TRAFFIC Project Seahorse

A CITES PRIORITY:

SEAHORSES AND THE TWELFTH MEETING OF THE CONFERENCE OF THE PARTIES TO CITES, SANTIAGO, CHILE 2002

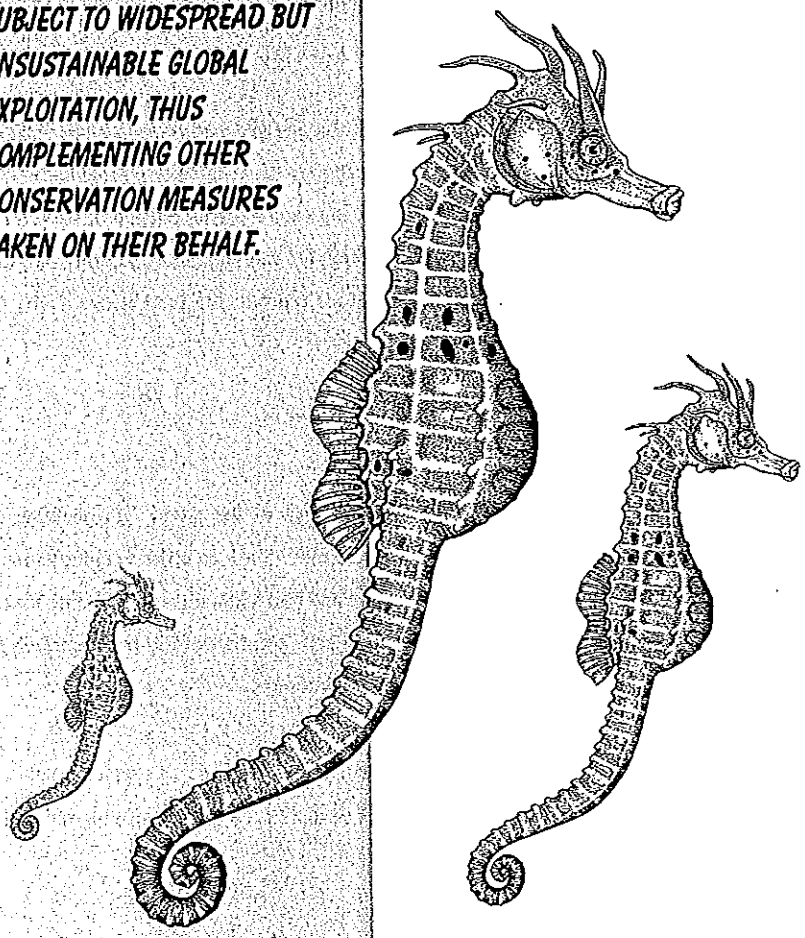
TRAFFIC AND PROJECT SEAHORSE BRIEFING DOCUMENT OCTOBER 2002

AT THE TWELFTH MEETING OF THE CONFERENCE OF THE PARTIES TO CITES (COP12), PARTIES WILL CONSIDER PROPOSALS TO LIST ALL SEAHORSES (GENUS *HIPPOCAMPUS*) IN CITES APPENDIX II. IF ACCEPTED BY THE PARTIES, THE LISTINGS WOULD PROMOTE MONITORING AND MANAGEMENT OF TRADE IN THESE FISHES THAT ARE SUBJECT TO WIDESPREAD BUT UNSUSTAINABLE GLOBAL EXPLOITATION, THUS COMPLEMENTING OTHER CONSERVATION MEASURES TAKEN ON THEIR BEHALF.

Project Seahorse and TRAFFIC are convinced that all seahorses (genus *Hippocampus*) should be listed on Appendix II, as one important component of collaborative efforts to achieve sustainable use of these remarkable fishes.

