



Australian Government

**Department of Sustainability, Environment,
Water, Population and Communities**



Species group report card – seahorses and pipefishes

Supporting the draft marine bioregional
plan for the North-west Marine Region

prepared under the *Environment Protection and Biodiversity Conservation Act 1999*

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Images:

Striped Nudibranch – C.Zwick and DSEWPaC, Raccoon butterfly fish – N.Wolfe, Display of colourful coral – Tourism WA, Red and yellow feather star (crinoids) – Tourism WA, Whale tail – Tourism WA, Snorkelling in Ningaloo Marine Park – Tourism WA, Green Turtle – Tourism WA, Black tip reef shark – N.Wolfe, Whale Shark – GBRMPA, Sea Grass Meadow – Lochman Transparencies



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SPECIES GROUP REPORT CARD – SEAHORSES AND PIPEFISHES

Supporting the draft marine bioregional plan for the North-west Marine Region prepared under the *Environment Protection and Biodiversity Conservation Act 1999*

Report cards

The primary objective of report cards is to provide accessible and up-to-date information on the conservation values found in Commonwealth marine regions. This information is maintained by the Department of Sustainability, Environment, Water, Population and Communities and is available online through the department's website (www.environment.gov.au). Reflecting the categories of conservation values, there are three types of report cards:

- species group report cards
- marine environment report cards
- heritage places report cards.

While the focus of these report cards is the Commonwealth marine environment, in some instances species and ecological processes occurring in state waters are referred to where there is connectivity between species and ecological processes in state and Commonwealth waters.





Species group report cards

Species group report cards are prepared for large taxonomic groups that include species identified as conservation values in a region; that is, species that are listed under Part 13 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and live in the Commonwealth marine area for all or part of their lifecycle. All listed threatened, migratory and marine species and all cetaceans occurring in Commonwealth waters are protected under the EPBC Act and are identified in the relevant marine bioregional plans as conservation values.

Species group report cards focus on species for which the region is important from a conservation perspective; for example, species of which a significant proportion of the population or an important life stage occurs in the region's waters.

For these species, the report cards:

- outline the conservation status of the species and the current state of knowledge about its ecology in the region
- define biologically important areas; that is, areas where aggregations of individuals of a species display biologically important behaviours
- assess the level of concern in relation to different pressures.



1. Seahorses and pipefishes of the North-west Marine Region

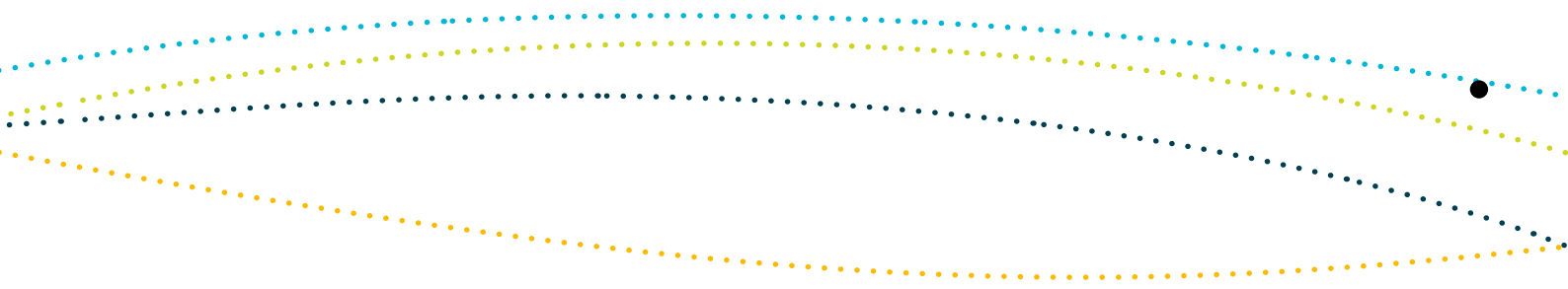
The family Syngnathidae is a group of bony fishes that includes seahorses, pipefishes, pipehorses and sea dragons. Australia has the highest recorded diversity of syngnathids in the world, with an estimated 25–37 per cent of the 330 syngnathid species currently described (Pogonoski et al. 2002). Along with syngnathids, members of the related Solenostomidae family, or ghost pipefish, are also found in the North-west Marine Region.

Most of the 22 syngnathid and the single solenostomid species known to occur in the North-west Marine Region are found in the shallow waters of Commonwealth marine reserves such as Ashmore and Mermaid reefs (DEWHA 2008). However, at least two species, the winged seahorse (*Hippocampus alatus*) and the western pipehorse (*Solegnathus* sp. 2), have also been recorded in deeper shelf waters of the Region (up to 200 metres). As yet no species of true sea dragon has been recorded in the North-west Marine Region. The family Solenostomidae, or ghost pipefish, is a related species group.

