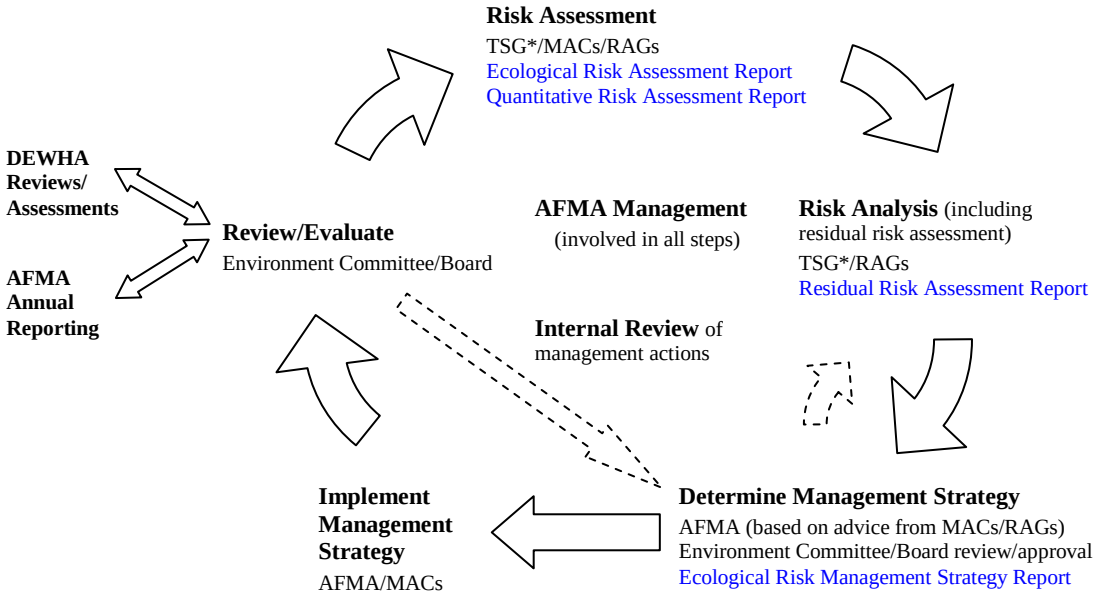
1. OVERVIEW

- **Implementing ecological risk management in Commonwealth managed fisheries**

AFMA aims to minimise the impacts of Commonwealth managed fisheries on all aspects of the marine ecosystem. AFMA's adoption of the ecological component of Ecologically Sustainable Development (ESD) is a significant departure from traditional fisheries management with the focus shifted from the direct management of target species to also considering the impacts on bycatch species, TEP species, habitats, and communities.

Key to AFMA's implementation of the ecological component of ESD has been to develop and implement an ERM framework (refer to **Figure 1**). The framework details a robust and transparent process to assess, analyse and respond to the ecological risks posed by Commonwealth managed fisheries.

