NATIONAL REPORT

-AUSTRALIA-

The Australian CITES Management Authority, the Australian Government Department of the Environment and Heritage (DEH)

I. Information on Wild Populations

a. Species of seahorses in Australian waters

See Table 1.

b. Survey programs in place, if any

State fisheries management authorities manage Syngnathid fisheries and therefore management differs across the jurisdictions.

Tasmania

Project Seahorse in southeastern Tasmania undertakes regular surveys of *H. abdominalis*.

Western Australia

License holders in the West Australian Marine Aquarium Fish Managed Fishery are required to submit monthly catch and effort returns detailing the number of species taken and the locations of take. The returns are recorded in the management agency's Catch and Effort Statistical System.

New South Wales

Universities and scuba diving clubs have conducted a few localized studies. Most recently a study was conducted on specimens of *H. whitei* and *H. bleekeri* on a shark mesh net in Sydney.

South Australia

None.

Queensland

Occurrence of seahorses is being documented as part of various trawl fishery research and monitoring programs. However there are currently no specific *Hippocampus* programs.

Victoria

The Museum of Victoria has undertaken work in the past on the Victorian coast. The survey is not a formal survey as such but is a database collection of 'point data' i.e. lists specific places where the specimen was found. The database is continually added to over time, and therefore shows distribution over time and temporal information (for example species found in Port Phillip Bay from over 100 years ago). All specimens are retained, allowing for re-identification over time. There are 42 'lots' or 'events of collection' (1-20 individuals in a lot) of *Hippocampus breviceps* from Victorian waters.

Northern Territory

None known.

Current Research Projects

- "Competition or choice: sex roles and sexual selection in the big-bellied seahorse", Keith Martin-Smith, Project Seahorse and University of Tasmania
- "Interactions of the big-bellied seahorse *Hippocampus abdominalis* with artificial structures", Keith Martin-Smith, Project Seahorse and University of Tasmania
- "Life history parameters of seahorses in Sydney Harbor – growth, movement, dispersal, longevity and behavior", Keith Martin-Smith, Project Seahorse and University of Tasmania & Jonathan Clark-Jones, Sydney.
- Recently completed study "Short-term movement patterns and habitat use of *Hippocampus whitei* at Clifton Gardens, Port Jackson", Gina Barnett & Scott Wilson, Australian Catholic University. [2003]
- Recently completed study "Resource utilization and reproductive biology of syngnathid fishes in a seagrass-dominated marine environment in south-western Australia" Alan Kendrick, Murdoch University. [2002]

c. Area of distribution, and habitat types if known

See Table 1 above.

d. Abundance (including anecdotal information)

Abundance information exists for a limited number of species (taken from information provided by State fishery management authorities).

H. abdominalis

Very common in Port Phillip Bay, southern sections of Westernport Bay and sponge gardens off Wilson's Promontory in Victoria. Overall abundance fluctuates every year. The last 5-6 years the species has been very common in Victoria. Abundance is likely to be dependent on food (i.e. abundance of mysids).

Preferred habitat in Victoria: Clear water rather than estuarine habitat, colorful bryozoans and sponges, common short kelp such as *Ecklonia* kelp substrate.

H. breviceps

Common in pockets across Victorian coast in areas where there is a semi open exposed bottom. Large numbers have been observed in seagrass beds in the Tamar River, Tasmania. Rare in southern Tasmania, occasionally found in seagrass beds.

Preferred habitat in Victoria: Shallow water, semi sheltered, Sargassum weed substrate, just below intertidal zone and as deep as 10m. Can occur at sea but prefers estuarine environment.

H. abdominalis

Anecdotal information suggests that there are large numbers in the Huon Estuary and D'Entrecasteaux Channel in Tasmania where they have been observed around salmon marine farming leases and at wharfs and jetties.

H. subelongatus

Anecdotal information suggests large numbers of this species in the Swan River Estuary, Western Australia at certain times.

Most other species reported from Australian waters are considered to occur at low abundance, but systematic surveys have generally not been conducted.