Background on seahorses and CITES

The USA and Australia submitted a discussion document on seahorses and the family Syngnathidae for consideration at the 11th meeting of the Conference of the Parties to CITES (CoP 11, Nairobi, April (Doc. 11.36). At CoP 11, the Parties unanimously agreed on two decisions: (1) Decision 11.153, which directed the CITES Secretariat to gather information from the Parties and convene a technical workshop on syngnathids, and (2) Decision 11.97, which directed the CITES Animals Committee to review the outcomes of the technical workshop and develop recommendations to secure the conservation status of seahorses and other syngnathids, and to prepare a discussion document for CoP 12. The Animals Committee subsequently established a Syngnathid Working Group (AC 16, Shepherdstown, USA), and the CITES Secretariat issued Notifications 2001/023 and 2001/034, asking Parties for information on syngnathid biology, fisheries, trade, and management; responses were included in AC 18 Doc 18.1.



Drawing by Bruce Mahalski, copyright TRAFFIC

A CITES technical workshop on seahorses and other syngnathids was held in Cebu, Philippines (27-29 May 2002). Its purpose was to review all available information on syngnathid biology and trade in order to establish conservation priorities and actions to secure the conservation status of species in the family. The workshop supported listing *Hippocampus* spp. in Appendix II and drafted an accompanying Decision. The Animals Committee then endorsed all outcomes, along with the USA's proposal to add seahorses to Appendix II at CoP12 (Doc. 12.43).

Analyses of CITES Amendment proposals by IUCN/SSC and TRAFFIC conclude that "seahorses appear to meet the criteria for inclusion in Appendix II", with "evidence of declines in

Why seahorses?

There are good economic, medicinal, ecological, biological and symbolic reasons to secure the future for seahorses:

· Subsistence fishers in developing countries obtain important income from targeting seahorses. In addition, seahorses can attract considerable earnings from tourists and divers.

· Traditional medicine uses seahorses to treat a wide range of health problems.

· In some habitats, seahorses are dominant species that help structure other faunal communities.

· The extraordinary life history of seahorses - all male seahorses become pregnant and many species form pairs that are faithfully monogamous - offers an unusual opportunity to study the evolution of sex differences.

· Seahorses have public appeal, therefore providing an important focus for protection of their diverse habitats and for the conservation of other marine fauna.

seahorse populations coupled with high levels of international demand". The CITES Secretariat is also of the opinion that "the genus *Hippocampus* seems to meet the criteria for inclusion in Appendix II", while noting implementation concerns.

Biology of seahorses

All seahorses are members of the family Syngnathidae, along with the pipefishes, pipehorses, and seadragons. About 32 species of seahorse (genus *Hippocampus*) are recognised, with a few more species likely to be described. Current knowledge about seahorse life history indicates that most species are probably highly susceptible to overexploitation.

Seahorses are distributed from about 50 degrees north to 50 degrees south. They live in seagrasses, macroalgae, mangrove roots, corals, open sand, muddy bottoms, estuaries and lagoons; all these habitats are highly influenced by human activities. The low population densities of most species mean that widowed seahorses may have trouble finding a new partner, while low mobility and very small home range sizes mean that adult seahorses are slow to recolonise overexploited areas.

Seahorses are readily identifiable at the genus level. Adult seahorse heights vary among species, ranging from the tiny Pygmy Seahorse (*Hippocampus bargibanti*, < 2 cm) to the large Australian Big-bellied Seahorse (*H. abdominalis* > 30 cm). Observations on captive animals suggest that seahorses live about one to five years, depending on the species. Apparently low rates of natural adult mortality means that heavy fishing of adults will place extra pressures on the populations.

The male seahorse, rather than the female, becomes pregnant, such that the survival of the young during the weeks of brooding depends on the survival of the male. Male seahorses have relatively small broods, but young are released at advanced stages of development, probably giving each a higher chance of survival than in many other species. Most (but probably not all) species of seahorses are monogamous, forming pair bonds that last at least the entire breeding season: a widowed seahorse stops reproducing until it eventually finds another unattached seahorse.

