Inclusion of seahorses *Hippocampus* spp. in Appendix II. Proponent: United States of America.

Summary: Seahorses are distinctive, carnivorous, bony fishes, which inhabit marine or brackish water, primarily in shallow temperate, subtropical and tropical coastal environments with the majority being in the eastern hemisphere. There have been several taxonomic revisions of the genus *Hippocampus* in recent years. The proposal uses a reference that recognises 32 species. Potential habitat is extensive but is degraded and reduced in some areas. *Hippocampus* spp. are characterised by sparse distributions, low population densities, limited mobility within their small home range, lengthy paternal care and mate fidelity, all of which may make them vulnerable to over-exploitation. Longevity ranges from one to five years depending on size and maturity is reached by one year of age. Commonly seahorses produce 100-200 offspring. Fishery dependent data and information gathered from fishers and traders indicates that seahorse catches have declined by 15-75% over a three to ten year period in the five main countries with seahorse fisheries. Declines in abundance are also reported in other range States with fisheries. In addition, the size of harvested individuals is decreasing. The IUCN Red List status of all 32 seahorse species was recently reassessed and 20 species are now considered Vulnerable, and one as Endangered. Twenty-three species are harvested in directed fisheries and through bycatch, the main demand being for the traditional medicine (TM), curio and aquarium trades. Non-selective fishing gear is causing considerable damage to seahorse habitat and impacts seahorses by removing all life stages as bycatch. Bycatch currently accounts for the majority of specimens traded on the TM and curio markets, whereas directed fisheries are usually the source of live specimens for the aquarium trade. Harvest and trade is not regulated in most countries that have a fishery and collection of trade statistics is extremely limited. Collection of species-specific data is hampered by the difficulty in identifying seahorses to species level based on morphological characteristics alone. Trade in heavily fished species from the Indo-Pacific is often grouped under four species *H. kuda, H. histrix, H. kelloggi* and *H. trimaculatus*, however *H. kuda* consists of several species complexes and the others of several separate species. Studies show that populations of *H. comes, H. spinosissimus, H. barbouri, H. reidi, H. erectus,* and *H. ingens* have undergone catch declines of 15-90% in heavily-fished areas. Specimens from these fisheries are destined for TM, live and curio trades. During the mid 1990s, the largest known exporters were India, Indonesia, the Philippines, Thailand and Viet Nam, with annual exports for each country estimated at three to 15 tonnes of dried seahorses. In 2000, trade in seahorses to Asia may have reached 70 tonnes; up to 50 medicines may contain seahorses as an active ingredient. Indonesia and the Philippines continue to be identified as major exporters, with primary buyers reporting an annual trade of 854 000 animals from the Philippines alone. The main importers of dried seahorses are China, Hong Kong SAR, Taiwan POC and Singapore, and of live seahorses are countries in North America and Europe as well as Japan and Taiwan POC. Commercial captive breeding operations have been largely unsuccessful and specimens in trade are taken almost entirely from the wild.

The proponents seek to include *H. comes, H. spinosissimus, H. barbouri, H. reidi, H. erectus* and *H. ingens* in Appendix II in accordance with Article II, Resolution Conf. 9.24, Annex 2a criteria Bi) on the grounds that harvesting of specimens from the wild will exceed, over an extended period, the level that can be continued in perpetuity. The remaining species in the genus *Hippocampus* are proposed for inclusion in Appendix II under Annex 2b criterion A to bring trade in specimens of the others under effective control.

Analysis: Following Resolution Conf. 9.24, seahorses appear to meet the criteria for inclusion in Appendix II. Twenty-one species of *Hippocampus* are currently regarded as threatened with extinction. There is evidence of declines in seahorse populations coupled with high levels of international demand. Studies have indicated that international trade has had significant impacts on the populations of *H. comes, H. spinosissimus, H. barbouri, H. reidi, H. erectus,* and *H. ingens* as all have declined, some strongly, in countries with fisheries. These species are therefore likely to meet the criteria for inclusion in Appendix II in that harvest for trade exceeds the level that can be continued in perpetuity. Distinguishing between different *Hippocampus* species is not easy due to taxonomic problems and identification difficulties, so that the remaining species would appear to qualify for inclusion in Appendix II to bring trade in specimens of the others under effective control. Implementation of an Appendix-II listing would be challenging.

Supporting Statement (SS)	Additional information
Taxonomy	
The taxonomy of seahorses requires additional	