Figure 1: Ecological Risk Management framework



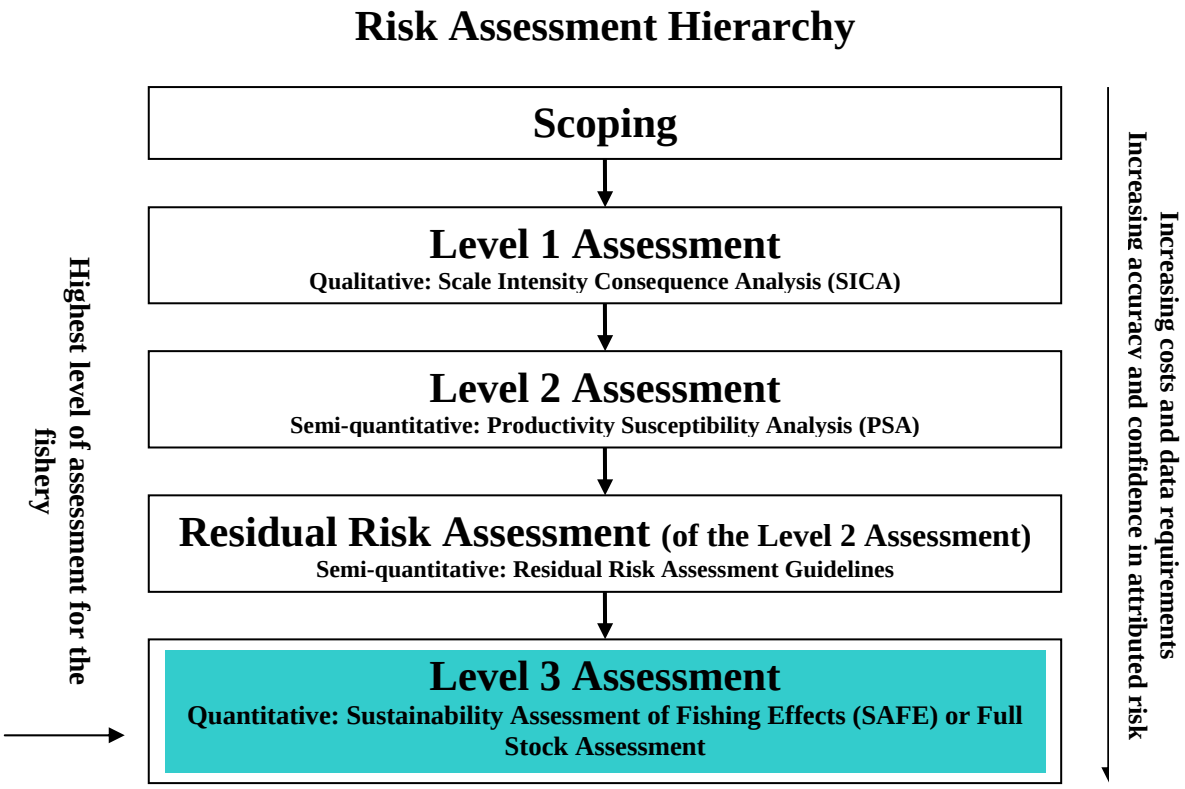
*TSG – Technical Support Group – currently provided by CSIRO

The ERM framework progresses through a number of steps and involves a hierarchy of risk assessment methodologies progressing from a comprehensive but largely qualitative analysis at Level 1 to a quantitative analysis at Level 3 (refer to **Figure 2**). This approach is a means of screening out low risk activities and focusing more intensive and quantitative analyses on those activities assessed as having a greater environmental impact on AFMA managed fisheries.

The initial assessment stage involves the development of a qualitative ecological risk assessment (ERA) for each individual fishery. ERAs assess the impact, direct and indirect, that a fishery's activities may have on the marine ecosystem. These assessments provide the foundation for further risk assessment and analysis. While it has been a long and complex process, ERAs have now been completed (to varying degrees – either Level 1, 2 or 3) for all major Commonwealth managed fisheries.

The next stage of the assessment process involves the development of a residual risk assessment for each individual fishery. Residual risk assessments evaluate and refine ERA high risk outcomes by taking into account additional information not considered through the ERA process, in particular the mitigating effects of current management arrangements. In addition to residual risk process, a number of fisheries have also undergone further quantitative risk assessment (Level 3 assessment).

Figure 2: Risk assessment hierarchy



The results of the risk assessments are now the focus for the development and implementation of this ERM strategy. Further information on the risk assessment process and methodologies applied can be found on AFMA's website.

- **Developing an ecological risk management strategy**

The result of the risk assessment process is a priority list identifying the key ecological areas in the fishery that require management attention. A fishery's priority list will be comprised of:

- those species identified as precautionary high risk, extreme high risk or precautionary extreme high risk through a quantitative risk assessment; and
- those species that have not undergone a quantitative risk assessment and are identified as high risk through the application of the residual risk assessment methodology; and,
- all TEP species identified through the ERA.

Once identified, species that form the priority list for each fishery will be managed either through fishery specific arrangements or under one or more of the following policies or measures:

- Harvest Strategy Policy and Guidelines;
- Non-key Commercial Species (byproduct) Policy;
- Bycatch and Discard Program;
- Shark Policy and the Chondrichthyan Guide for Fisheries Managers; and
- Protected (TEP) species under various international plans of action, recovery plans etc.

ERM strategies to address those remaining species identified as at medium or low risk may be implemented at a later date. Due to limitations in the ERA methodology, for assessing the impacts of fishing operations on habitats and communities, AFMA will defer the development of an ERM strategy for these components until more refined and meaningful results become available.