Exploitation and trade of seahorses

Seahorses are caught and sold in a large proportion of the global range of the genus. Project Seahorse conducted trade surveys around the world from 1993-95, then again in 1998-2001, in order to complement the few data available from Customs statistics. Data for Indonesia, Thailand and Vietnam are still being assessed and are incomplete in this summary of the most recent trade review. Trade estimates from field research have proven robust when compared with later official data on seahorse exploitation.

At least 23 of the approximately 32 species of seahorse are exploited. A minimum of 13 species is sold dried for traditional medicine (TM), 17 sold dried as curiosities and 18 sold live for the aquarium trade. Most

syngnathid fisheries and trade are entirely legal, but fishery landings data are few, partly because so many syngnathids are derived from small-scale and multi-species subsistence fisheries, that largely go unrecorded.

Many seahorses sold into both the dried and live trade are target-caught, primarily by subsistence fishers. However, most syngnathids for the dried trade are landed as incidental bycatch, primarily from shrimp and prawn trawlers. Trade for the three different uses diverge after the fishers sell the syngnathids to the primary buyer, with different routes to different markets; trade routes are complex and erratic. Pressure on seahorse populations varies from area to area depending on the form of exploitation and trade involved; in some areas, virtually all seahorses are destined for the globally smaller aquarium trade.

Fifteen countries plus the European Union (EU) regulate and/or monitor the use of dried syngnathids, while 20 plus the EU regulate and/or monitor the use of live syngnathids. About 10 countries or trade unions have specific Customs listings for syngnathids - they are usually grouped with other commodities under broad general Customs classifications - but most records are so erratic and/or so full of gaps and discrepancies as to render the data of little value. For example, India's recorded syngnathid exports were 4-10 tonnes a year from 1995-1998 compared to estimated exports of 30-40 tonnes in 1998 based on Project Seahorse trade surveys. Only Hong Kong and Taiwan keep records specifically for seahorses.

The trade surveys indicate that at least 75 countries traded syngnathids from 1996-2001, up from a documented set of 32 trading countries in 1995. Much of the expansion was in Africa or Latin America, and appeared to represent genuinely new trade, not merely new discoveries due to better information. More countries are involved in dried than live trade. The largest exporters of dried syngnathids are thought to be Thailand, India, Mexico, the Philippines and Vietnam. The largest importers are probably mainland China, Hong Kong, Taiwan and Singapore. For the live trade, Indonesia, the Philippines and Brazil appeared to be the major exporters, and the USA and the EU the primary importers.

A combination of official data (e.g. customs and other government records), trade surveys, and qualitative information lead to an estimate that the global trade in dried seahorses exceeded 70 tonnes in 2000. This would amount to at least 24.5 million seahorses, using an average of 350 seahorses per kilogram. These figures are underestimates as they include only the international trade that passes through mainland China, Hong Kong, Singapore, and Taiwan. Even so, such totals represent a considerable increase on the inferred trade of more than 45 tonnes (or 20 million seahorses) in 1995. The difference probably represents improved knowledge of the trade as well as actual trade increases.

Information from source countries suggests that many hundreds of thousands of seahorses were caught for the aquarium trade in 2000, as in 1995. However, import records and industry data suggest much lower levels. Further research is needed to reconcile these figures. The aquarium trade was the primary purchaser of seahorses from some regions.

Fishers received US$0.10-0.50 per dried seahorse whereas retailers sold them for many hundreds of dollars per kilogram. The highest price was about US$2400 per kilogram, paid in Hong Kong for large smooth seahorses, with approximately 60 individuals per kilogram (US$40 per individual).

The balance between supply and demand of seahorses fluctuates with market pressures and larger economic trends. Demand is expected to increase in China, in particular, as the economy and the human population both continue to grow. Overall, continued seahorse trade appears to be supported by geographic expansion, as well as by increased fishing effort, higher retention of bycatch, and greater sale of incidental landings. Some countries (e.g. India and Malaysia) have responded to persistent demand by retaining syngnathids in bycatch, whereas they were previously discarded.