All members of the Syngnathidae and Solenostomidae families are listed marine species under the EPBC Act and although no species is currently listed as threatened or migratory, this status is being reviewed (Scales 2010). Twenty-two species of syngnathid and one species of solenostomid listed under the EPBC Act are thought to occur in the North-west Marine Region and are listed in Table 1. Approximately 32 additional species of syngnathid occur in Western Australian state waters adjacent to the region, although taxonomic uncertainty still surrounds a number of these (DEWHA 2008). Of these 32 species of syngnathid, nine are thought to be endemic to state waters adjacent to the region (DEWHA 2008). Syngnathids are diverse, ranging from apparently rare and localised species, to widely distributed and very common species.

Knowledge about the distribution, abundance and ecology of both syngnathids and solenostomids in the North-west Marine Region is limited. Typically syngnathids are carnivorous and feed on small crustaceans such as copepods, often eating those that drift by or reside in coral branches or algal mats (Gronell 1983; Kendrick & Hyndes 2005; Martin-Smith 2008; Scales 2010). A few species also eat other invertebrates (for example, shrimps) and larval fish (Kuitert 2009).

Almost all syngnathids live in nearshore and inner shelf habitats, usually in shallow, coastal waters, among seagrasses, mangroves, coral reefs, macroalgae-dominated reefs, and sand or rubble habitats (Dawson 1985; Lourie et al. 1999, Lourie et al. 2004; Vincent 1996). Temperate-water species predominately inhabit seagrasses and macroalgae, while tropical species are primarily found among coral reefs (Foster & Vincent 2004; Scales 2010).



The ridge-nose pipefish is known to occur on shallow coral reefs, but also in sandy or rubble areas, and in stands of tropical *Sargassum* macroalgae. Sheltered bays, lagoons and estuaries with seagrass and macroalgae are thought to be important habitats for the double-ended pipehorse (*Syngnathoides biaculeatus*) (Barrows et al. 2009; Takahashi 2000). Little is known of the habitat of the other pipehorse species recorded in the North-west Marine Region, the western pipehorse, but it is likely that tropical, subtropical and warm temperate reef habitats (e.g. with hard and soft coral, sponges and sand) are important habitats. The western pipehorse has been found in waters 20–200 metres deep, with most records from depths more than 50 metres. Research in eastern Australia has shown that *Solegnathus* pipehorses may be more abundant in proximity to reefs in areas having some three-dimensional structure (sessile biota), such as sponges and gorgonian corals (Zeller et al. 2003). Similar habitat preferences might be expected in north-west Australia.

The EPBC Act controls international trade in all wild capture and aquarium-raised Australian syngnathid and solenostomid species. Within the Syngnathidae family, the entire genus *Hippocampus* (seahorses) are listed on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (CITES 2008; Scales 2010). This group of bony fish is internationally traded in dried form for traditional medicine and ornaments as well as alive for aquarium display (Bruckner et al. 2005; Martin-Smith & Vincent 2006; Scales 2010). As a signatory to this convention, Australia is obliged to manage international trade to enable the conservation of wild populations. Licences are granted under CITES for trade in these species.

Biologically important areas

Biologically important areas identify areas where aggregations of individuals of a species display biologically important behaviours. Based on available information, biologically important areas have been identified where possible for listed threatened and marine species where the region is considered to support a significant proportion of the population or an important life history stage. Biologically important areas have not yet been identified for seahorse or pipefish species in the North-west Marine Region.



2. Vulnerabilities and pressures

Vulnerabilities

Syngnathid populations may be particularly susceptible to pressures because their biology is characterised by relatively low population densities; lengthy parental care combined with small brood size limiting their reproductive rate; strict monogamy, which means that social structure is easily disrupted; sparse distribution, which means that lost partners are not quickly replaced; typically low rates of adult mortality, which means that fishing exerts a relatively substantial selective pressure; strong association with preferred habitat, which can make populations vulnerable to site-specific impacts; and low mobility and small home ranges, which restrict recolonisation of depleted areas (Foster & Vincent 2004; Vincent 1996). Most species are more localised than previously thought, and preserving habitats is one of the most important factors in protecting seahorses (Kuitert 2001; Shokri et al. 2009).

Syngnathids tend to use only certain parts of apparently suitable habitat. For example, they have been recorded occupying the edges of seagrass beds or macroalgae-dominated reefs and leaving large areas unoccupied (Scales 2010; Vincent 1996). Most species associate strongly with site, presumably with localised reproduction, although some solenostomids, such as the blue-finned ghost pipefish, may have a prolonged larval stage that may permit longer range dispersal (Kuitert 2009).

In shallower waters, pipefish and seahorses are a dominant group of fish and are important predators of benthic organisms such as mysids in the zooplankton and small amphipods. (CITES 2001; Gronell 1983; Kendrick & Hyndes 2005; Martin-Smith 2008). A few species also eat shrimps and vertebrates such as larval fish. It is thought that the species eat enough to affect the structure of benthic invertebrate communities (Lourie et al. 1999). As such, removing these species could well disrupt ecosystems (Vincent 1996).