II. Nature of Seahorse Fisheries

State fisheries management authorities manage Australian seahorse fisheries, and the management arrangements therefore vary across the States. For a. to f. please see Appendix A.

g. Conservation measures

International

Four of the 13 Australian species in Lourie et al. (1999) are listed as Vulnerable on the IUCN Red List while the remainder are listed as Data Deficient (IUCN 2003). The majority of these species were assessed in 2001, except H. abdominalis (1994) and the criteria for the Vulnerable listings were downward trends in population sizes. All the Vulnerable species are widespread Indo-Pacific species that are exploited commercially outside Australia.

Australian Government – Commonwealth Legislation

All syngnathids and solenostomids are listed marine species under Part 13 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). As a result of this listing, it is an offence to kill, injure, take or trade syngnathids and solenostomids in, or from, a Commonwealth area. The Act specifies that certain actions are not offences, including actions undertaken in accordance with an accredited management regime or in accordance with a permit under which the action is approved. Accidental capture may also provide a defense against prosecution.

Syngnathids are considered regulated native specimens under Part 13A of the EPBC Act, and therefore require an export permit from DEH. In order to get this permit, the operation from which the specimens are sourced needs to be an approved wildlife trade operation or an approved captive breeding operation under the EPBC Act. There are a number of requirements that need to be met in order for an operation to be approved under the EPBC Act. These requirements include ensuring that any commercial utilization of Australian native wildlife for the purposes of export is managed in an ecologically sustainable way, and that Australia's obligations under CITES are complied with. Permits may also be issued for non-commercial purposes including education and research. Further detail regarding requirements for an approved operation under the EPBC Act can be found at http://www.deh.gov.au/coasts/fisheries/index.html.

Western Australia

There is no specific legislation that relates to the taking of seahorses. The collection of specimens is prohibited in sanctuary zones and closed waters in marine parks and reserves.

Victoria

Under the Victorian *Fisheries Act 1995*, the family *Syngnathidae* is listed as Protected Aquatic Biota. Victoria's Marine Parks and Sanctuaries provide protection for a variety of habitats and species. A permit holder cannot take seahorses from a Fisheries Reserve or Marine Park.

South Australia

Current policy may limit the number of individuals taken from the same locality within a specified time period, particularly where there is the intent to collect male and female specimens, to avoid the removal of entire populations or breeding potential from one area.

Tasmania

Taking of *Hippocampus* species is prohibited in Tasmanian State waters under the Tasmanian *Living Marine Resources Management Act 1995*.

Queensland

None.

New South Wales

A discussion paper has recently been released on the New South Wales Government's proposal to protect all syngnathids from collection in the wild.

Northern Territory

None.

III. Extent of International Trade

This information has primarily been taken from an unpublished paper written by Keith Martin-Smith on syngnathid trade in Australia.

a. Number of levels (buyers, middlemen, exporters, etc.)

Best information suggests that there are usually up to 3 levels within the seahorse trade in Australia. The participants differ between the live and dried seahorse trade.

The live seahorse trade usually consists of three levels:

1. The fisher that harvests live specimens from the wild
2. The aquarium shop owner or aquaculture facility operator
3. The exporter

In some cases all three levels are undertaken by the one operation. Some captive breeding operations harvest a limited number of specimens from the wild themselves, before breeding them in an aquaculture facility and then exporting the progeny to overseas buyers. Wild specimens exported would generally only have 1 or 2 levels involved, either the specimen would be exported directly by the collector to an overseas buyer, or an exporter would be employed to manage shipment of the specimens.

The export of dried seahorses from Australia is very small and therefore little is known about this industry. It is likely that the trade would include a fisher, that harvests specimens from the wild, and an exporter, with a traditional Chinese medicine supplier potentially involved in the middle.

b. Information on value, retail and wholesale prices

Statistics for dried seahorses being exported to Hong Kong between 1998 and 2001 indicate that prices have varied between approximately US$270 and US$100 per kilo. Live seahorse prices over the period 1997-2000 have varied between an average of US$189 and US$9 per individual.

c. Customs/CITES involvement at ports

DEH relies heavily on the Australian Customs Service (Customs), as Australia's primary border protection agency, to implement CITES at ports of exit and entry. Under a formal memorandum of understanding, Customs performs the following major tasks:

- Inspection of CITES documents at ports of exit and entry;
- Seizure of items suspected of being exported or imported in breach of the Act;
- Short-term storage, transfer and secure destruction of seized items, subject to DEH direction; and
- Provision of technical and practical assistance in investigations and prosecutions of breaches of the Act, where border control has been compromised.