Conservation status of seahorses

Many seahorses are listed as threatened according to international or national criteria. For example, the 2002 IUCN Red List of Threatened Species lists one species (*H. capensis*) as Endangered, 20 species as Vulnerable, and the remaining 11 species as Data Deficient. National assessments also list seahorses as threatened in Australia (many species), France (*H. guttulatus*), China (*H. kelloggi*), Portugal (*H. hippocampus* and *H. ramulosus* = *H. guttulatus*), South Africa (*H. capensis*), the Ukraine (*H. guttulatus microstephanus*), and Vietnam (*H. histrix, H. japonicus, H. kelloggi, H. kuda* and *H. trimaculatus*).

In cross-validated trade surveys, fishers and other informants around the world reported significant declines in seahorse catch and trade, while effort remained consistent or increased. For example, fishers in Brazil, Ecuador, Panama, Guatemala, Mexico, India and the Philippines reported declines in catches. Many traders, such as those in Singapore, correspondingly reported a decline in availability, which they believed was the result of decreased catches.

Loss of coastal habitat, suitable for syngnathids, is a concern in many countries. At least six EU countries consider syngnathid species to be at risk from habitat degradation. Mangrove cutting and associated shrimp and prawn farming are causing concern in countries as far apart as Bangladesh, Brazil, Ecuador, and Kenya. Tourism is putting pressure on coastal habitat in Mexico and many more countries. Pollution was feared to be a specific threat to syngnathids in countries as diverse as Australia, Costa Rica, Kenya, Panama, and Peru.

Fisheries management options for seahorses

Fisheries management techniques are not yet well developed for syngnathids, which are either landed with other species in artisanal and small-scale target fisheries – caught by hand or with very simple gear – or are obtained from bycatch in other fisheries.

During Project Seahorse consultation with stakeholders, eleven management options were identified, none of which was comprehensive. The possibilities included five input controls (number of fishers, gear restriction, temporal closures, spatial closures, and tenurial systems) and six output controls (total

Uses of seahorses

Seahorses as TM: The majority of seahorses are used in traditional medicine (TM), especially traditional Chinese medicine and its derivatives (e.g. Japanese and Korean medicines), which together have a large global constituency. Treatments including seahorses are considered to address a range of conditions, including asthma and other respiratory disorders, sexual dysfunction such as impotence, and general lethargy and pain. Traditional medicine is recognised by the World Health Organisation as providing a viable health care option

Seahorses as ornamentals: Seahorses have been popular aquarium fishes for many years. The vast majority of seahorses bought from aquarium shops are wild-caught and fare poorly in captivity, leading to repeat purchases. This trade puts particular seahorse populations under considerable pressure.

Seahorses as curiosities: Many dried seahorses are sold as curiosities or souvenirs. They are found in tourist shops as key chains, glued to candles, picture frames, suspended in yo-yos, and much more. The scale of trade is unclear but will be at least locally important.

allowable catch, minimum, maximum, and slot size limits, sex-selective fishing and caging pregnant males). Collectively, stakeholders favoured spatial closures (enforced, no-take marine protected areas) and minimum size limits, while tenurial systems, sex-selective fishing and caging pregnant males also had considerable support.

All of the proposed management options are compatible with CITES trade controls (e.g. a CITES Appendix II listing) at the national and international level. Indeed, in order to make non-detriment findings, Parties will need to consider implementing fisheries management measures that increase confidence in the long-term persistence of wild populations. Moreover, certain of these management measures, such as restricting specimens in trade to a carefully-judged minimum size limit, may be sufficiently precautionary, if implemented, to allow a Party to make non-detriment findings even while it developed other assessment and management tools for seahorse populations. The corollary, of course, is that favoured management options could benefit from the greater structure and funding that might emerge from a CITES listing.

