


FRI NEWSLETTER

Vol. 20 (2017)



SUCCESS IN BREEDING AND REARING OF SEAHORSE (*Hippocampus spp.*) IN CAPTIVITY

PROSPECTS AND CHALLENGES IN CULTURING EXPLOITED SEAHORSES (*Hippocampus spp.*) IN MALAYSIA

SPECIAL EDITION

ISSN 0126-9403



9 770126 940007

BIOLOGY / THREATS / MALE PREGNANCY / CURRENT STUDIES

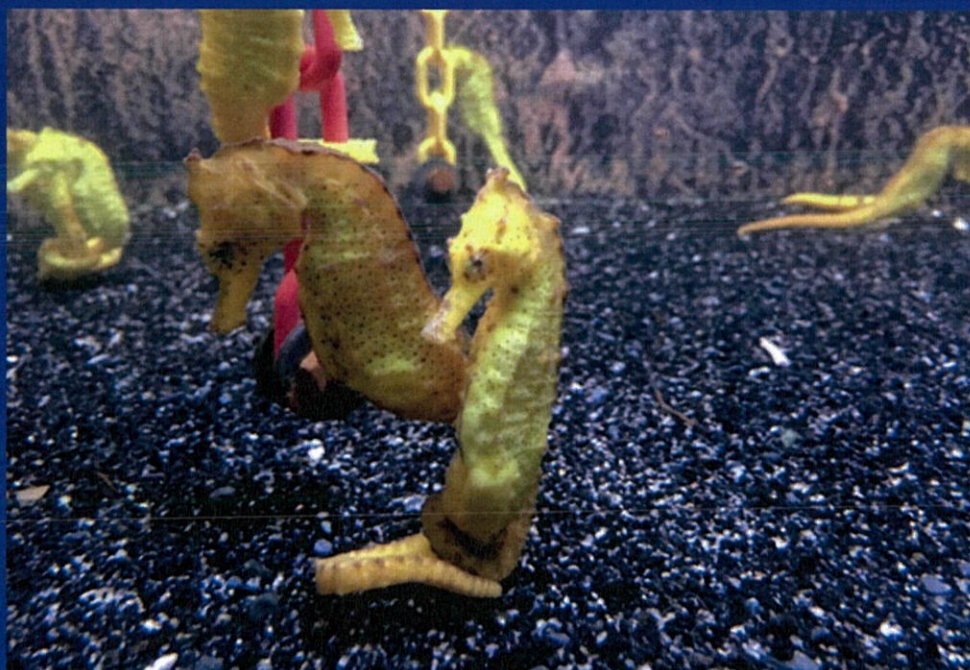
SUCCESS IN BREEDING AND REARING OF SEAHORSE (HIPPOCAMPUS SPP.) IN CAPTIVITY

Prepared by:
Mohamad Saupi Ismail
FRI Batu Maung

As seahorse wild populations continue to die off from habitat loss, incidental by-catch and direct fishing pressure either for traditional Chinese medicine (TCM), curios or aquarium trade, the Tunku Abdul Rahman (TAR) Aquarium in Pulau Pinang has come up with a unique way to help preserve this pivotal part of the seas.

The TAR Aquarium currently holds more than a thousand individuals of seahorses from three different species, i.e. *Hippocampus kuda* (spotted seahorse), *H. barbouri* (Barbour's seahorse), and *H. abdominalis* (big-belly seahorse). These numbers are a product of an inhouse nursery program dedicated to breeding and rearing in captivity seahorses

Hippocampus kuda is one of the major seahorse species occurring in the Malaysian waters. *Hippocampus barbouri* is found especially on the east coast of Sabah while the big-belly seahorse, *Hippocampus abdominalis*, one of the largest seahorse species in the world is normally found in southeast Australia and New Zealand.



Spotted seahorse, *H. kuda* F1 broodstock

Captive breeding of juvenile seahorses for reintroduction in the wild (called *ex-situ* conservation) is an option, however it can be a challenging and an erratic strategy. So, why do the researchers do this?

"To have a system in case everything does disappear in the wild. This way we can re-populate the seas and do research to find out why seahorses are declining the way they are", says TAR Aquarium seahorse expert Mohamad Saupi Ismail.

Through the Aquarium's nursery program, researchers have developed a practical method of breeding the Barbour's seahorse and big-belly seahorse up to the fourth (F4) and third generation (F3) respectively. The program also showed both species have a high resilience, with a survival rate of more than 50%, and can adjust to a captive environment. The significance of this program in completely closing the life cycle of these two species in less than 7 months opens up avenues for commercial aquaculture and conservation initiatives. Moreover, this program is likely to be the first documented success story in closing the life cycle of big-belly seahorse in Malaysia.