Assessment of pressures

Pressures have been assessed for the 22 species of syngnathid and 1 species of solenostomid found in the North-west Marine Region as a species group, based on their life history characteristics and presence in the region. A summary of this analysis is provided in Table 1. Only those pressures identified as *of concern* or *of potential concern* are discussed in further detail. For more information on the regional pressure analysis refer to Schedule 1 of the draft North-west Marine Bioregional Plan.

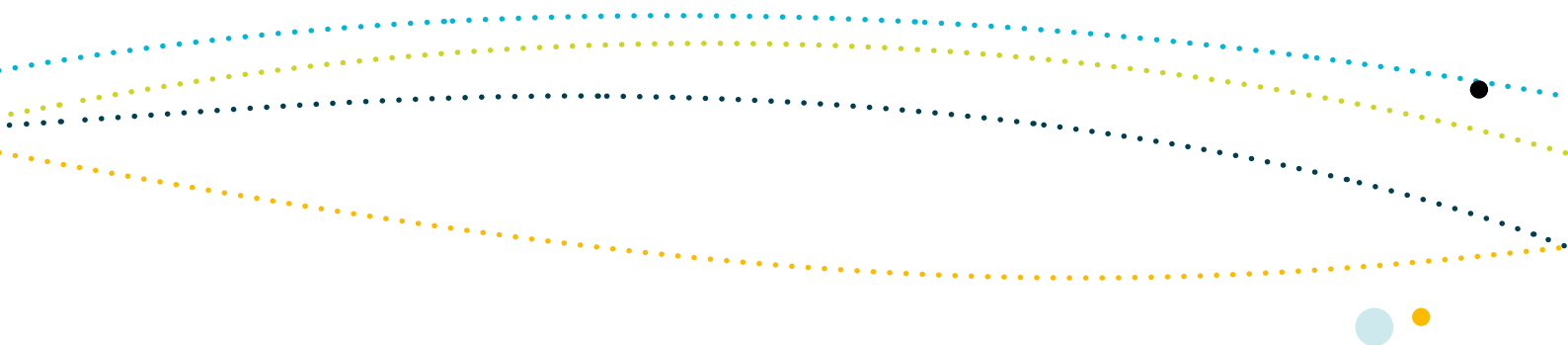


Table 1: Assessment of the level of concern associated with the effects of pressures on selected seahorse and pipefish species of the North-west Marine Region

Pressure	Source	Selected seahorse and pipefish species
Sea level rise	Climate change	of less concern
Changes in sea temperature	Climate change	of less concern
Ocean acidification	Climate change	of less concern
Chemical pollution/contaminants	Shipping	of potential concern
	Vessels (other)	of potential concern
	Urban development Mining operations	of potential concern
Marine debris	Shipping, vessels, (other)	of less concern
	Fishing boats	of less concern
	Land-based activities	of less concern
Physical habitat modification	Dredging, dredge spoil	of potential concern
	Fishing gear	of potential concern
	Offshore construction and mining operations	of potential concern
Extraction of living resources	Commercial fishing (domestic)	of less concern
	Illegal, unregulated and unreported fishing	of less concern
Bycatch	Commercial fishing (domestic)	of potential concern
Oil pollution	Shipping	of less concern
	Vessels (other)	of less concern
	Oil rigs	of less concern
Invasive species	Shipping	of less concern
	Fishing vessels	of less concern
	Vessels (other)	of less concern
	Tourism land-based activities	of less concern

Legend of concern of potential concern of less concern not of concern data deficient/ not assessed



Chemical pollution/contaminants—shipping; other vessels; urban development; mining operations

Chemical pollution and contaminants are *of potential concern* for the seahorse and pipefish species assessed. Chemical pollution has the potential to adversely impact syngnathids primarily through habitat loss or damage. The highly specialised characteristics of syngnathid biology, including a restricted diet, specific habitat requirements, low mobility and low reproductive output with obligate male brooding, render them more susceptible to threats that involve loss or degradation of habitat (Kuitert 2009; Martin-Smith & Vincent 2006; Pogonoski et al. 2002). In addition, the species' tendency to have specific habitat preferences within small home range sizes reduces their ability to find and adapt to new habitats, thereby making them vulnerable to habitat loss or damage (McClatchie et al. 2006).

The North-west Marine Region and adjacent coastal areas support a number of industries including petroleum exploration and production, minerals extraction, ports, shipping, commercial and recreational fishing, pearling and aquaculture, marine tourism, salt production, agriculture and defence-related activities (Clifton et al. 2007; Jonasson 2008). These industries are all potential sources of chemical pollution and contamination. Some of the industries, particularly mining and petroleum exploration and development, have grown rapidly over the past few decades, as has the infrastructure necessary to support them (Jonasson 2008).