The need to make non-detriment findings under Article IV will present a particular challenge when confronted with seahorse bycatch in non-selective gear. Standard stock assessment techniques can be used in evaluating landings, however, and the data can then be used to model possible management measures. While few extensive stock assessments have been conducted, an adaptive management approach could provide management options to help make non-detriment findings.

If the level of seahorse bycatch is judged to be unsustainable, then one or more of the above management approaches might also be applied to the multi-species fishery in which seahorses and other non-targeted species are incidentally landed. In particular, gear alteration and temporal and spatial closures (no-take marine protected areas) might lead to adjustments in bycatch of vulnerable species.

Socioeconomic aspects of the seahorse trade

Some of the world's poorest fishers have come to depend on seahorses as important sources of income, focusing on these fish as other marine resources decline. For example, about 1500 fishers in the Philippines targeted seahorses directly in the late 1990s while another 1700 probably sold them from secondary catch in non-selective fishing gear. Fishers and villagers valued seahorses for the income, although their economic importance fluctuated by season. Some fishers obtained up to 100% of their cash income from seahorses during peak fishing seasons, and many fishers and buyers noted that 25-50% of their income came from these fishes.

A dearth of income earning opportunities means that seahorse exploitation remains attractive despite dwindling populations, partly because seahorse fishing depends on skills that can be learned and requires little capital. Reductions in seahorse availability force communities to put additional pressure on other marine resources. Syngnathid trade could become a sustainable source of income for local communities if a better balance between number and unit price were found.

Key reference documents for seahorse trade management:

Vincent, A.C.J. 1996. *The International Trade in Seahorses.* TRAFFIC International, Cambridge, UK. vii + 163 pp. ISBN 1 85850 098 2

Lourie, S.A., A.C.J. Vincent and H.J. Hall. 1999. *Seahorses: an identification guide to the world's species and their conservation.* Project Seahorse, London, UK. x + 214 pp. ISBN 0 9534693 0 1

Consultative workshops on seahorse management in the central Philippines were organised for groups of fisheries scientists, fishers, resource managers, aquarium professionals and TM traders. Stakeholders considered the following management objectives to be very important: increases in populations of seahorses; long-term sustainability of populations of seahorses; maintenance or increase in catch-per-unit-effort of seahorses; and maintenance or increase in income for seahorse fishers.

Conservation action for seahorses

A number of countries are responding to the challenge of managing syngnathids. Australia has shown the most notable engagement in syngnathid conservation, regulating trade in all members of the family, and fully protecting some species in particular states. The European Union and Hong Kong began monitoring syngnathid trade in 1997 and 1998 respectively, but without management requirements. Other countries have also adopted protective or management measures for these fish, while many more have marine conservation policies that should be of indirect benefit to syngnathids.

Several field conservation programmes now focus on seahorses and seahorse fishers in order to achieve broad marine conservation and resource management goals. Examples include Project Seahorse's large community-based programme in the Philippines and past activities in Vietnam, and related field programmes in countries such as Brazil and South Africa.

User communities have begun to play an active role in syngnathid conservation. For example, Hong Kong Chinese Medicine Merchants Association (HKCMMA) has proven very supportive of collaborative moves towards syngnathid conservation. With engagement from Project Seahorse, TRAFFIC East Asia and WWF Hong Kong, this association called on six related TM organisations to develop and follow purchase guidelines for syngnathids (including minimum size limits), and then participated in (and helped fund) the CITES technical workshop.

Trade in marine ornamentals is gradually being evaluated for quality and sustainability, through Marine Aquarium Council (MAC) certification. Moreover, public aquaria in Europe and North America are now launching conservation initiatives for their local syngnathid populations.

Recommendations for seahorse conservation

Dedicated Customs trade codes and strong national trade monitoring would enhance understanding of the trade. Accordingly, an Appendix II listing has been recommended by the CITES technical workshop on syngnathids, and by the Animals Committee.