Barbour's seahorse, *H. barbouri* F3 broodstock

“Right now, we’re doing it in on a small scale and if we can expand the scale a little bit larger, it would be much more useful around here in Pulau Pinang and hopefully expanded to other places in our country where seahorses are hardly found” Mohamad Saupi said.

The management of FRI hopes that the Aquarium’s seahorse arc turns into a Noah’s Ark, where the seahorse grows and breeds. Some of seahorses reared from this Aquarium are shared with other researchers and public aquariums nationwide.

“You learn to appreciate it because you realize that they do grow on their own and it’s essentially a pivotal part of the sea life but unfortunately people take it for granted”, says the Senior Director of Research Mr. Abu Talib Ahmad.

The TAR Aquarium serves an important function of educating the public in the conservation of seahorses and in particularly the native populations. It has successfully cultured live seahorses since 2014 and now houses the largest collection of seahorses in Peninsular Malaysia.



Big-belly seahorse,
H. abdominalis F2 broodstock



Ongoing experiment at TAR Aquarium

PROSPECTS AND CHALLENGES IN CULTURING EXPLOITED SEAHORSES (*Hippocampus* spp.) IN MALAYSIA

Prepared by:
Mohamad Saupi Ismail
FRI Batu Maung

BIOLOGY

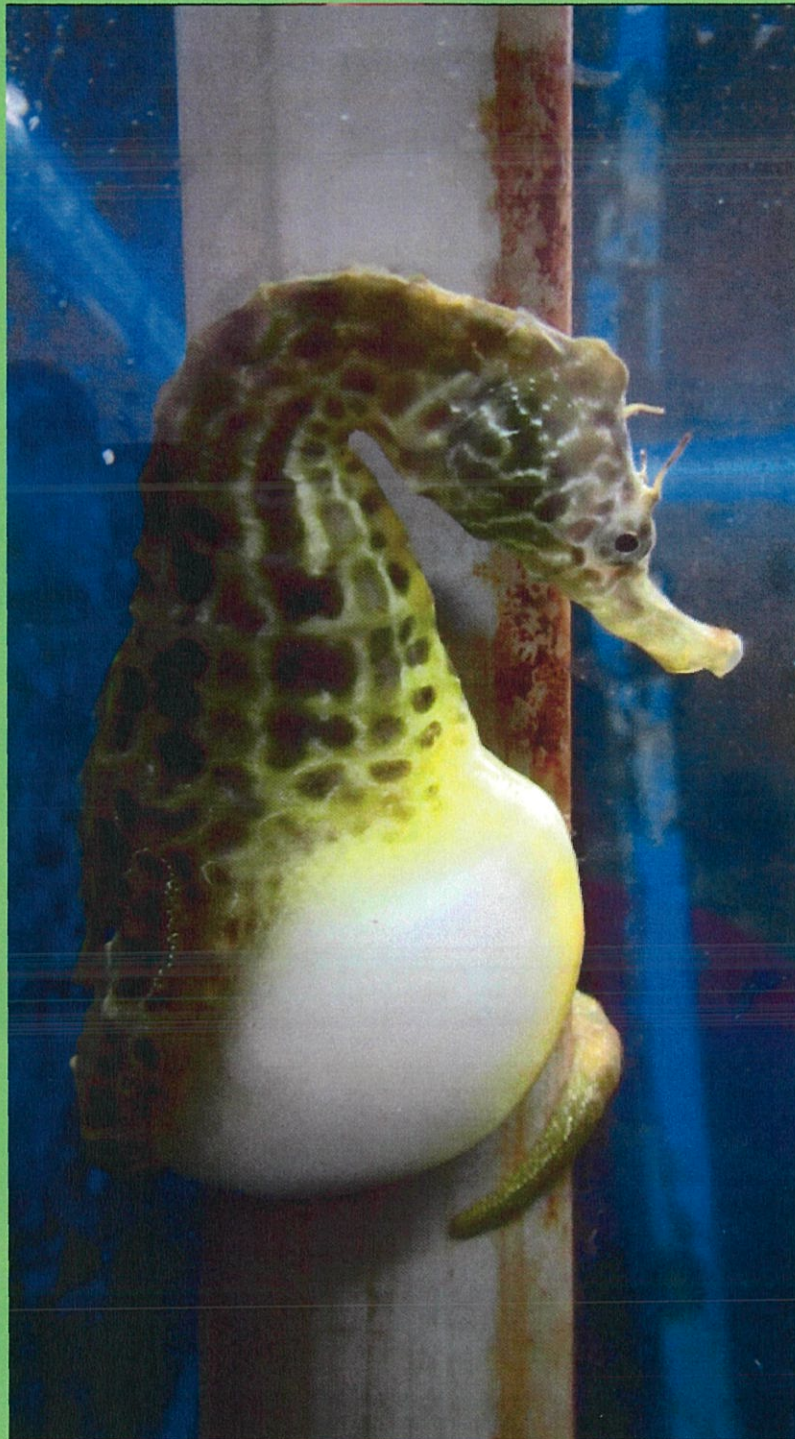
Seahorses are fish, belong to the family SYNGNATHIDAE under the order of SYNGNATHIFORMES. Its body is covered by bony rings. The adults of the three species, *Hippocampus kuda* (spotted seahorse), *H. barbouri* (Barbour's seahorse), and *H. abdominalis* (big-belly seahorse) are having more or less similar characteristics. However, they can be differentiated through their body spines, coronet and snout. *Hippocampus kuda* and *Hippocampus barbouri* are found in tropical waters, while the big-belly seahorse *Hippocampus abdominalis*, is only found in temperate waters of Australia and New Zealand.