The population of Western Australia showed an overall increase of 5.3 per cent in the period 2001–2006, with a 13.5 per cent jump in the Pilbara, which includes regional centres such as Karratha and Port Hedland (Clifton et al. 2007). The areas adjacent to the North-west Marine Region also have an increasing population of temporary residents largely associated with mining and petroleum activity (Clifton et al. 2007). The expansion of the north-west's economy is reflected in the increased number of vessel visits to the region's ports and the intensification of shipping activity (IRC 2007). There are 12 ports adjacent to the North-west Marine Region, and a number of new ports (including Ronsard Island, Port Hedland expansion, Dixon Island and Cape Preston) are being considered by the Western Australian Government to meet the increasing global demand for iron ore and other commodities (DEWHA 2008; DPI 2007; IRC 2007). An increase in shipping and port expansion associated with the growth of the resources sector in the north-west has potential implications for the marine environment including loss or contamination of marine habitat as a result of dredging and sea dumping, oil spills, and interactions between vessels and protected species (DEWHA 2008; IRC 2007).



Physical habitat modification—dredging; fishing gear (active and derelict); offshore construction and mining operations

Physical habitat modification is *of potential concern* for the seahorse and pipefish species assessed. Seahorses (*Hippocampus* species) and pipefishes (*Solegnathus* species) are among the site-associated fish genera that have life histories that render them vulnerable to habitat damage (Martin-Smith & Vincent 2006; Pogonoski et al. 2002). Species associated with soft bottom substrates are particularly vulnerable to habitat loss and degradation (Martin-Smith & Vincent 2006; Pogonoski et al. 2002; Vincent et al. 2005). Endemic species with a limited geographic range that occur in the vicinity of urbanised and industrial areas, such as Port Hedland, or in areas where nearshore waters are subject to pollutant run-off, may also be particularly susceptible to the impacts of habitat degradation (DEWHA 2008).

Expanding offshore oil and gas exploration and production and associated increases in shipping and port development have the potential to cause habitat modification through activities such as dredging, installation of infrastructure and sea dumping. The use of some fishing gear is a source of habitat degradation. Five commercial fisheries in the region use trawling methods, which can physically impact on benthic communities (Fletcher & Santoro 2007; Heupel & McAuley 2007; Larcombe & McLoughlin 2007; Newton et al. 2007).

Bycatch—commercial fishing (domestic)

Bycatch from commercial fishing is *of potential concern* for the seahorse and pipefish species assessed. Seahorses and pipefishes have been recorded as bycatch in the North-west Marine Region through the trawl operations of the North West Slope Trawl Fishery, Northern Prawn Fishery and Pilbara Trawl Fishery (Fletcher & Santoro 2009; Stobutzki et al. 2000). Seahorse and pipefish species caught as bycatch in trawl fisheries include ribboned seadragon, pallid pipefish, alligator pipefish and long-nosed pipefish (Griffiths et al. 2004). *Solegnathus* species are among the largest syngnathids, growing up to 500 millimetres in total length (Dawson 1985), and so are most likely to be caught by demersal fishing gear. Pipefish species inhabit trawling grounds and might therefore be prone to bycatch in these areas.

Seahorse and pipefish species caught as bycatch in deepwater trawling operations (e.g. *Solegnathus* species) are unlikely to survive if returned to the water (Connolly et al. 2001; Dodt 2005, 2006). However, syngnathids taken from shallow water trawl or dredging activities may survive if returned to the water, especially if the trawl duration is relatively short (A Mednis, pers. comm. in Pogonoski et al. 2002).



3. Current protection measures

The 23 seahorse and pipefish species discussed in this report card are listed as marine species under the EPBC Act. Under the Act it is generally an offence to kill, injure, take, trade, keep or move listed marine, migratory or threatened species on Australian Government land or in Commonwealth waters without a permit.

Alongside the EPBC Act, a broad range of sector-specific management measures to address environmental issues and mitigate impacts apply to activities that take place in Commonwealth marine areas. These measures give effect to regulatory and administrative requirements under Commonwealth and state legislation for activities such as commercial and recreational fishing, oil and gas exploration and production, ports activities and maritime transport. In some instances, as in the case of shipping, these measures also fulfil Australia's obligations under a number of international conventions for the protection of the marine environment from pollution and environmental harm.

International agreements

- Convention on International Trade in Endangered Species (CITES)—www.cites.org.

For more information on conservation listings under the EPBC Act and related management objectives and protection measures, visit www.environment.gov.au/coasts/species/marine-species-list.html.





References

Barrows, APW, Martin-Smith, KM & Baine, MSP 2009, 'Population variables and life-history characteristics of the alligator pipefish *Syngnathoides biaculeatus*, in Papua New Guinea', *Journal of Fish Biology*, vol. 74, pp. 806–819.

Bruckner, A, Field, J & Daves, N (eds) 2005, *The proceedings of the international workshop on CITES implementation for seahorse conservation and trade*, NOAA technical memorandum NMFS-OPR-27, Silver Spring, Maryland.

CITES (Convention on International Trade in Endangered Species of Wild Flora and Fauna) 2001, *Consideration of proposals for amendment of appendices I and II (prop. 12.37): inclusion of all species of the genus Hippocampus (Hippocampus spp.) in Appendix II of CITES*, viewed 15 July 2011, <www.cites.org/eng/cop/12/prop/E12-P37.pdf>.

