



THE NORTH MARINE BIOREGIONAL PLAN

# BIOREGIONAL PROFILE

## APPENDIX D2

# NORTH MARINE REGION PROTECTED SPECIES GROUP REPORT CARDS: BONY FISH



A DESCRIPTION OF THE ECOSYSTEMS, CONSERVATION VALUES AND USES  
OF THE NORTH MARINE REGION



Australian Government

Department of the Environment, Water, Heritage and the Arts

## D2 North Marine Region Protected Species Group Report Card – Bony Fish

Current at February 2008. For updates see [www.environment.gov.au/coasts/mbp/north](http://www.environment.gov.au/coasts/mbp/north).

### General information

The Region supports a diverse range of fish fauna, inhabiting a large variety of habitats. Much of the information in this report card is drawn from the publication *Conservation Overview and Action Plan for Australian Threatened and Potentially Threatened Marine and Estuarine Fishes* (Pogonoski et al. 2002). For further information please see [www.environment.gov.au/coasts/fisheries/publications](http://www.environment.gov.au/coasts/fisheries/publications).

### Nationally protected species

No species of bony fish found in the Region are listed as threatened under the EPBC Act. All syngnathids (seahorses, seadragons, pipefish and pipehorses) and solenostomids (ghost pipefish) in Australia are protected by listing as marine species under Section 248 of the EPBC Act. There are 21 species of syngnathids that are known to occur in the Region, with 34 species that occur infrequently or may occur in the Region (see appendix C).

In 2002, all seahorses (the entire *Hippocampus* genus) were listed under CITES Appendix II, which allows trade of these species under certain permitted conditions. The EPBC Act controls international trade in all wild capture and aquarium-raised Australian syngnathid and solenostomid species (Department of the Environment and Heritage 2003). It should be noted that most of the species names listed in the CITES Red List do not agree with those species listed in the recent ABRS Catalogue of Australian fishes.

### Ecology of protected species in the North Marine Region

#### **Syngnathids and Solenostomids (seahorses, seadragons, pipefish, pipehorses and ghost pipefish)**

There is a paucity of knowledge on the distribution, relative abundance and habitats of species of syngnathids in the Region. However, at least one species

of syngnathid, the big-head seahorse (*Hippocampus grandiceps*), is likely to be endemic to the Region (Kuitert, 2001; Pogonoski et al. 2002). Syngnathids are a group with diverse characteristics, including some species that are apparently rare and localised (eg. big-head seahorse) and other species that are widely distributed and very common (e.g. Pacific short-bodied pipefish). Many of the pipefish, seahorse and seadragon species are found in near-shore coastal environments such as seagrass beds in shallow bays, mangroves and coral and rocky reefs. Some pipehorses are found in the deeper waters of the continental shelf.

While the taxonomy of this family is contested, Australian waters appear to support the largest number of syngnathid genera in the world, and new species have been discovered in recent years. Habitat that supports syngnathid populations is generally patchy, and hence populations of syngnathid species may be dispersed and fragmented. Some groups of syngnathids, notably the seahorses, have particular microhabitat preferences, occupying the edges of seagrasses, sand, or sand habitats. Syngnathids feed in the water column, on or near the sea-floor. Most eat small invertebrates, such as mysids in the zooplankton, and small amphipods. A few species also eat other invertebrates (for example, shrimps), and larval fish.

Some species of pipefish that live in coastal waters have very high population densities and live in unstable habitats, subject to damage from storms and dramatic changes in temperature or salinity. As such, these species can quickly colonise even small patches of suitable habitat. However, many syngnathids, particularly seahorses, are vulnerable to over-exploitation because of their biology, which is characterised by:

- relatively low population densities;
- low mobility and small home range sizes;
- possibly low rates of natural mortality in adults;
- dependency of birth and survival of offspring on the survival of the males;
- monogamous breeding (hence a 'widowed' partner may temporarily stop reproducing until another mate is found);
- small brood sizes; and
- strong association with preferred habitats.

## Important areas for protected bony fish in the North Marine Region

Important areas in the Region are identified for species that are listed as threatened or migratory under the EPBC Act. No such sites have been identified for syngnathids in the Region.

## Known interactions, threats and mitigation measures

### Commercial fishing and trade

Trade of seahorses is heavily regulated in Australia under State, Northern Territory, Commonwealth and international law. Licences are granted under CITES and permits are required under the EPBC Act for the export of wild capture and aquarium-raised specimens. The Department of the Environment, Water, Heritage and the Arts implements CITES arrangements in Australia, and relies heavily on the Australian Customs Service to implement syngnathid trade controls at ports of exit and entry.

Syngnathids are retained both as target species and by-product in State waters adjacent to the Region. Seahorses and pipehorses are traded in Australia and internationally for traditional medicine and for aquaria. Seahorses are currently exported for the aquarium trade from Victoria, Queensland, South Australia, Western Australia and the Northern Territory. In the Northern Territory, however, syngnathids have not been actively targeted by the Northern Territory Aquarium Fishery since 1997 (Department of the Environment and Heritage 2005). The pallid pipefish (or pipehorse) (*Solegnathus hardwickii*) exported from Australia occurs in the Region. All *Hippocampus* species exported from Australia occur under CITES provisions.

