

Seahorses: Trade, aquaculture and their long-term outlook in New Caledonia

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Introduction

Seahorses inhabit many people's imagination. Although we seldom come across them, these modest fish have fascinated us since time immemorial, but such fascination has led to overfishing in Southeast Asia, where seahorses are turned into powder for their supposed medicinal properties! Not only are they used for medicine, but they often end up dried and sold as souvenirs in markets worldwide. Admiration and extinction certainly make for unlikely bedfellows.

Fifty-four seahorse species have so far been recorded worldwide in tropical and temperate regions. They can be giants or pygmies, spiked, striped or even covered in tubercles and are often found in the seagrass or seaweed beds of calm or shallow waters. They can be camouflaged and bedecked with ornaments that make them look like the *Sargassum* they ride, or change the colour of their robes and blend in with the background, as if they were chameleons of the sea.

This article does not set out to analyse the animal's biology or describe how it is marketed, but, following a brief overview of its current status, will highlight recent seahorse conservation initiatives and business developments in New Caledonia.

Use and regulation

Dried and ground, cooked whole in soup or hung on strings, seahorses are consumed in every conceivable shape or form in Southeast Asia, particularly in traditional Chinese medicine. Official figures put the number of seahorses exported every year to over 80 countries at 30 million.³ Divers fish for them and they are then usually dried and bagged for sale.

No viable solutions, such as large-scale farming, have as yet been adopted to supply the burgeoning market. In 2016, for example, eight million illegally fished seahorses, valued at USD 4 million and bound for the Chinese market, were seized.⁴ As with sea cucumbers in the southwest Pacific, it would appear that no holds are barred when it comes to meeting demand.

Moves have, nevertheless, been made to regulate the trade and preserve the species. Seahorses have been CITES-listed⁵

since 2004 in a bid to understand the trade flows related to seahorse fishing, even if consignments often go undeclared and countries do not regulate the trade nationally. Some non-governmental organisations, however, such as Project Seahorse, work on protecting and managing wild stocks of seahorses.

Seahorse farming

Seahorses are live bearers, but are very unusual ones. Once the eggs are mature, the female deposits them in the male's pouch in a vertical mating dance. Once deposited, the eggs are then fertilised and incubated for three weeks by the male that then gives birth to several hundred babies.



A gestating male seahorse with a heavily swollen brood pouch (image: Aquarium des Lagons).

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³ <http://www.dailymail.co.uk/sciencetech/article-3181192/Seahorses-extinct-30-years-Trade-dried-wildlife-souvenirs-marine-creatures-wiped-out.html>

⁴ <http://www.abc.net.au/news/2016-06-22/peru-seizes-8-million-seahorses-illegally-bound-for-asia/7531550>

⁵ CITES: Convention on International Trade in Endangered Species of Wild Flora and Fauna

Large-scale farming projects for supplying traditional Chinese medicine are often mentioned, but none has yet seen the light of day. Only hatcheries for aquarium seahorses are operating at the moment.

Hatchery production is usually divided into three separate operations: one for producing live prey (*Artemia* sp. and copepods), another for maintaining breeders, and a nursery for growing out juveniles. There is no larval breeding as such, as the initial stages take place in the male's pouch.

The aquarium trade

Aquarium enthusiasts are utterly beguiled by this creature. For the fish-tank buff, it is the perfect guest in a dedicated aquarium or with placid housemates, but he or she needs to know how to feed the insatiable seahorse, which most often prefers fresh food, such as small shrimps, or live prey such as *Artemia* sp. or mysids over flakes and pellets.

The aquarium trade is mainly supplied by seahorse farms, and juveniles are only exported once they are at least 7 cm in length. There are some seahorse farms in the United States (Hawaii and Florida), Australia, various Asian countries and elsewhere, and these usually sell weaned and acclimatised individuals that make for excellent aquarium fish.

The aquarium trade involves many species, such as *Hippocampus erectus* in Hawaii, *H. reidi* in Florida and *H. agustus* in Western Australia, to name but a few.

Seahorses in New Caledonia

Seahorses in New Caledonia are very much alive in local lore. In the past, it was not uncommon for fishers to net a seahorse or to see them drifting in seagrass beds. Today, while they are still familiar to most people, seahorses have become a rare sight in the wild. They are not fished in New Caledonia but because they live in a fragile habitat and are vulnerable to onshore development and urban sprawl, they have gone from being a fairly common species to an underwater myth in the space of a single generation, at least around Noumea, New Caledonia's capital and largest urban centre.

Past and present efforts

Fifteen years ago, *Hippocampus kuda* breeding trials on a prawn farm in New Caledonia were very successful from a technical viewpoint. The aquafarmers' skill and expertise at the time led to seahorse yields in the hundreds. Having breeders in the farm's water supply canals and an abundant provision of post-larval prawns, the breeders' favourite food, was a major asset. Although, the project was discontinued for various reasons, it remains a positive milestone that marks the beginning of New Caledonia's seahorse farming history.

In recent years, after *H. kuda* was broken down into several species by geneticists, Aquarium des Lagons began breeding

H. semispinosus. By using well-established protocols and closely monitoring the animals, the breeders have been producing over 500 fry a month. Once they are released from the male's pouch, young seahorses receive close attention. They are fed a range of live prey bred within the aquarium, which in turn have grazed on microalgae.



The elegant *Hippocampus semispinosus* (image: Aquarium des Lagons).

Some of the juveniles are displayed in a dedicated tank, where the public can view hundreds of miniature seahorses, while others are released on the coast near Noumea to repopulate areas where they are no longer observed.

Recently, some juveniles grown out to 5–7 cm were given to Aquarium Fish Nouvelle-Calédonie for export on the aquarium market, and the first *H. semispinosus* consignment left New Caledonia bound for the USA with a CITES permit issued by the appropriate authorities. It was a great success, with a 100% survival rate and satisfied customers who have received healthy seahorses that are already eating frozen food. Seahorses are usually difficult to feed because they require live food, but aquaculture helps get the juveniles accustomed to frozen food, making them much hardier and better suited to aquarium life.

This fresh burst of seahorse activity in New Caledonia is another boost to the private sector with the aim of developing commercial production for the aquarium market. The project should get underway in 2017.

Preserving, breeding and developing such iconic but often endangered resources is a commendable quest for today's aquaculture efforts, particularly within a fragile island setting.