CITES (Convention on International Trade in Endangered Species of Wild Flora and Fauna) 2008, *Checklist of CITES species*, viewed 15 July 2011, <www.cites.org/eng/resources/pub/checklist08/index.html>.

Clifton, J, Olejnik, M, Boruff, B & Tonts, M 2007, *The development, status and socio-economic linkages of key industries within and adjacent to the North-west Marine Region, Western Australia*, report prepared by the Institute for Regional Development, University of Western Australia, Perth for the Australian Government Department of the Environment, Water, Heritage and the Arts, Canberra.

Connolly, RM, Cronin, ER & Thomas, BE 2001, *Trawl bycatch of syngnathids in Queensland: catch rates, distribution and population biology of Solegnathus pipehorses (seadragons)*, Fisheries Research and Development Corporation project 1999/124 final report, Griffith University, Queensland.

Dawson, C 1985, *Indo–Pacific pipefishes (Red Sea to the Americas)*, Gulf Coast Research Laboratory, Ocean Springs, Mississippi.

DEWHA (Australian Government Department of the Environment, Water, Heritage and the Arts) 2008, *The north-west marine region bioregional profile: a description of the ecosystems, conservation values and uses of the north-west marine region*, DEWHA, Canberra.

Dodt, N 2005, *Fisheries long term monitoring program: syngnathids in the east coast trawl fishery: a review and trawl survey*, Queensland Government Department of Primary Industries and Fisheries, Brisbane.



Dodt, N 2006, *Fisheries long term monitoring program – syngnathids and their associated communities, supplementary report to: syngnathids in the east coast trawl fishery: a review and trawl survey*, Queensland Government Department of Primary Industries and Fisheries, Brisbane.

DPI (Western Australian Government Department of Planning and Infrastructure) 2007, *Port and related infrastructure requirements to meet the expected increases in iron ore exports from the Pilbara*, DPI, Perth.

Fletcher, WJ & Santoro, K (eds) 2007, *State of the fisheries report 2006/2007*, Western Australian Government Department of Fisheries, Perth.

Fletcher, WJ & Santoro, K (eds) 2009, *State of the fisheries report 2008/2009*, Western Australian Government Department of Fisheries, Perth.

Foster, SJ & Vincent, ACJ 2004, 'Life history and ecology of seahorses: implications for conservation and management', *Journal of Fish Biology*, vol. 65, pp. 1–61.

Griffiths, S, Larson, H & Courtney, T 2004, 'Trawl bycatch species', in National Oceans Office, *Description of key species groups in the northern planning area*, National Oceans Office, Hobart.

Gronell, AM 1983, 'Pipefishes – seahorses of a different sort', *Tropical Fish Hobbyist*, vol. 31, no. 11, pp. 26–32.

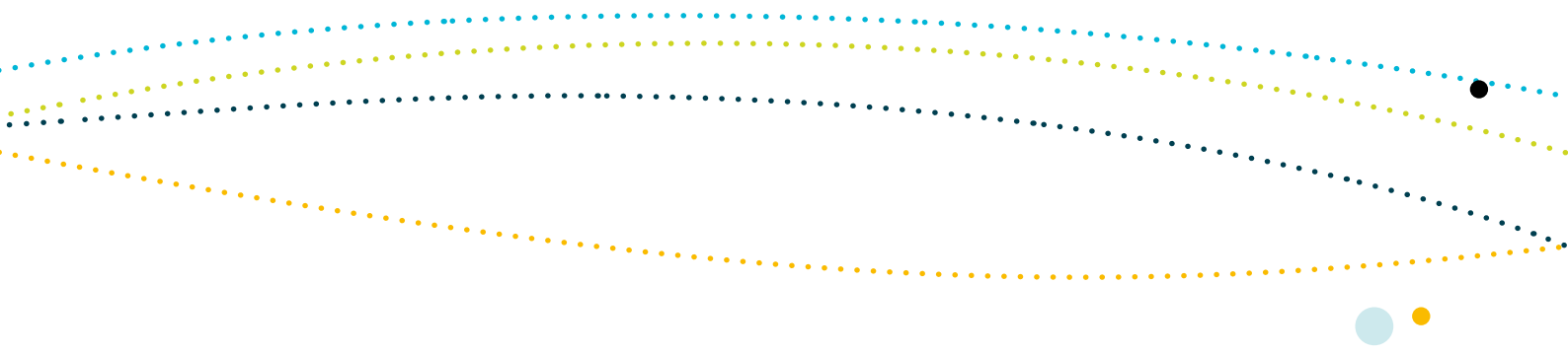
Heupel, M & McAuley, R 2007, *Sharks and rays (Chondrichthyans) in the north-west marine region*, report prepared for the Australian Government Department of the Environment, Water, Heritage and the Arts by the Fisheries and Marine Research Laboratory, Western Australian Government Department of Fisheries, Perth.

IRC (International Risk Consultants Pty Ltd) 2007, *Petroleum and minerals industries in the North-west Marine Region*, report prepared by International Risk Consultants for the Department of the Environment and Water Resources, Perth.