As the CITES Secretariat pointed out in its assessment of CoP 12 proposals, the sourcing of seahorses from bycatch poses challenges in applying Article IV. Bycatch assessment and management is becoming essential for most fisheries, in order to improve food security and conserve biodiversity. Indeed, new forms of bycatch reduction are emerging, through gear modifications and temporal and spatial closures. *Hippocampus* is an easily recognised genus that can provide one test case on the effectiveness of bycatch management and waste reduction.

Project Seahorse and TRAFFIC support the Animals' Committee recommendation that an Appendix II listing be deferred for 18 months to allow Parties time to develop necessary measures for seahorse fisheries and trade management. A number of countries (particularly the Philippines, a major exporting Party) will need time to consider the implications of an Appendix II listing in light of domestic legislation. CITES will need to make provision for capacity building in management of the syngnathid trade, in support of national fisheries agendas.

Project Seahorse and TRAFFIC could make their expertise and experience in seahorse biology and conservation available to the Parties to CITES to enable them to promote sustainable trade in these fishes. Project Seahorse has already produced a clear identification guide that would assist in the implementation of the Appendix II listing, along with identification materials directed at traders in dried seahorses.

Trade regulation, though necessary, will be insufficient *per se* for seahorse conservation. As the CITES Secretariat notes, "a decline in the availability and quality of habitat may be an equally serious threat in several countries". Collaborative measures for a wide range of other conservation initiatives will also be required. All government agencies should promote population assessments of these fishes and undertake conservation measures for their seagrass, mangrove, reef and estuarine habitats. Non-governmental organisations and academic institutions should also engage in integrated coastal management for seahorses and other marine life.

Project Seahorse / A.C.J. Vincent

Project Seahorse

PROJECT SEAHORSE IS A MARINE CONSERVATION ORGANISATION. IN SECURING THE FUTURE FOR THE THREATENED AND CHARISMATIC SEAHORSES, PROJECT SEAHORSE IS ADDRESSING MANY OF THE MOST PRESSING ISSUES AFFECTING MARINE LIFE. THE TEAM UNDERTAKES BIOLOGICAL AND SOCIO-ECONOMIC RESEARCH, FACILITATES COMMUNITY-BASED MANAGEMENT, SHAPES SUSTAINABLE TRADE, AND CATALYSES INTERNATIONAL POLICY.

Publication of this briefing document was supported by the John G. Shedd Aquarium, Chicago, USA. Shedd Aquarium's mission is to promote the enjoyment, appreciation and effective conservation of aquatic life and its environments through education, research and public display.

For further information, contact:

Project Seahorse / Fisheries Centre
The University of British Columbia
2204 Main Mall, Vancouver, BC V6T 1Z4, Canada
Tel: +1 (604) 827-5139
Fax: +1 (604) 827-5199
Email: info@projectseahorse.org
Website: www.projectseahorse.org

Project Seahorse
12 Espina Compound
B Rodriguez
Cebu City 6000
Philippines
Tel: +63 (32) 254-4909
Fax: +63 (32) 254-5985
Email: info@projectseahorse.ORG
Website: www.projectseahorse.org

---

*TRAFFIC,
THE WILDLIFE TRADE
MONITORING NETWORK,
WORKS TO ENSURE THAT
TRADE IN WILD PLANTS AND ANIMALS
IS NOT A THREAT TO THE CONSERVATION OF NATURE.*

For more information, please contact

**TRAFFIC International
219 Huntingdon Road
Cambridge CB3 0DL
United Kingdom
Tel: +44 1223 277427
Fax: +44 1223 277237
Email: traffic@trafficint.org**

TRAFFIC website: *www.traffic.org*
CoP12 Conference Room: *www.traffic.org/cop12*

TRAFFIC

is a joint programme of

WWF IUCN