

NORTHERN TERRITORY AQUARIUM FISHERY

Export Exemption Submission

RE-ASSESSMENT REPORT

MARCH 2008

**A report prepared
for the**

**Department of Environment, Water, Heritage and the Arts (DEWHA) as
required for assessment under Part 13 and 13A of the *Environment
Protection and Biodiversity Conservation Act.***

Compiled by:
Tricia Beatty
Aquatic Resource Management Officer
Department of Primary Industry, Fisheries and Mines
GPO Box 3000, Darwin, NT, 0801

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Introduction

The Northern Territory Government's Department of Primary Industry, Fisheries and Mines (DPiFM) submitted a report to the Department of Environment, Water, Heritage and the Arts (DEWHA) for assessment of the NT Aquarium Fishery under Parts 13 and 13A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in April 2005. The assessment resulted in the fishery being declared an approved Wildlife Trade Operation (WTO), exempt from the export regulations of the EPBC Act, for a period of 3 years, beginning June 2005.

Following the initial assessment of the Aquarium Fishery, a substantial level of information is now publicly available regarding the environmental performance of the fishery. In order to focus limited resources on continuous improvement within the fishery and to build on the findings from the initial assessment, the submission requirements were streamlined (by the regulating authority) to align with annual reporting requirements for the fishery.

As part of this new process, Guidelines for the Ecologically Sustainable Management of Fisheries (the Guidelines) were developed, along with accompanying terms of reference. The terms of reference require the preparation of a draft assessment report that assesses all impacts of the fishery on the environment. The draft assessment report is then used to determine if the fishery is ecologically sustainable.

The Aquarium Fishery is now due for reassessment against the Guidelines. DPiFM has prepared an assessment report that includes this document, the annual Fishery Status Reports published since the initial assessment in 2005, and the Aquarium Fishery annual reports submitted to DEWHA. In compiling the report, DPiFM has addressed the Guidelines and where necessary, responded to each of the issues outlined.

As a result of the initial assessment of the fishery in 2005, a series of recommendations were agreed to between DEWHA and DPiFM. These agreed recommendations were focused on ensuring the continuation and enhancement of current sustainable management practices. This document specifically addresses these recommendations and provides a response to each.

The document should be read in conjunction with the Annual Fishery Status Reports, and the initial assessment document that was provided to DEWHA in 2005. For a comprehensive understanding of the legislative arrangements in place for the Aquarium Fishery please refer to the *Northern Territory Fisheries Regulations* available for download at www.nt.gov.au/dpifm/Fisheries/index.cfm?header=Legislation

Copies of the NT Annual Fishery Status Reports are available for download at www.nt.gov.au/dpifm/Fisheries.

Please note that for all management decisions, NT Fisheries uses the most current data available provided through a desktop system linked with the compulsory logbook data program. Such data are summarised for public access, where appropriate, in the Annual Fishery Status Reports and are published after all data for the calendar year have been compiled, validated and thoroughly analysed.

DPiFM will ensure that any future DEWHA conditions and recommendations will be addressed in the 2007 and subsequent Annual Fishery Status Reports.

The following progress has been made by DPIFM in implementing the DEWHA recommendations:

DEWHA Recommendation 1

“DPIFM to advise DEWHA of any material change to the Northern Territory Aquarium Fishery's management arrangements that could affect the criteria on which EPBC decisions are based, within 3 months of that change being made.”

DPIFM's Response

DPIFM has kept the DEWHA informed of any future amendments to the management regime for the Aquarium Fishery through the publication of the *Current Issues* and *Future Plans* sections in the annual Fishery Status Reports. This practice will continue in future Fishery Status Reports and any changes to the management arrangements for the fishery will be communicated to DEWHA through subsequent annual Fishery Status Reports.

At the request of the industry, DPIFM has recently conducted a review of the management arrangements for the Aquarium Fishery. Specifically, the review focused on the fishery's licence conditions including that of licence transferability. This issue is now under NT Government consideration. DEWHA will be notified of any changes to the management arrangements once determined.