Jonasson, K (ed.) 2008, *Petroleum in Western Australia Magazine April 2008, Western Australia's digest of petroleum exploration, development and production*, Western Australian Government Department of Industry and Resources, Perth.

Kendrick, AJ & Hyndes, GA 2005, 'Variations in the dietary compositions of morphologically diverse syngnathid fishes', *Environmental Biology of Fishes*, vol. 72, pp. 415–427.

Kuiter, RH 2001, 'Revision of the Australian seahorses of the genus *Hippocampus* (Syngnathiformes: Syngnathidae) with descriptions of nine new species', *Records of the Australian Museum*, vol. 53, pp. 293–340.



Kuiter, RH 2009, *Seahorses and their relatives*, Aquatic Photographics, Seaford, Australia.

Larcombe, J & McLoughlin, K (eds) 2007, *Fishery status reports 2006: status of fish stocks managed by the Australian Government*, Bureau of Rural Sciences, Canberra.

Lourie, SA, Vincent, ACJ & Hall, HJ 1999, *Seahorses: an identification guide to the world's species and their conservation*, Project Seahorse, London.

Lourie, SA, Foster, SJ, Cooper, EWT & Vincent, A 2004, *A guide to the identification of seahorses*, Project Seahorse and TRAFFIC North America, University of British Columbia and World Wildlife Fund.

Martin-Smith, KM 2008, 'Role of syngnathids in shallow coastal ecosystems of southeastern Australia', in RE Forrest, JP Scandol & CR Pitcher (eds), *Towards ecosystem-based fishery management in New South Wales: proceedings of the experts and data workshop, December 8–10, 2003, Cronulla, Australia*, Fisheries Centre Research Reports 14(5), University of British Columbia, Vancouver, pp. 89–100.

Martin-Smith, K & Vincent, ACJ 2006, 'Exploitation and trade of Australian seahorses, pipehorses, sea dragons and pipefishes (family Syngnathidae)', *Oryx*, vol. 40, no. 2, pp. 141–151.

McClatchie, S, Middleton, J, Pattiaratchi, C, Currie, D & Hendrick, G (eds) 2006, *The southwest marine region: ecosystems and key species groups*, Australian Government Department of the Environment and Heritage, Canberra.

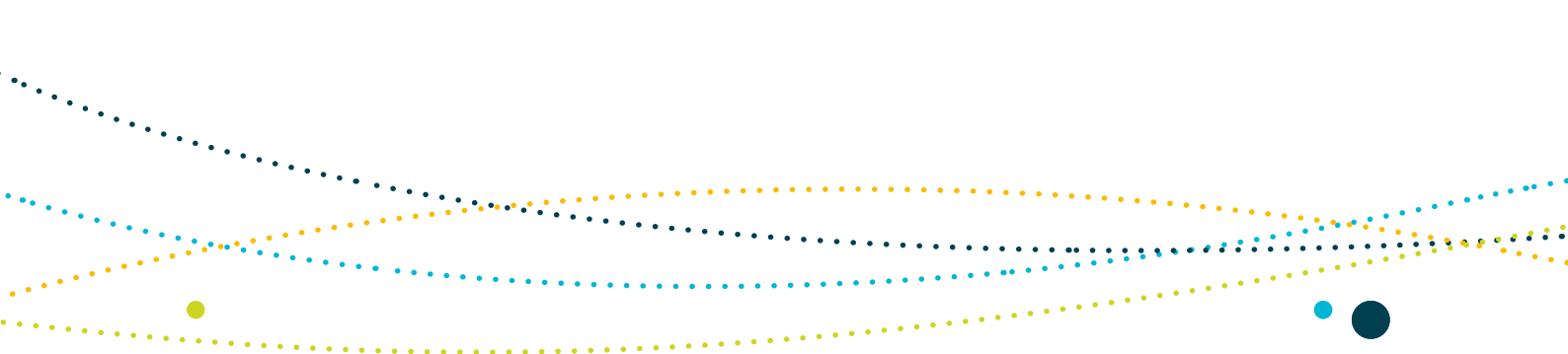
Newton, P, Wood, R, Galeano, D, Vieira, S & Perry, R 2007, *Fishery economic status report*, ABARE report 07.19, prepared for the Fisheries Resources Research Fund, Canberra.

Pogonoski, JJ, Pollard, DA & Paxton, JR 2002, *Conservation overview and action plan for Australian threatened and potentially threatened marine and estuarine fishes*, Environment Australia, Canberra.

Scales, H 2010, 'Advances in the ecology, biogeography and conservation of seahorses (genus *Hippocampus*)', *Progress in Physical Geography*, vol. 34, p. 443.

Shokri, MR, Gladstone, W & Jelbart, J 2009, 'The effectiveness of seahorses and pipefish (Pisces: Syngnathidae) as a flagship group to evaluate the conservation value of estuarine seagrass beds', *Aquatic Conservation: Marine and Freshwater Ecosystems*, vol. 19, no. 5, pp. 588–595.