A strong relationship with Customs is essential to effective implementation of CITES in Australia. In order to further this strategic relationship by promoting inter-agency awareness, a Customs officer is permanently seconded to IWT, primarily to assist in investigations and to liaise with Customs.

DEH supports Customs in its work through regular and ad hoc training exercises, and the ongoing provision of technical advice (including a twenty-four hour call service).

d. Relationship between CITES offices and fisheries agencies

The EPBC Act is the primary legislative vehicle for the implementation of national obligations under CITES and domestic control of international trade in non-CITES wildlife. DEH (also the CITES Management Authority) is responsible for ensuring that Commonwealth managed and State export fisheries are assessed under the EPBC Act to ensure that they are managed in an ecologically sustainable manner. In fulfilling this requirement, DEH works closely with fisheries management authorities and ensures they are aware of CITES requirements.

e. Export volumes

Discrepancy exists between export figures for dried seahorses from Australia and import figures from other countries. Volumes of dried seahorses recorded by the DEH as exported from Australia in the period1998-2000 were less than 5kg, however imports to China, Hong Kong and Taiwan over the same period were 500kg. It is possible that this discrepancy is due to pipehorses from Australia being recorded as seahorses when they were imported to Taiwan and Hong Kong. It is also possible that there was a degree of under-reporting of export volumes.

There is reasonable consistency between live seahorses recorded as exported from Australia and import figures from the largest market, the U.S.A. The volumes of live seahorses exported have increased from 254 seahorses in 1998 to 3224 in 2000, the majority of which were *H. abdominalis*. The increase in seahorse exports represents the increase in commercial production from aquaculture operations in South Australia and Tasmania[1].

f. Statistics

No statistics are available.

(Footnotes)

[1] Martin-Smith, unpublished.

Table 1: Species of the genus *Hippocampus* in Australian waters (taken from Kuiter 2000, Kuiter 2001, Kuiter 2003-, Lourie *et al* 1999 and information provided by State fisheries management authorities).

a. Species of seahorses in Australian waters (endemic species marked with *)		**c. Distribution and habitat if known (According to literature and information provided by State fisheries management authorities)**
According to Kuiter 2000, 2001 and 2003	**Recognized by Lourie *et al* 1999**	
H. abdominalis (New Zealand pot-belly seahorse)	*H. abdominalis* (Big-belly seahorse)	New Zealand and southern Australian waters. Found on macroalgae and sponges to depths of 80m. In Tasmanian waters the species is found in estuarine sheltered waters and on man-made structures.
H. alatus * (Winged seahorse)	–	Northern Australia, soft bottom habitat from 10-80m depths.
H. angustus * (Western spiny seahorse)	*H. angustus* * (Narrow-bellied seahorse)	Northern Australian waters (Shark Bay, Western Australia to Torres Strait). Usually found on algal reef 12-25m and trawled from up to 60m.
H. bargibanti (Pygmy seahorse)	*H. bargibanti* (Pygmy seahorse)	Throughout the West Pacific, Coral Sea, southern Japan and ranging into Indonesia. Always found in association with soft corals in depths over 20m.
H. biocellatus * (False-eyed seahorse)	(Part of *H. trimaculatus*)	Shark Bay Western Australia. Occurs in shallow algae or weedy reef habitats to a depth of about 20m.
H. bleekeri (Australian pot-belly seahorse)	(Part of *H. abdominalis*)	Known in waters of South Australia, Victoria and Tasmania. Occurs in shallow estuaries and reefs in coastal waters to a depth of at least 35m.
H. breviceps * (Short-head seahorse)	*H. breviceps* * (Short-headed seahorse)	Southern Australia, in protected bays and estuaries associated with brown algae on low, shallow reefs.
H. colemani * (Coleman's pygmy seahorse)	–	New South Wales coast, only known from shallow sparse seagrass at Lord Howe Island
H. dahli * (Low-crown seahorse)	(Part of *H. trimaculatus*)	Coastal Queensland to Darwin, Northern Territory. Lives in estuarine channels and offshore on soft bottoms to 21m.