- **Measuring individual mitigation strategies**

In managing the priority species identified in each fishery we will prepare reports with clear performance measures which address both long and short term goals and aims. Ongoing monitoring and review of the mitigation measures will occur. In the medium to longer term these results will also be used when assessing any change of status of a species e.g. where a bycatch or byproduct species moves to become a target species. Mitigation actions can be taken for individual species or groups of species.

Fisheries are encouraged to consider “cross” fishery solutions when implementing measures for species that are identified as at risk across more than one fishery and/or where fishing methods cross fishery boundaries.

Outcomes of the ERM strategies and measures described in each fishery’s various work plans and Harvest Strategies will flow into a number of processes including annual reporting to the Department of the Environment, Water, Heritage and the Arts.

It is expected that each fishery will be reassessed against the ERA methodology on a periodic basis in line with the review of any Wildlife Trade Operation (WTO) accreditation in place in the fishery.

2. ECOLOGICAL RISK MANAGEMENT PRIORITY LIST

The risks that the North West Slope Fishery poses to the sustainability of the marine ecosystem have been assessed through the application of a progression of risk assessment methodologies as listed below:

- an individual ERA completed to Level 2 in June 2007;
- a residual risk assessment completed in December 2007 and in 2010; and,
- a rapid quantitative Level 3 risk assessment completed in June 2009.

Table 1 details the results at each level of assessment. Further information and reports for each level of assessment can be found on AFMA's website.

Level of assessment and risk levels attributed	Target Species	Byproduct Species	Bycatch Species	TEP Species
Level 1 SICA Assessment				
Consequence score (for each species component)	3	2	2	1
Proceeded to Level 2 PSA Assessment (scores ≥ 3)	7	0	0	0
Level 2 PSA Assessment				
High Risk	1	0	0	0
Medium Risk	4	0	0	0
Low Risk	2	0	0	0
Level 2 PSA Residual Risk Assessment				
High Risk	1	0	0	0
Medium Risk	4	0	0	0
Low Risk	2	0	0	0
Level 3 SAFE Assessment				
$F_{cur} > F_{msm}$	0	0	0	0
$F_{cur} < F_{msm}$	0	18	4	0

The results of these risk assessments have been consolidated to form a priority list for the fishery comprised of:

- 1 species that has not undergone a further rapid quantitative risk assessment and are identified as high risk through the application of the residual risk assessment methodology; and,
- 121 TEP species identified through the ERA, however these species were eliminated at Level 1 due to the offshore nature of the fishery and the low level of fishing effort.

Table 2 details the priority species list for the North West Slope Trawl Fishery on which AFMA will focus ERM efforts. Overall 1 species was identified: 1 target, 0 byproduct, 0 bycatch (discard), 0 Chondrichthyan and 0 TEP species.

Taxonomic Group	Scientific Name	Common Name	Role in Fishery	Highest Level of Assessment	Risk Score
Invertebrate	*Aristaeopsis edwardsiana*	Scarlet prawn	Target	PSA Level 2	3.32

In addition to this one species that was identified as a priority on ecological grounds, the risk assessments also identified that 121 TEP species are theoretically found within the waters of the fishery (refer to **Table 3**). None of these 121 TEP species were assessed as being at high ecological risk. However, consistent with effective fisheries management and the specific requirements of the *Environment Protection and Biodiversity Conservation* (EPBC) *Act 1999*, all reasonable steps will be taken to ensure that interactions with these TEP species are minimised.

Table 3: TEP species identified through the risk assessment process.