Stobutzki, I, Blaber, S, Brewer, D, Fry, G, Heales, D, Miller, M, Milton, D, Salini, J, Van der Velde, T, Wassenberg, T, Jones, P, Wang, Y-G, Dredge, M, Courtney, T, Chilcott, K & Eayrs, S 2000, *Ecological sustainability of bycatch and biodiversity in prawn trawl fisheries*, Fisheries Research and Development Corporation final report 96/257.



Takahashi, E 2000, 'Life history characteristics of double-ended pipefish, *Syngnathoides biaculeatus* (Bloch) in Moreton Bay, Queensland, Australia', MSc thesis, School of Environmental and Applied Sciences, Griffith University, Queensland.

Vincent, ACJ 1996, *The international trade in seahorses*, Traffic International, Cambridge.

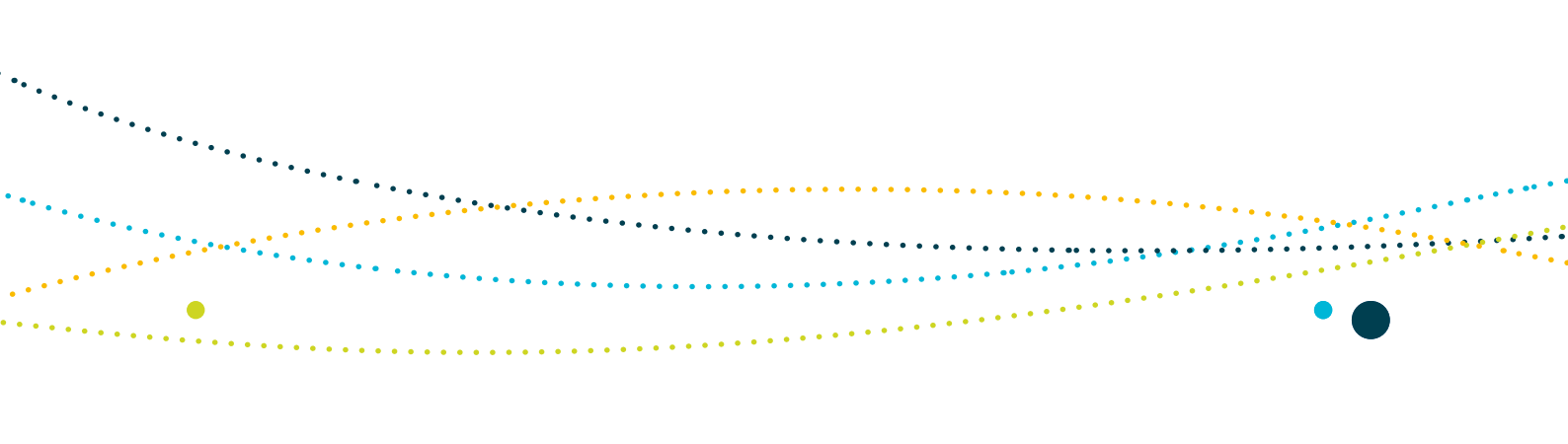
Zeller, B, Dunning, M, Williams, L, Bullock, C, Jebreen, E, Lightowler, M, Norris, W, Slade, S, Tyrer, B, Dredge, M, Turnbull, C, Courtney, T, Gribble, N, O'Neill, M, Haddy, J & Supple, R 2003, *Ecological assessment of the Queensland east coast otter trawl fishery*, a report to Environment Australia on sustainable management of a multi-species macro-scale fishery ecosystem, Department of Primary Industries, Queensland.



Attachment 1: Listed seahorses and pipefishes occurring in the North-west Marine Region

Table A1: Listed seahorses and pipefishes known to occur in the North-west Marine Region

Species (common/scientific name)	Conservation status
Seahorses	
Montebello seahorse or Monte Bello seahorse (<i>Hippocampus montebelloensis</i>)	Marine Listed under CITES (Appendix II)
Western spiny seahorse or narrow-bellied seahorse (<i>Hippocampus angustus</i>)	Marine Listed under CITES (Appendix II)
Winged seahorse (<i>Hippocampus alatus</i>)	Marine Listed under CITES (Appendix II)
Yellow seahorse or spotted seahorse (<i>Hippocampus kuda</i>) ^a	Marine Listed under CITES (Appendix II)
Pipefishes	
Banded pipefish or ringed pipefish (<i>Doryrhamphus dactyliophorus</i>)	Marine
Barbed pipefish or corrugated pipefish (<i>Bhanotia fasciolata</i>)	Marine
Bentstick pipefish (<i>Trachyrhamphus bicoarctatus</i>)	Marine
Bluestripe pipefish or Pacific blue-strip pipefish (<i>Doryrhamphus melanopleura</i>)	Marine
Brock's pipefish or tasselled pipefish (<i>Halicampus brocki</i>)	Marine
Double-ended pipehorse or alligator pipefish (<i>Syngnathoides biaculeatus</i>)	Marine
Glittering pipefish (<i>Halicampus nitidus</i>)	Marine
Long-nosed pipefish or straightstick pipefish (<i>Trachyrhamphus longirostris</i>)	Marine
Messmate pipefish or banded pipefish (<i>Corythoichthys intestinalis</i>)	Marine
Mud pipefish, Gray's pipefish (<i>Halicampus grayi</i>)	Marine