DEWHA Recommendation 2

“Within 1 year, DPIFM to develop fishery specific performance indicators and performance measures, linked to the existing objectives, for CITES listed species, EPBC Act listed species, Group A Finfish species and hermit crabs.”

DPIFM's Response

Objectives, performance indicators, trigger points and management responses have been developed in consultation with industry and relevant scientific experts. These fishery-specific indicators apply to the target species, byproduct, bycatch and the impacts of the fishery on the ecosystem. It should be highlighted that results from the Northern Territory Aquarium Fishery Ecological Risk Assessment have been utilised to ensure appropriate performance measures are in place with full industry consultation and support. In addition, the management objectives and indicators for the fishery target specific CITES and EPBC Act listed species.

The objectives, together with the performance indicators and trigger points are outlined in Table 1.

DEWHA Recommendation 3

“DPIFM to incorporate the performance measures into existing management arrangements once developed. Within 3 months of becoming aware of a performance

measure not being met, DPIFM to finalise a clear timetable for a review of management arrangements and the implementation of appropriate management respon.”

DPIFM's Response

Management objectives, performance measures, and trigger points have been incorporated into the existing arrangements and policies for the Aquarium Fishery. As shown in Table 1 and published in the annual Fishery Status Reports, appropriate management responses are required to be undertaken if trigger points are breached within the fishery. Advice must be provided to the Director of Fisheries within three months of notice of the event.

DEWHA Recommendation 4

“DPIFM to implement finer spatial recording of catch and effort information, and recording of catch to a species level for key target species, CITES listed species and EPBC Act listed species in compulsory commercial logbooks.”

DPIFM's Response

Over the past 6 months, logbooks with finer spatial recording have successfully been trialled by key industry operators in the Aquarium Fishery. The logbooks require the reporting of GPS coordinates, with seconds recorded to two decimal points for all trips undertaken. The reporting to two decimal points will enable DPIFM to acquire a finer understanding of the distribution of effort in, and take from, the fishery. The revised logbooks will be introduced into the Aquarium Fishery for the 2008/09 licensing period. A copy of the trialled logbooks is attached (attachment A).

To ensure accurate reporting of aquatic species harvested by the Aquarium Fishery, DPIFM is developing two identification guides for industry use. The Coral and Associated Benthic Species Identification Guide and the Finfish Species Identification Guide will be used by aquarium operators to ensure consistency and accurate identification of harvested species. It is expected that these two guides will be distributed to all licensed operators prior to the 2008/09 licensing year.

A formal review of the logbooks is undertaken by DPIFM annually, in conjunction with relevant researchers and industry. The success of the identification guides in refining industry's reporting will be reviewed during this process. It is intended these review outcomes will be incorporated within the logbooks to further enhance reporting.

DEWHA Recommendation 5

“Within 1 year DPIFM to develop precautionary sustainable limits for hermit crabs, Group A finfish species, EPBC Act listed species and CITES listed species based on existing knowledge. DPIFM to pursue research into the stock status, biology and ecology of these species on an ongoing basis within resource constraints.”

DPIFM's Response

Precautionary trigger points have been developed in consultation with scientific experts and industry. The trigger levels have been set for the Group A finfish species, coral and associated benthic species, clams, *Pristis* species, Syngathid species, hermit crabs and all other CITES and EPBC Act listed species. These trigger points are detailed in Table 1.

Due to the data poor nature of the Aquarium Fishery, these precautionary triggers points have been developed to ensure the fishery is managed with minimal risk. Until further information regarding the stock status is known and reporting through the logbook system is further refined, these triggers will be used to monitor the performance of the stock and establishes DPIFM's management responses to the stock's performance.

Low licence numbers coupled with low licence activity ensures low impact on harvested species groups. Other constraints on the activities of operators within the Fishery is the limited access to more than 80% of the Northern Territory coastline due to restrictions imposed by Aboriginal and private ownership of land; National Parks and Northern Territory Conservation Park regulations; and marine exclusion zones. Furthermore, tropical monsoon conditions in the Northern Territory render large areas of its inland and coastal waters inaccessible or unsafe for several months each year.