Supporting Statement (SS)	Additional information
clarification due to the large numbers of synonyms, multi-species complexes and some unnamed species. There have been several recent taxonomic revisions. This proposal uses Lourie *et al*. (1999) which recognises 32 species.	
Range	
Seahorses inhabit marine and brackish water, occurring mainly in shallow temperate, subtropical and tropical coastal environments between 52º north and 44º south latitudes. These latitudes encompass the Pacific and Atlantic Oceans, and the Caribbean and Mediterranean Seas. Seahorses are likely to be found in coastal areas of all range States within these latitudes. See SS and Appendix A of SS.	
Range States of the six species proposed for inclusion in Appendix II of CITES in accordance with Article II paragraph 2 (a), as provided in Appendix A of SS:	
H. comes: Malaysia, Philippines, Singapore, Viet Nam	**H. comes**: *also occurs in Indonesia (Lourie, 2002).*
H. spinosissimus: Australia, Indonesia, Malaysia Philippines, Sri Lanka, Taiwan POC, Singapore, Viet Nam	**H. spinosissimus***: also occurs in Thailand (Lourie, 2002).*
H. barbouri: Southeast Asia including the Philippines and Malaysia	**H. barbouri**: *also occurs in Indonesia (Lourie, 2002).*
H. reidi: Western Atlantic: Bahamas, Barbados, Bermuda, Brazil, Columbia, Cuba, Grenada, Haiti, Jamaica, Mexico, Uruguay, USA, Venezuela	
H. erectus: Caribbean, western Atlantic: Anguilla, Antigua and Barbuda, Argentina, Aruba, Bahamas, Barbados, Belize, Bermuda, Brazil, Canada, Cape Verde, Cayman Islands, Colombia, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Guatemala, Haiti, Martinique, Mexico, Montserrat, Netherlands Antilles, Panama, Puerto Rico, Saint Helena, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sao Tome and Principe, Suriname, Trinidad and Tobago, Turks and Caicos Islands, Uruguay, USA, Venezuela	
H. ingens: Eastern Pacific: Costa Rica, Ecuador, Ecuador, Galapagos, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, USA	
IUCN Global Category	
As provided in Appendix A of the SS, the global Red List status of all 32 seahorse species in the genus *Hippocampus* was recently reassessed with 20 species now considered VU. These reassessments will be included in the 2002 IUCN Red List of Threatened Species. One species is considered as EN *(H. capensis*), the remainder are considered DD.	*The 2000 IUCN Red List classifies 34 species (using a different taxonomy and criteria to the 2002 Red List) in the genus* Hippocampus, *30 as VU due to a decline caused by actual or potential levels of exploitation. One species is classified as EN (*H. capensis*), the remainder are DD (Hilton-Taylor, 2000).*

Supporting Statement (SS)	Additional information

Biological and trade criteria for inclusion in Appendix II

A) Trade regulation needed to prevent future inclusion in Appendix I

B) Harvesting for international trade has, or may have, detrimental impact on population

(i) exceeds sustainable yield; (ii) reduces population to potentially threatened level

Sparse distribution, low population density, limited mobility within their small home range leading to limited ability to recolonise depleted areas, lengthy parental care and mate fidelity make seahorses susceptible to overexploitation.

Life span estimates in the SS are based on ex situ individuals, not wild. The SS mentions that reproductive rates are limited by lengthy parental care combined with a small brood size, when in fact the parental care probably offsets the small brood size by higher juvenile survival than in fishes without parental care (Foster, 2002).

Approximately 23 of the 32 described seahorse species are harvested through directed fisheries, and also as bycatch in non-selective trawl fisheries to supply local and international markets. Bycatch currently accounts for the majority of specimens in trade, destined for the TM and curio markets, whereas directed fisheries are usually the source of live specimens for the aquarium trade. Management of seahorse fisheries is not well developed in the majority of range States due to lack of biological information and only limited reporting of catch.

Best evidence suggests that H. erectus, H. reidi*, and* H. ingens *are declining throughout their ranges and reported levels of trade in seahorses are certainly not sustainable (Baum, 2002).*

The Project Seahorse assessment of the largest exporters during 1998-2000 (cited in the SS) is based on incomplete trade report sections for Indonesia and Thailand (Vincent, 2002).

In the early 1990s, 20 million seahorses were caught annually, and annual consumption in Asia is estimated at 45 tonnes. Trade may have declined in 1998 and 1999, but increased to 70 tonnes of seahorses imported into Asia in 2000. The main exporting countries (in descending order) based on 1998-2000 trade data were Thailand, India, Mexico, the Philippines and Viet Nam. Nine countries in Africa and nine countries in Latin America have recently begun supplying seahorses to the TM trade, possible in response to a decline in supplies in Southeast Asia. More recently, Indonesia and the Philippines were identified as the major exporters, with primary buyers reporting an annual export of 854 000 animals from the Philippines alone. The main importers of dried specimens are China, Hong Kong SAR, Taiwan POC and Singapore.

Declines reported between 1990 and 1995 (Vincent, 1996) are accurately reported in the SS, but it should also be noted that the decline of 15-50% in Indonesia was noted in Bali and East Java, the decline of 50% in Thailand was in the Chonburi region, the 33-80% decline in Viet Nam was in Cua Be, and the decline of up to 75% in India was reported from Palk Bay (Perry, 2002).