Species (common/scientific name)	Conservation status
Negros pipefish or flagtail pipefish (<i>Doryrhamphus negrosensis negrosensis</i>)	Marine
Pacific short-bodied pipefish (<i>Choeroichthys brachysoma</i>)	Marine
Red-banded pipefish or Fijian pipefish (<i>Corythoichthys amplexus</i>)	Marine
Reticulate pipefish or yellow-banded pipefish (<i>Corythoichthys flavofasciatus</i>)	Marine
Ridge-nose pipefish or red-hair pipefish, Duncker's pipefish (<i>Halicampus dunckeri</i>)	Marine
Robust ghost pipefish (<i>Solenostomus cyanopterus</i>)	Marine
Rough-ridge pipefish or Banner's pipefish (<i>Cosmocampus banneri</i>)	Marine
Schultz's pipefish or gilded pipefish (<i>Corythoichthys schultzi</i>)	Marine
Western pipehorse (<i>Solegnathus</i> sp. 2) ^b	Marine

CITES = Convention on International Trade in Endangered Species

a Also known as *Hippocampus polytaenia*.

b Also known as *Solegnathus hardwickii*.



Table A2: Listed seahorses and pipefishes that may infrequently occur in the Northwest Marine Region

Species (common/scientific name)	Conservation status
Seahorses	
False-eyed seahorse or false-eye seahorse (<i>Hippocampus biocellatus</i>)	Marine Listed under CITES (Appendix II)
Flatface seahorse or flatface seahorse (<i>Hippocampus planifrons</i>)	Marine Listed under CITES (Appendix II)
Half-spined seahorse (<i>Hippocampus semispinosus</i>)	Marine Listed under CITES (Appendix II)
Knobby seahorse (<i>Hippocampus tuberculatus</i>)	Marine Listed under CITES (Appendix II)
Northern spiny seahorse (<i>Hippocampus multispinus</i>)	Marine Listed under CITES (Appendix II)
Short-headed seahorse (<i>Hippocampus breviceps</i>)	Marine Listed under CITES (Appendix II)
Smooth seahorse (<i>Hippocampus kampylotrachelos</i>)	Marine Listed under CITES (Appendix II)
Three-spot seahorse (<i>Hippocampus trimaculatus</i>)	Marine Listed under CITES (Appendix II)
Pipefishes	
Beady pipefish or steep-nosed pipefish (<i>Hippichthys penicillus</i>)	Marine
Bony-headed pipefish (<i>Nannocampus subosseus</i>)	Marine
Braun's pughead pipefish, pug-headed pipefish or eel pipefish (<i>Bulbonaricus brauni</i>)	Marine
Christmas Island pipefish (<i>Dunkerocampus</i> sp. 1)	Marine
Cleaner pipefish or Janss' pipefish (<i>Doryrhamphus janssi</i>)	Marine
Gale's pipefish (<i>Campichthys galei</i>)	Marine
Halimeda ghost pipefish (<i>Solenostomus halimeda</i>)	Marine
Harlequin ghost pipefish or ornate ghost pipefish (<i>Solenostomus paradoxus</i>)	Marine



Species (common/scientific name)	Conservation status
Helen's pygmy pipehorse (<i>Acentronura larsonae</i>)	Marine
Indian short-bodied pipefish (<i>Choeroichthys valencienni</i>)	Marine
Indonesian pipefish or Günther's pipehorse (<i>Solegnathus lettiensis</i>)	Marine
Ladder pipefish (<i>Festucalex scalaris</i>)	Marine
Many-banded pipefish or multi-banded pipefish (<i>Doryrhamphus multiannulatus</i>)	Marine
Muirion Island pipefish or Muirion pipefish (<i>Choeroichthys latispinosus</i>)	Marine
Pig-snouted pipefish or pignout pipefish (<i>Choeroichthys suillus</i>)	Marine
Prophet's pipefish (<i>Lissocampus fatiloquus</i>)	Marine
Reef-top pipefish, reeftop pipefish or dragon pipefish (<i>Corythoichthys haematopterus</i>)	Marine
Ribboned pipehorse, ribboned seadragon or ribboned pipefish (<i>Haliichthys taeniophorus</i>)	Marine
Sculpted pipefish (<i>Choeroichthys sculptus</i>)	Marine
Short-pouch pygmy pipehorse (<i>Acentronura breviperula</i>)	Marine
Spiny-snout pipefish or spinysnout pipefish (<i>Halicampus spinirostris</i>)	Marine
Three-keel pipefish (<i>Campichthys tricarinatus</i>)	Marine
Tidepool pipefish (<i>Micrognathus micronotopterus</i>)	Marine
Tiger pipefish (<i>Filicampus tigris</i>)	Marine

CITES = Convention on International Trade in Endangered Species