Taxonomic Group	Scientific Name	Common Name	Role in Fishery	Highest Level of	Risk Score
Chondrichthyan	*Carcharias taurus*	grey nurse shark	TEP	SICA	NA
Chondrichthyan	*Carcharodon carcharias*	white shark	TEP	SICA	NA
Chondrichthyan	*Rhincodon typus*	whale shark	TEP	SICA	NA
Marine bird	*Anous minutus*	Black Noddy	TEP	SICA	NA
Marine bird	*Anous stolidus*	Common noddy	TEP	SICA	NA
Marine bird	*Anous tenuirostris*	Lesser noddy	TEP	SICA	NA
Marine bird	*Anous tenuirostris melanops*	Australian Lesser Noddy	TEP	SICA	NA
Marine bird	*Calonectris leucomelas*	streaked shearwater	TEP	SICA	NA
Marine bird	*Fregata ariel*	Lesser frigatebird	TEP	SICA	NA
Marine bird	*Fregata minor*	Great Frigatebird	TEP	SICA	NA
Marine bird	*Larus novaehollandiae*	Silver Gull	TEP	SICA	NA
Marine bird	*Macronectes giganteus*	Southern Giant-Petrel	TEP	SICA	NA
Marine bird	*Phaethon lepturus*	White-tailed Tropicbird	TEP	SICA	NA
Marine bird	*Phaethon rubricauda*	Red-tailed Tropicbird	TEP	SICA	NA
Marine bird	*Pterodroma mollis*	Soft-plumaged Petrel	TEP	SICA	NA
Marine bird	*Puffinus pacificus*	Wedge-tailed Shearwater	TEP	SICA	NA
Marine bird	*Sterna anaethetus*	Bridled Tern	TEP	SICA	NA
Marine bird	*Sterna bergii*	Crested Tern	TEP	SICA	NA
Marine bird	*Sterna caspia*	Caspian Tern	TEP	SICA	NA
Marine bird	*Sterna dougallii*	Roseate tern	TEP	SICA	NA
Marine bird	*Sterna fuscata*	Sooty tern	TEP	SICA	NA
Marine bird	*Sula dactylatra*	Masked Booby	TEP	SICA	NA
Marine bird	*Sula leucogaster*	Brown boobies	TEP	SICA	NA
Marine bird	*Sula sula*	Red-footed Booby	TEP	SICA	NA
Marine mammal	*Balaenoptera acutorostrata*	Minke Whale	TEP	SICA	NA
Marine mammal	*Balaenoptera bonaerensis*	Antarctic Minke Whale	TEP	SICA	NA
Marine mammal	*Balaenoptera borealis*	Sei Whale	TEP	SICA	NA
Marine mammal	*Balaenoptera edeni*	Bryde's Whale	TEP	SICA	NA
Marine mammal	*Balaenoptera musculus*	Blue Whale	TEP	SICA	NA
Marine mammal	*Delphinus delphis*	Common Dolphin	TEP	SICA	NA
Marine mammal	*Dugong dugon*	Dugong	TEP	SICA	NA
Marine mammal	*Feresa attenuata*	Pygmy Killer Whale	TEP	SICA	NA
Marine mammal	*Globicephala macrorhynchus*	Short-finned Pilot Whale	TEP	SICA	NA
Marine mammal	*Grampus griseus*	Risso's Dolphin	TEP	SICA	NA
Marine mammal	*Indopacetus pacificus*	Longman's Beaked Whale	TEP	SICA	NA
Marine mammal	*Kogia breviceps*	Pygmy Sperm Whale	TEP	SICA	NA
Marine mammal	*Kogia simus*	Dwarf Sperm Whale	TEP	SICA	NA
Marine mammal	*Lagenodelphis hosei*	Fraser's Dolphin	TEP	SICA	NA