Nonetheless, research into the stock status, biology and ecology of target species is occurring through a number of different studies.

Freshwater Finfish

It is anticipated that the results of the following two projects will provide valuable information on which to base future decisions regarding the harvest of freshwater aquatic species.

"Water regime dependence of fish in the wet-dry tropics"

This major research project is managed by the Charles Darwin and Griffith Universities with support from DPIFM. This project sampled the fish communities of the middle and upper-reaches of the Daly River Basin.

"A Comprehensive Analysis of the Freshwater Fish Faunas and their Key Management Issues across Northern Australia"

This project is coordinated by the James Cook and Griffith Universities and aims to sample all catchments where comprehensive studies of freshwater fish have yet to be undertaken. This project, coupled with the "Water regime dependence of fish in the wet-dry tropics" project, will ultimately map the geographic distribution, biodiversity and habitat requirements of freshwater fish in all major catchments across the Northern Territory.

Hermit Crabs

The available scientific literature on land hermit crabs has been reviewed, with an emphasis on movement, and the potential for localised depletion. Available data and anecdotal reports suggest that adult land hermit crabs are capable of considerable movements. Further studies are planned, with Charles Darwin University, to investigate and model movements of adults.

Corals and associated benthic species

Research on coral reefs is undertaken by a variety of agencies. Species in the Darwin region have been recorded by the Museum and Art Gallery of the Northern Territory, and a brief survey of coral communities along the eastern half of the Arnhem coast was conducted in 2003. Long term monitoring sites have been established by the Marine Biodiversity Group of the Department of Natural Resources, Environment and the Arts (NRETA) in the Cobourg Marine Park and also Gove Peninsula to monitor coral health and the impacts of bleaching and cyclone damage.

North Australia Marine Biodiversity Survey

In November 2004 researchers from the Marine Biodiversity Group and NRETA, and the sea rangers, commenced the *North Australia Marine Biodiversity Survey* (NAMBS). This collaboration between scientists and Indigenous landowners attempted to combine both scientific and cultural knowledge approaches and the survey was notable in this regard. NAMBS was co-funded by the NT Government, the National Oceans Office (NOO), the Director of National Parks and supported by the Northern Land Council.

NAMBS aimed to collect baseline environmental data in the Northern Planning Area (NPA). The NPA covers almost 700,000 square kilometres, encompassing waters in both the Northern Territory and Queensland. In the NT, the area stretches from Kakadu National Park across Arnhem Land to the Gulf of Carpentaria and the Torres Strait.

NAMBS focussed on seagrass habitats as they are a widespread and integral component of these waters, stabilising sediment and providing habitat for many commercial and endangered species. The aims of this survey were to broadly map seagrass habitat and then to describe associated marine communities. Results from the survey should be available this year.

DEWHA Recommendation 6

“Within 2 years DPIFM to investigate the potential for localised and serial depletion of target species within the fishery and to implement management measures to mitigate any risks identified where necessary.”

DPIFM's Response

The Northern Territory Aquarium Fishery is a small scale, underutilised fishery that operates over an extensive area using benign harvest methods. Weather-induced seasonal closures and the wide distribution of the majority of the species harvested afford them further protection. These factors, in conjunction with strict input controls and low participant numbers mean that threats to the depletion of target species are considered minimal.

The Aquarium Fishery Ecological Risk Assessment (ERA) determined that there was negligible risk of localised and serial depletion of target species in Northern Territory waters. A copy of the ERA is attached (attachment 2), and the targeted species groups assessed are summarised below:

- Group A Finfish - highly fecund and an early maturation that ensures minimisation of overfishing.

- Group B Finfish - highly fecund with planktonic larvae dispersal and an early age of maturity.
- Hermit Crabs – planktonic larvae, wide distribution and high densities with one operator and irregular harvesting activity. Adults appear capable of moving considerable distances.
- Corallimorphs - ability to split, bud and regenerate meaning that new individuals will ensure replenishment of fished populations.
- Clams – planktonic larvae recruitment, relatively fast maturity in early stages of growth (the existing size limit protects the slow growing mature animals) and small harvest area relative to total distribution of the species ensure minimised risk of localised depletion.