More recent investigations of the seahorse trade indicate that declines are still occurring (Perry, 2002). The following are examples not mentioned in the SS:

India: half of surveyed fishers (n=160) reported decreased catches, 36% reported no change, 14% reported an increase
Pakistan: fishers (n=8 of 11) reported a 50% decrease in catch (although seahorses do not appear to be traded from the fishery)
Singapore: traders in the live and dried trades reported decreased supplies over 10 years, citing declining populations as the reason

Estimated declines in catch of ***H. comes,*** ***H. spinosissimus*** and ***H. barbouri*** (possibly also includes *H. fuscus*, *H. kelloggi*, *H. kuda* and *H. trimaculatus*):
Indonesia: 15-50% decline since 1990
Thailand: 50% decline between 1993-1995
Viet Nam: 30-60% decline between 1990-1995
India: declines of up to 75% between 1992-1995

H. comes**: Philippines**: 69% decrease in catch between 1985-1995 in northern Bohol

Estimated declines in catch of ***H. erectus*** and ***H. reidi*** (Western Atlantic):
Mexico: 75-90% in past 10-20 years
Honduras: decrease in catch
Brazil: decrease in catch

The number of countries involved in the seahorse trade appears to have increased. By 1995, the number of known trading countries was 32 (Vincent, 1996). Perry (2002) notes that there are least 75 countries that have been involved in the trade. Many countries appear to have begun trading only recently, on the basis of trade surveys. Some, however, may have been actively trading seahorses prior to 1995, and awareness of their participation likely reflects a better understanding of the trade. Increases in known volumes of dried seahorses in trade likely represent in part an increased effort in trade monitoring, as well as a real increase in trade

Supporting Statement (SS)	Additional information
Estimated declines in catch (Eastern Pacific) **Mexico**: 95% in the past 20-30 years **Guatemala**: 100-150 animals per trip to 4-15 seahorses per trip in 2000 **Costa Rica**: a decline in numbers **Panama:** decrease in catch during 1985-1990 **Ecuador**: decline during the 1990s	*volumes (Perry, 2002).* *Based on experience in the Indo Pacific, it appears that seahorses are being fished over their maximum sustainable yield; additional environmental factors will serve to deplete stocks to unrecoverable levels (Doyle, 2002).* *On the basis of declines reported by fishers and traders it is inferred that harvesting from the wild in some areas has had, or will have a detrimental effect (Perry, 2002).* *Large volumes of trade in dried seahorses from many countries around the world has created a situation wherein current levels of resource extraction cannot be maintained. It is clear that current levels of exploitation of seahorses are unsustainable when assessed against criteria for overfishing (Martin Smith, 2002).*

Inclusion in Appendix II to improve control of other listed species

Specimens resemble other species and are difficult to distinguish, or most of taxon is already listed

The taxonomy of seahorses requires clarification. Identification to species is difficult based on morphological characteristics alone. These characteristics combined with genetic information, environmental data, geographic ranges and habitat details are also required for identification. Two taxonomic references and a database of diagnostic characteristics are available to assist with species identification.	*Some species such as* H. abdominalis *or* H. bargibanti *are very easy to recognise while others such as H. kuda,* H. barbouri *or* H. spinosissimus *are very difficult to recognise (Martin-Smith, 2002).*

Other information

Threats

Over-harvest in directed fisheries, bycatch and habitat degradation and loss are considered the main threats.	

Conservation, management and legislation

See Table 10 of SS for summary of regulations affecting *Hippocampus* spp. Fishery management recommendations were adopted at the recent CITES Technical Workshop on Seahorses and Other Members of the Family *Sygnathidae* (Cebu, Philippines; 27-29 May, 2002) but these have been implemented and tested only on a small scale.	*The SS summary of regulations for India appears to be inconsistent as it states that capture of seahorses is prohibited, but then states that permits are required for export. However, Vincent (2002) indicated that seahorse exports were prohibited in 2001.* *Contrary to the information in the SS, which states that seahorse exports from Mexico are prohibited, seahorses caught as bycatch in other fisheries can be traded though this is not specifically addressed in the legislation. In addition, there are harvest quotas for the live capture of seahorses in Costa Rica however it is unlikely that there is there is a scientific basis for the quota or population monitoring (Baum, 2002).* *Payne (2002) believes that current regulatory controls in Australia are effective. Reported trade levels from there are probably sustainable (Martin Smith, 2002).*

Supporting Statement (SS)	Additional information
	Similar species
	Hippocampus species are very distinctive and easily distinguished from other genera.
	Captive Breeding
Large scale captive breeding programmes have been mainly unsuccessful due to the difficulty of rearing offspring to market size. Seahorse culture relies on a repeated removal of adult males to maintain stock and mortality rates tend to be high due to disease and nutritional problems.	*In Australia captive breeding facilities achieve high rate of juvenile survival with negligible removal of seahorses from the wild (Payne, 2002). Some large-scale ventures can now achieve 70% survival to sexual maturity (Woods, 2002).* *It is very difficult to distinguish between wild caught specimens and those bred in captivity (Baum, 2002).*
	Other comments
	Making non-detriment findings at the species level will be challenging and could be quite costly. Participants at the CITES Technical Workshop on Seahorses and Other Members of the Family Sygnathidae therefore proposed moving towards a uniform minimum size limit across the genus, as a crude first approach to making a detriment findings.

Reviewers: J. Baum, K. Doyle, S. Foster, S. Laurie, K. Martin Smith, M. Payne, A. Perry, TRAFFIC East Asia, A. Vincent, C. Woods.

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