Table 1 (CONTINUED)

a. Species of seahorses in Australian waters (endemic species marked with *)		**c. Distribution and habitat if known (According to literature and information provided by State fisheries management authorities)**
According to Kuiter 2000, 2001 and 2003	**Recognized by Lourie *et al* 1999**	
H. elongatus * (West Australian seahorse)	*H. subelongatus* * (West Australian seahorse)	Sub-tropical West Australian waters, occurring mainly in sheltered bays in mixed reef and vegetation habitats from 1-25m depth often in high sediment areas.
H. grandiceps * (Big-head seahorse)	(Part of *H. spinosissimus*)	Eastern side of the Gulf of Carpentaria, in shallow water.
H. hendriki * (Eastern spiny seahorse)	(Part of *H. spinosissimus*)	Inner Great Barrier Reef area, Queensland.
H. histrix (Thorny seahorse)	*H. histrix* not recorded from Australia.	Range from Japan through Indonesia and the Coral Sea, Australia. Deep coastal slopes over 15m deep on soft bottom. (Occurrence of this species in northern Australian waters needs confirmation)
H. jugumus n.sp. * (Collared seahorse)	*H. fisheri* (Fisher's seahorse)	Only known from a single specimen at Lord Howe Island, New South Wales. Further work needed.
[*H. kampylotrachelos* (Smooth seahorse)]	(Part of *H. trimaculatus*)	A single specimen recorded from Ashmore Reef, Western Australia in a bird's nest – may have come from Indonesia.
	H. kuda (yellow seahorse, spotted seahorse)	Northern Australian waters, and throughout the Pacific and Asia. Shallow inshore waters to 50m, usually soft substrates.
H. minotaur * (Bullneck seahorse)	*H. minotaur* * (Bullneck seahorse)	Only known from a few specimens in southern New South Wales and Bass Strait region. Trawled from 64-100m
H. montebelloensis. * (Monte Bello seahorse)	–	Monte Bello Island in Western Australia.
H. multispinus (Northern spiny seahorse)	(Part of *H. angustus*)	Northern Australia waters and southern Papua New Guinea. Most specimens trawled 20-60m.
H. planifrons * (Flat-face seahorse)	(Part of *H. trimaculatus*)	Shark Bay to Exmouth, Western Australia. Lives in algae and rubble reefs in shallow bays to 20m depths.
H. procerus n.sp. (High-crown seahorse)	(Part of *H. whitei*)	Southern Queensland, on mixed algal reefs to depths of about 20m.

Table 1 (CONTINUED)

a. Species of seahorses in Australian waters (endemic species marked with *)		**c. Distribution and habitat if known (According to literature and information provided by State fisheries management authorities)**
According to Kuiter 2000, 2001 and 2003	**Recognized by Lourie *et al* 1999**	
H. queenslandicus * (Queensland seahorse)	(Part of *H. whitei*)	Inner reef waters of Queensland in depths of 20-63m.
H. semispinosus (half-spined seahorse)	(Part of *H. kuda*)	Specimens of this species possibly trawled from North West shelf, Western Australia. Further work needed.
	H. spinosissimus (Hedgehog seahorse)	Torres Strait and Gulf of Carpentaria. Muddy or sandy bottoms.
H. taeniopterus (Common seahorse)	(Part of *H. kuda*)	Found in the Moluccan seas, Papua New Guinea and tropical eastern Australia. Shallow water species, mainly in coastal areas to about 15m depths.
H. tristis * (Sad seahorse)	*H. kelloggi* (Kellogg's seahorse)	Distribution and taxonomy uncertain. Has been found in southern Queensland, northern New South Wales and Lord Howe Island, mostly from trawls between 18-53m depths.
H. tuberculatus * (Knobby seahorse)	(Part of *H. breviceps*)	Western Australia, offshore in floating *Sargassum*, settling on sponge reefs at about 20m depth
H. whitei * (White's seahorse)	*H. whitei* * (Sydney seahorse)	Found in estuaries of New South Wales.
H. zebra (Zebra seahorse)	*H. zebra* * (Zebra seahorse)	Queensland and southeastern Papua New Guinea. Soft bottom habitat in depth of about 20-60m.