The above factors combine to provide protection from localised or serial depletion of target species. Nonetheless, DPIFM realise that the relatively high harvest numbers of hermit crabs within the Northern Territory Aquarium Fishery and limited knowledge of the species could lead to localised or serial depletion of stock. For this reason an honours project is proposed to determine the biological and harvest parameters of the terrestrial hermit crab species *Coenobita variabilis*. The study will also compare harvested and non harvested hermit crab populations of the Darwin region and determine which shells are utilised by the hermit crab (*C. variabilis*). This will enable comparison of the frequency of these shell types in harvested and non harvested areas.

Additionally, DPIFM have modified fishery log books to include finer spatial recording of catch and effort information. These log book modifications will provide valuable information on which to assess potential stock depletion within an area.

DEWHA Recommendation 7

“DPIFM to conduct an ecological risk assessment on the fishery within 12 months and to develop appropriate responses to any high risks identified.”

DPIFM's Response

DPIFM conducted an Ecological Risk Assessment for the Aquarium Fishery in 2006, the results of which were compiled into a report submitted to DEWHA. Owing to the selective nature of the gear used in the Aquarium Fishery and the relatively small harvest quantities taken in the fishery, DPIFM determined that all aspects of the fishery were assessed as being negligible or low risk. The results of the Northern Territory Aquarium Fisheries Ecological Risk Assessment are attached (attachment 2).

Research into the stock status, biology and ecology of target species in the Aquarium Fishery is occurring through a number of different studies. As further information is acquired and reporting refined, a review of the Ecological Risk Assessment for the Aquarium Fishery will be conducted. In addition, DPIFM will continue to monitor the fishery's activities and will incorporate any new information into the assessment if deemed influential.

Table 1. Proposed Management Objectives, Performance Indicators, Performance Measures, Triggers and Management Actions used in the Aquarium Fishery.

Species/Group	Management Objectives	Performance Indicator	Performance Measure	Trigger Point	Management response to be taken
Group A Finfish (silver & spotted scat, common archerfish, chequered & black banded rainbowfish, sail-fin perchlet, black catfish)	Ensure intergenerational equity by maintaining ecologically sustainable annual catches in all sectors.	Significant increase or decline in the annual catch.	The harvest of any Group A species increases or decreases by 70% when compared to the mean of the previous 3 years.	The harvest of any group A finfish species has a trigger point of 30,000 individuals per species.	DPIFM to review fishery, after consultation with industry stakeholders, and make recommendations on appropriate management responses to the Director of Fisheries. Advice provided to the Director within 3 months of trigger being reached.
Coral and Associated Benthic Species	Ensure intergenerational equity by maintaining ecologically sustainable annual catches in all sectors.	Significant increase or decline in the annual catch.	The harvest of any coral and associated benthic species increases or decreases by 50% when compared to the mean of the previous 3 years.	Coral and associated benthic species have a total trigger value of 60 tonnes. This trigger will require further refinement after triggers are resolved.	DPIFM to review fishery, after consultation with industry stakeholders, and make recommendations on appropriate management responses to the Director of Fisheries. Advice provided to the Director within 3 months of trigger being reached.
Giant Fluted Clam	Ensure intergenerational equity by maintaining ecologically sustainable annual catches in all sectors.	Significant increase or decline in the annual catch.	The harvest of giant fluted clams increases or decreases by 50% when compared to the mean of the previous 3 years.	Giant fluted clams are harvested within a trigger value of 2000 individuals.	DPIFM to review fishery, after consultation with industry stakeholders, and make recommendations on appropriate management responses to the Director of Fisheries. Advice provided to the Director within 3 months of trigger being reached.
<i>Pristis</i> species (sawfish)	Ensure intergenerational equity by maintaining ecologically sustainable annual catches in all sectors.	Significant increase or decline in the annual catch.	The harvest of any <i>Pristis</i> species increases or decreases by 50% when compared to the mean of the previous 3 years.	<i>Pristis</i> species are harvested within a trigger value of 50 individuals.	DPIFM to review fishery, after consultation with industry stakeholders, and make recommendations on appropriate management responses to the Director of Fisheries. Advice provided to the Director within 3 months of trigger being reached.
Syngnathids, other than <i>Hippocampus</i> spp. (seahorses)	Ensure intergenerational equity by maintaining ecologically sustainable annual catches in all sectors.	Significant increase or decline in the annual catch.	The harvest of any Syngnathids, other than <i>Hippocampus</i> spp., increases or decreases by 50% when compared to the mean of the previous 3 years.	Syngnathids, other than <i>Hippocampus</i> spp., are harvested within a trigger value of 150 individuals.	DPIFM to review fishery, after consultation with industry stakeholders, and make recommendations on appropriate management responses to the Director of Fisheries. Advice provided to the Director within 3 months of trigger being reached.