Marine mammal	*Megaptera novaeangliae*	Humpback Whale	TEP	SICA	NA
Marine mammal	*Mesoplodon densirostris*	Blainville's Beaked Whale	TEP	SICA	NA
Marine mammal	*Mesoplodon gingkodens*	Gingko Beaked Whale	TEP	SICA	NA
Marine mammal	*Orcaella brevirostris*	Irrawaddy dolphin	TEP	SICA	NA
Marine mammal	*Orcinus orca*	Killer Whale	TEP	SICA	NA
Marine mammal	*Peponocephala electra*	Melon-headed Whale	TEP	SICA	NA
Marine mammal	*Physeter catodon*	Sperm Whale	TEP	SICA	NA
Marine mammal	*Pseudorca crassidens*	False Killer Whale	TEP	SICA	NA
Marine mammal	*Sousa chinensis*	Indo-Pacific Humpback Dolphin	TEP	SICA	NA
Marine mammal	*Stenella attenuata*	Spotted Dolphin	TEP	SICA	NA
Marine mammal	*Stenella coeruleoalba*	Striped Dolphin	TEP	SICA	NA
Marine mammal	*Stenella longirostris*	Long-snouted Spinner Dolphin	TEP	SICA	NA
Marine mammal	*Steno bredanensis*	Rough-toothed Dolphin	TEP	SICA	NA
Marine mammal	*Tursiops aduncus*	Indian Ocean bottlenose dolphin	TEP	SICA	NA
Marine mammal	*Tursiops truncatus*	Bottlenose Dolphin	TEP	SICA	NA
Marine mammal	*Ziphius cavirostris*	Cuvier's Beaked Whale	TEP	SICA	NA
Marine reptile	*Acalyptophis peronii*	Horned Seasnake	TEP	SICA	NA
Marine reptile	*Aipysurus apraefrontalis*	Short-nosed Seasnake	TEP	SICA	NA
Marine reptile	*Aipysurus duboisii*	Dubois' Seasnake	TEP	SICA	NA
Marine reptile	*Aipysurus eydouxii*	Spine-tailed Seasnake	TEP	SICA	NA
Marine reptile	*Aipysurus foliosquama*	Leaf-scaled Seasnake	TEP	SICA	NA
Marine reptile	*Aipysurus fuscus*	Dusky Seasnake	TEP	SICA	NA
Marine reptile	*Aipysurus laevis*	Olive Seasnake	TEP	SICA	NA
Marine reptile	*Aipysurus tenuis*	Brown-lined Seasnake	TEP	SICA	NA
Marine reptile	*Astrotia stokesii*	Stokes' seasnake	TEP	SICA	NA
Marine reptile	*Caretta caretta*	Loggerhead	TEP	SICA	NA
Marine reptile	*Chelonia mydas*	Green turtle	TEP	SICA	NA
Marine reptile	*Dermochelys coriacea*	Leathery turtle	TEP	SICA	NA
Marine reptile	*Disteira kingii*	spectacled seasnake	TEP	SICA	NA
Marine reptile	*Disteira major*	Olive-headed Seasnake	TEP	SICA	NA
Marine reptile	*Emydocephalus annulatus*	Turtle-headed Seasnake	TEP	SICA	NA
Marine reptile	*Enhydrina schistosa*	Beaked Seasnake	TEP	SICA	NA
Marine reptile	*Ephalophis greyi*	NW Mangrove Seasnake	TEP	SICA	NA
Marine reptile	*Eretmochelys imbricata*	Hawksbill turtle	TEP	SICA	NA
Marine reptile	*Hydrelaps darwiniensis*	Black-ringed Seasnake	TEP	SICA	NA
Marine reptile	*Hydrophis coggeri*	Slender-necked Seasnake	TEP	SICA	NA
Marine reptile	*Hydrophis czeblukovi*	fine-spined seasnake	TEP	SICA	NA
Marine reptile	*Hydrophis elegans*	Elegant seasnake	TEP	SICA	NA
Marine reptile	*Hydrophis mcdowelli*	seasnake	TEP	SICA	NA
Marine reptile	*Hydrophis ornatus*	seasnake	TEP	SICA	NA
Marine reptile	*Lapemis hardwickii*	Spine-bellied Seasnake	TEP	SICA	NA
Marine reptile	*Natator depressus*	Flatback turtle	TEP	SICA	NA
Marine reptile	*Pelamis platurus*	yellow-bellied seasnake	TEP	SICA	NA
Teleost	*Acentronura larsonae*	Helen's Pygmy Pipehorse	TEP	SICA	NA
Teleost	*Bhanotia fasciolata*	Corrugated Pipefish	TEP	SICA	NA
Teleost	*Bulbonaricus brauni*	Braun's Pughead Pipefish	TEP	SICA	NA