There are a number of syngnathid species that are also caught as by-catch in trawl fisheries in the Region. These include ribboned seadragon (*Haliichthys taeniophorus*), pallid pipefish (*Solegnathus hardwickii*), alligator pipefish (*Solegnathus lettiensis*) and the long-nosed pipefish (*Trachyrhamphus longirostris*) (Griffiths et al. 2004).

The *Conservation Overview and Action Plan for Australian Threatened and Potentially Threatened Marine and Estuarine Fishes* (Pogonoski et al. 2002), identifies over-harvesting

of wild specimens for the marine aquarium fish trade and/or the traditional medicine trades as the greatest potential threat to some species of syngnathids, including two species that occur in the Region: the pallid pipefish (*Solegnathus hardwickii*) and the double-ended pipehorse (*Syngnathoides biaculeatus*).

### Habitat degradation

The *Conservation Overview and Action Plan for Australian Threatened and Potentially Threatened Marine and Estuarine Fishes* identifies inshore habitat degradation as a potential threat to the survival of some populations of syngnathid species. Endemic species of limited geographic range may be particularly susceptible to habitat degradation, particularly those species that occur near urbanised and industrial areas, or in rural areas where nearshore waters are subject to polluted run-off.

### Poaching

Conservation authorities and government agencies around Australia have been concerned about the potential impact of poaching on syngnathid populations, especially prior to the development of a syngnathid aquaculture industry in southern Australia. There are no known records of poaching and illegal collecting of syngnathids in the Region.



## Key references and further reading

Department of the Environment and Heritage, 2001, 'Coasts and Oceans', in *Australia State of the Environment 2001*, report by Newton, G. and Boshier, J. (Australian State of the Environment Committee), Commonwealth of Australia, Canberra.

Department of the Environment and Heritage, 2003, *Environment Protection and Biodiversity Conservation Act 1999, Trade of Syngnathids and Solenostomids (Seahorses, Seadragons, Pipehorses and Pipefish)*, Commonwealth of Australia, Canberra.

Department of the Environment and Heritage, 2005, *Assessment of the Ecological Sustainability of the Management Arrangements for the Northern Territory Aquarium Fishery*, Commonwealth of Australia, Canberra.

Department of the Environment, Water, Heritage and the Arts, 2008, *Species Profile and Threats Database*, Commonwealth of Australia, Canberra, <[www.environment.gov.au/sprat](http://www.environment.gov.au/sprat)>, accessed February 08.

Griffiths, S., Larson, H. and Courtney, T., (2004), 'Trawl Bycatch Species' in National Oceans Office, *Description of Key Species Groups in the Northern Planning Area*, Commonwealth of Australia, Hobart, <[www.environment.gov.au/coasts/mbp/publications/north/n-key-species.html](http://www.environment.gov.au/coasts/mbp/publications/north/n-key-species.html)>, accessed September 07.

Kuiter, R.H., 2001, 'Revision of the Australian Seahorses of the Genus *Hippocampus* (Syngnathiformes: Syngnathidae) with Descriptions of Nine New Species', *Records of the Australian Museum*, 53: 293–340.

Pogonoski, J.J., Pollard, D.A. and Paxton, J.R., 2002, *Conservation Overview and Action Plan for Australian Threatened and Potentially Threatened Marine and Estuarine Fishes*, Environment Australia, Canberra.

## D3 North Marine Region Protected Species Group Report Card – Marine Turtles

Current at February 2008. For updates see <[www.environment.gov.au/coasts/mbp/north](http://www.environment.gov.au/coasts/mbp/north)>.

### General information

Marine turtles are reptiles, and as such have lungs and must surface to breathe. Marine turtles are typically associated with tropical seas; however, some species are also known to inhabit subtropical and temperate oceanic waters. Much of the information in this report card is drawn from *A Biological Review of Australian Marine Turtles* (Limpus, in press). A draft publication containing information on the important areas for marine turtles in the Northern Territory is currently under internal review by The Northern Territory Government Department of Natural Resources, Environment and the Arts and will soon be available for wider circulation.

There are two families of marine turtles, Cheloniidae and Dermochelyidae. Five species from five genera (*Caretta*, *Chelonia*, *Eretmochelys*, *Lepidochelys* and *Natator*) found within the Region are from the family Cheloniidae, with one species from one genus *Dermochelys* from the family Dermochelyidae.

### Nationally protected species

Six of the seven species of marine turtle in the world are known to inhabit the Region (table D II). All six species of marine turtle are listed under the EPBC Act as threatened, migratory and marine species. The Region supports globally significant breeding populations of green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*) and flatback (*Natator depressus*) turtles.



Hawksbill turtle. Photo: Department of the Environment, Water, Heritage and the Arts.