<i>Hippocampus</i> spp. (seahorses)	Ensure intergenerational equity by maintaining ecologically sustainable annual catches in all sectors.	Significant increase or decline in the annual catch.	The harvest of any <i>Hippocampus</i> spp. increases or decreases by 50% when compared to the mean of the previous 3 years.	<i>Hippocampus</i> spp. are harvested within a trigger value of 50 individuals.	DPIFM to review fishery, after consultation with industry stakeholders, and make recommendations on appropriate management responses to the Director of Fisheries. Advice provided to the Director within 3 months of trigger being reached.
Hermit Crabs	Ensure intergenerational equity by maintaining ecologically sustainable annual catches in all sectors.	Significant increase or decline in the annual catch.	The harvest of hermit crabs increases or decreases by 70% when compared to the mean of the previous 3 years.	A precautionary trigger is set at 120,000 hermit crabs per year.	DPIFM to review fishery, after consultation with industry stakeholders, and make recommendations on appropriate management responses to the Director of Fisheries. Advice provided to the Director within 3 months of trigger being reached.
Other EPBC Act Listed Species	Ensure the continued protection of species and communities listed under the EPBC Act 1999, and as listed under the Territory Parks and Wildlife Conservation Act 2001.	Endangered, threatened or protected species and/or communities are identified in Northern Territory waters.		Identifiable impacts observed by DPIFM, commercial fishers, or other agencies regarding EPBC Act listed species or communities.	DPIFM to review fishery, after consultation with industry stakeholders, and make recommendations on appropriate management responses to the Director of Fisheries. Advice provided to the Director within 3 months of trigger being reached.
Other CITES Listed Species	Ensure the continued protection of species and communities listed under the CITES.	Identification of CITES listed species in Northern Territory Waters		A precautionary trigger is set at 50 per year.	DPIFM to review fishery, after consultation with industry stakeholders, and make recommendations on appropriate management responses to the Director of Fisheries. Advice provided to the Director within 3 months of trigger being reached.
Ecosystem Components	Minimise effects on ecosystem components.	Identification of threatening processes.		Identification of significant negative impact with components of the ecosystem present on aquarium fishing grounds.	DPIFM to make recommendations, after consultation with industry stakeholders, to the Director of Fisheries regarding appropriate remedial action. Advice provided to the Director within 3 months of trigger being reached.
Harvest of Protected Species Intended for Trade to Public Aquariums	Continuation of public education while ensuring the ongoing protection of species and communities listed under the EPBC Act 1999, the Territory Parks and Wildlife Conservation Act 2001 and CITES.	Monitoring of targeted species against any observable trends	The harvest of any protected species increases or decreases by 50% when compared to the mean of the previous 3 years.	Identifiable impacts observed by DPIFM, commercial fishers, or other agencies regarding EPBC Act listed species or communities.	DPIFM to make recommendations, after consultation with industry stakeholders, to the Director of Fisheries regarding appropriate remedial action. Advice provided to the Director within 3 months of trigger being reached.