Teleost	*Campichthys tricarinatus*	Three-keel Pipefish	TEP	SICA	NA
Teleost	*Choeroichthys brachysoma*	Pacific Short-bodied Pipefish	TEP	SICA	NA
Teleost	*Choeroichthys latispinosus*	Muiron Island Pipefish	TEP	SICA	NA
Teleost	*Choeroichthys suillus*	Pig-snouted Pipefish	TEP	SICA	NA
Teleost	*Corythoichthys amplexus*	Fijian Banded Pipefish	TEP	SICA	NA
Teleost	*Corythoichthys conspicillatus*	Yellow-banded Pipefish	TEP	SICA	NA
Teleost	*Corythoichthys intestinalis*	Australian Messmate Pipefish	TEP	SICA	NA
Teleost	*Corythoichthys schultzi*	Schultz's Pipefish	TEP	SICA	NA
Teleost	*Cosmocampus banneri*	Roughridge Pipefish	TEP	SICA	NA
Teleost	*Doryrhamphus janssi*	Cleaner Pipefish	TEP	SICA	NA
Teleost	*Doryrhamphus malus*	Flagtail Pipefish	TEP	SICA	NA
Teleost	*Doryrhamphus melanopleura*	Bluestripe Pipefish	TEP	SICA	NA
Teleost	*Dunckerocampus dactyliophorus*	Ringed Pipefish	TEP	SICA	NA
Teleost	*Dunckerocampus pessuliferus*	Many-banded Pipefish	TEP	SICA	NA
Teleost	*Festucalex scalaris*	Ladder Pipefish	TEP	SICA	NA
Teleost	*Filicampus tigris*	Tiger Pipefish	TEP	SICA	NA
Teleost	*Halicampus brocki*	Brock's Pipefish	TEP	SICA	NA
Teleost	*Halicampus dunckeri*	Red-hair Pipefish	TEP	SICA	NA
Teleost	*Halicampus grayi*	Mud Pipefish	TEP	SICA	NA
Teleost	*Halicampus nitidus*	Glittering Pipefish	TEP	SICA	NA
Teleost	*Halicampus spinirostris*	Spiny-snout Pipefish	TEP	SICA	NA
Teleost	*Haliichthys taeniophorus*	Ribboned Seadragon	TEP	SICA	NA
Teleost	*Hippichthys penicillus*	Beady Pipefish	TEP	SICA	NA
Teleost	*Hippocampus angustus*	Western Spiny Seahorse	TEP	SICA	NA
Teleost	*Hippocampus jugumus*	Spiny Seahorse	TEP	SICA	NA
Teleost	*Hippocampus planifrons*	Flat-face Seahorse	TEP	SICA	NA
Teleost	*Hippocampus spinosissimus*	Hedgehog Seahorse	TEP	SICA	NA
Teleost	*Hippocampus taeniopterus*	Spotted Seahorse	TEP	SICA	NA
Teleost	*Micrognathus micronotopterus*	Tidepool Pipefish	TEP	SICA	NA
Teleost	*Milyeringa veritas*	Blind Gudgeon	TEP	SICA	NA
Teleost	*Phoxocampus belcheri*	Rock Pipefish	TEP	SICA	NA
Teleost	*Solegnathus guentheri*	Indonesian Pipefish	TEP	SICA	NA
Teleost	*Solegnathus sp. 1 [in Kuiter, 2000]*	Pipehorse	TEP	SICA	NA
Teleost	*Solenostomus cyanopterus*	Blue-finned Ghost Pipefish	TEP	SICA	NA
Teleost	*Syngnathoides biaculeatus*	Double-ended Pipehorse	TEP	SICA	NA
Teleost	*Trachyrhamphus bicoarctatus*	Bend Stick Pipefish	TEP	SICA	NA
Teleost	*Trachyrhamphus longirostris*	Long-nosed Pipefish	TEP	SICA	NA

3. ECOLOGICAL RISK MANAGEMENT STRATEGY

Currently, the North West Slope Trawl Fishery is managed through Management Arrangements and permit conditions, as well as the Harvest Strategy Policy. There is limited entry into the fishery, with only 7 permits issued. Effort in the fishery is currently very low, and has been so for several years, thus limiting the impact of the fishery on the priority species.

Should effort increase dramatically (i.e. by 50% or greater), the management strategy will be reviewed and reassessed. Finally, the priority species is included in the Harvest Strategy.

The ERM strategy for the North West Slope Fishery will address the one species identified as a priority through the risk assessment process. The strategy will employ a number of fisheries management policies and measures to deliver appropriate actions to mitigate the risk posed by the fishery. Further details of how the individual species will be addressed are provided below.

3.1. Harvest Strategies for key commercial (target and some byproduct) species

The implementation of Harvest Strategies for all Commonwealth managed fisheries is a key component of AFMA's management of key commercial species (target and some byproduct) species. Individual Harvest Strategies will set out clear decision rules to manage fisheries in an environmentally sustainable manner while also ensuring maximum economic returns.

The North West Slope Fishery has developed a Harvest Strategy for several target species, including the high priority species noted above.