Note: Lourie *et al.* (1999) has been adopted as standard taxonomy for CITES listing and IUCN Red Book listings. This gives a total of 13 species found in Australian waters with the possible addition of a 14th species, *H. histrix*. On the other hand, Kuiter (2001 and 2003) recognizes 25 species (with a possible two additional species). Further genetic and morphometric work is needed to ascertain the true number of species. For example Armstrong (2001) showed that there were no significant differences in the cytochrome b sequence of *H. abdominalis* and "*H. bleekeri*" suggesting that there is only one species. However, genetic sequencing of *H. biocellatus* has confirmed it to be a true species (Sara Lourie, pers. comm.)

REFERENCES

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Appendix I. Management of State Seahorse Fisheries

State	Species taken	Commercial licensing/permitting requirements	Recreational licensing/ permitting requirements	No. Permits	Gear used	Landings data
South Australia	*Hippocampus abdominalis* (Big-bellied seahorse)	Collection from the wild for commercial purposes requires an exemption under Section 34(1) of the *Fisheries Act 1982*. Current policy is to only issue exemptions for the collection of broodstock for recognised and competent breeders for the aquaria trade.	Not covered under *Fisheries Act 1982*. It is believed that wild harvest for personal aquaria etc is negligible.	4 since 1st Jan 2000, roughly on an annual basis from a single known breeder	?	23, 20, 20, 10,
	Hippocampus breviceps (Short-headed seahorse)	As above	As above	3 since 1st Jan 2000	?	10, 6, 10,
	Hippocampus whitei (White's seahorse)	As above	As Above	0	?	0
Victoria	*H. breviceps* *H. bleekeri*	Permit required Application for permit must include a business Plan for consideration in the application	(*Sygnathidae* listed as Protected Aquatic Biota under the *Fisheries Act 1995*) Recreational take is prohibited.	3 permits issued allowing the <u>*take and display*</u> 1 permit issued allowing <u>*take and sale*</u>	Hand net	Landed and sold live. Very small quantities, the one Victorian permit holder authorised to sell, only harvests a small number (less than 10) each year for breeding.
New South Wales		There is currently no commercial harvest or aquaculture of *Hippocampus* sp in New South Wales.				
Northern Territory		Unknown				

Appendix I (continued). Management of State Seahorse Fisheries

State	Species taken	Commercial licensing/permitting requirements	Recreational licensing/ permitting requirements	No. Permits	Gear used
Western Australia	*Hippocampus angustus* (WA spiny seahorse)	Annual syngnathid quota of 750 individuals*. Required to submit monthly catch and effort returns detailing the number of species taken and the locations of take.	There is no recreational take.	13 licenses in the commercial fishery.	Collect specimens by hand or hand held nets.
	Hippocampus breviceps (Short snouted seahorse)	Same as above.	Same as above.	Same as above.	Same as above.
	Hippocampus hystrix (Spiny seahorse)	Same as above.	Same as above.	Same as above.	Same as above.
	Hippocampus kuda (Spotted seahorse)	Same as above.	Same as above.	Same as above.	Same as above.
Tasmania	*Hippocampus abdominalis, Hippocampus breviceps*	No commercial licenses. Permits issued authorising limited harvest for educational and community awareness purposes and scientific research (including one for aquaculture broodstock).	No recreational licensing.	4 current permits (duration less than 12 months)	
Queensland	*H. alatus* *H. bargibanti* *H. dahli* *H. grandiceps* *H. hendriki* *H. procerus* *H. queenslandicus* *H. taeniopterus* *H. tristis* *H. zebra*	Licensed marine aquarium fish collectors that may collect all ten species. Public aquaria are authorized to collect and display fish under a General Fisheries Permit. Aquaculture permits can also be obtained for broodstock collections.	Seahorses can be taken recreationally without permit authority using gear prescribed under the Fisheries Regulations 1995.	There are approximately 50 marine aquaria permits. Aquaculture permits have been issued.	