Three catch trigger rules initiate management actions that progressively increase data and analysis requirements for the fisheries (Levels 1 and 2) and establish a limit reference point (level 3). As such, the risk associated with further expansion is minimized. Separate triggers and control rules apply to vulnerable species identified through the ecological risk assessment process

The following decision rules apply to each trigger level:

- Level 1:
    - Undertake a detailed examination/exploratory analysis of logbook data, with particular focus on the species for which the trigger has been reached
    - To the extent possible, standardise the annual CPUE for that species to obtain an abundance index.
    - Consult experts with a view to refining the limit reference point (i.e. obtain a more informed estimate than that of double the historical high catch)
- Level 2:
    - Analyse the collected biological data
    - If possible, undertake a basic stock assessment, with a view to establishing stock status and revising the limit reference point (Level 3) in light of this improved information.
- Level 3:
    - The limit reference point, above which targeted fishing for the species must cease
    - No further overall increase in effort pending expert consultation and stock assessment (if outcomes from stock assessment undertaken at Level 2 are pending or uninformative)

3.2. Management of non-key commercial (byproduct) species

AFMA is currently developing a policy to address a gap in the management of byproduct species in Commonwealth fisheries. No byproduct species were identified through the ERA process as being at high risk at this time in the North West Slope Fishery.

3.3. Managing bycatch and discarding

AFMA's program for addressing bycatch and discarding in Commonwealth managed fisheries was released in March 2008. The program implements a two streamed approach for minimising and mitigating against capture of bycatch and TEP species as well as strategies to minimise the discarding of target and quota species.

The North West Slope Trawl Fishery has developed a Bycatch and Discarding Work Plan for the period 31 October 2008 to the 1 November 2010. The main features of the work plan are to maximise observer coverage and improve data collection. Data collection has been included as a trigger response for species in the harvest strategy. That is, when the first trigger point for a species is reached, data collection will begin. However, the ERA did not identify any bycatch species as high risk at this time.

3.4. Chondrichthyan Working Group

A practical guide has been released by the Chondrichthyan Technical Working Group (CTWG) to assist fishery managers and stakeholders to adopt and implement management arrangements for chondrichthyan species. The CTWG utilised expert based advice to develop effective mitigation strategies and to identify gaps in research and data. No chondrichthyan species were identified as high risk in the fishery through the ERA process.

3.5. Protected (TEP) species

All species listed as threatened, endangered and protected and identified through the ERA process will automatically be included in the priority list for each fishery. Many of these species are already managed under various international plans of action including the:

- Threat Abatement Plan 2006: for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations;
- National Strategy to Address Interactions between Humans and Seals: Fisheries, Aquaculture and Tourism;
- Recovery Plan for Marine Turtles in Australia; and,
- Recovery Plan for the Australian Sea Lion.

There were no TEP species found to be at high risk in the NWSF but theoretically there is potential overlap in the distribution of 121 species with the fishery. As such, AFMA will continue to monitor all interactions with TEP species in the fishery and assess, if and when fishing effort increases, the level of risk.

4. REPORTING AND REVIEW

The reporting mechanisms and frameworks that are in place within each of the policies and measures detailed above will form the principal ERM strategy review components for each fishery as well as providing input to annual reporting requirements for the Department of the Environment, Water, Heritage and the Arts.

A full review of the risk assessments undertaken for each Commonwealth managed fishery will be completed periodically. Outcomes of the ERM strategies and measures described in each fishery's various work plans and Harvest Strategies will flow into a number of processes including annual reporting to the Department of the Environment, Water, Heritage and the Arts. Individual fishery Harvest Strategies and Bycatch and Discard Work Plans contain annual and longer term review timeframes and it is expected that the Non-key Commercial Species Policy will do likewise. The Chondrichthyan Working Group has met once with its goal being to produce a generic guide of mitigation measures suitable for use across all Commonwealth managed fisheries.

On a broader scale the outputs from the annual reviews will be used to form the response to any Wildlife Trade Operation (WTO) accreditation or exemption in place in the fishery.

References

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Wayte, S., Dowdney, J., Williams, A., Bulman, C., Sporcic, M., Fuller, M. and Hobday, A. (2007). Ecological Risk Assessment for the Effects of Fishing: Report for the North West Slope Trawl Fishery. Report R04/1072 for the Australian Fisheries Management Authority, Canberra, Australia.