Pregnant male spotted seahorse, *H. kuda*

THREATS

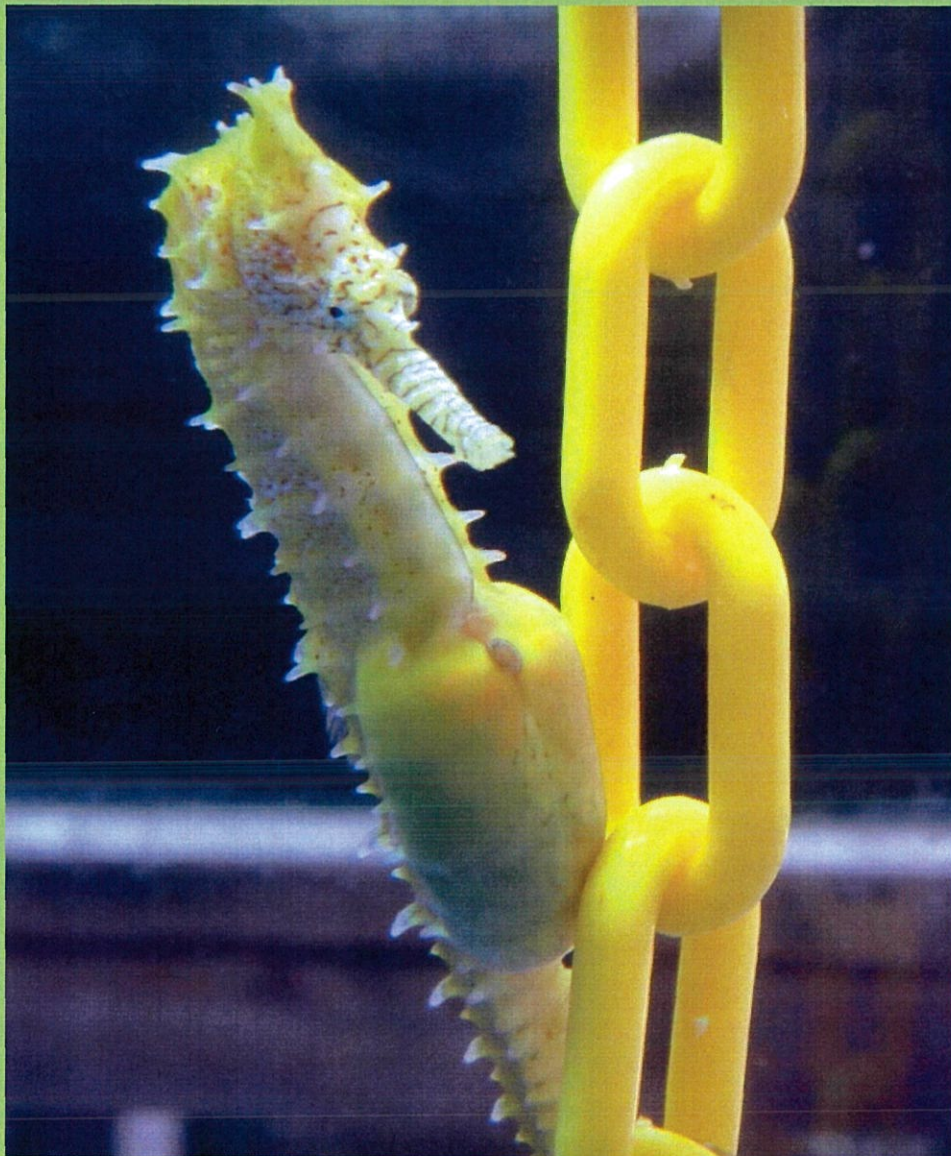
Seahorses are sought for 3 major reasons, the traditional Chinese medicine (TCM), curio and ornamental fish trades. This causes the decline of wild seahorse population. In order to ensure that seahorses do not go extinct, supply from sustainable sources i.e. aquaculture should be considered.



Pregnant male big-belly seahorse, *H. abdominalis*

MALE PREGNANCY

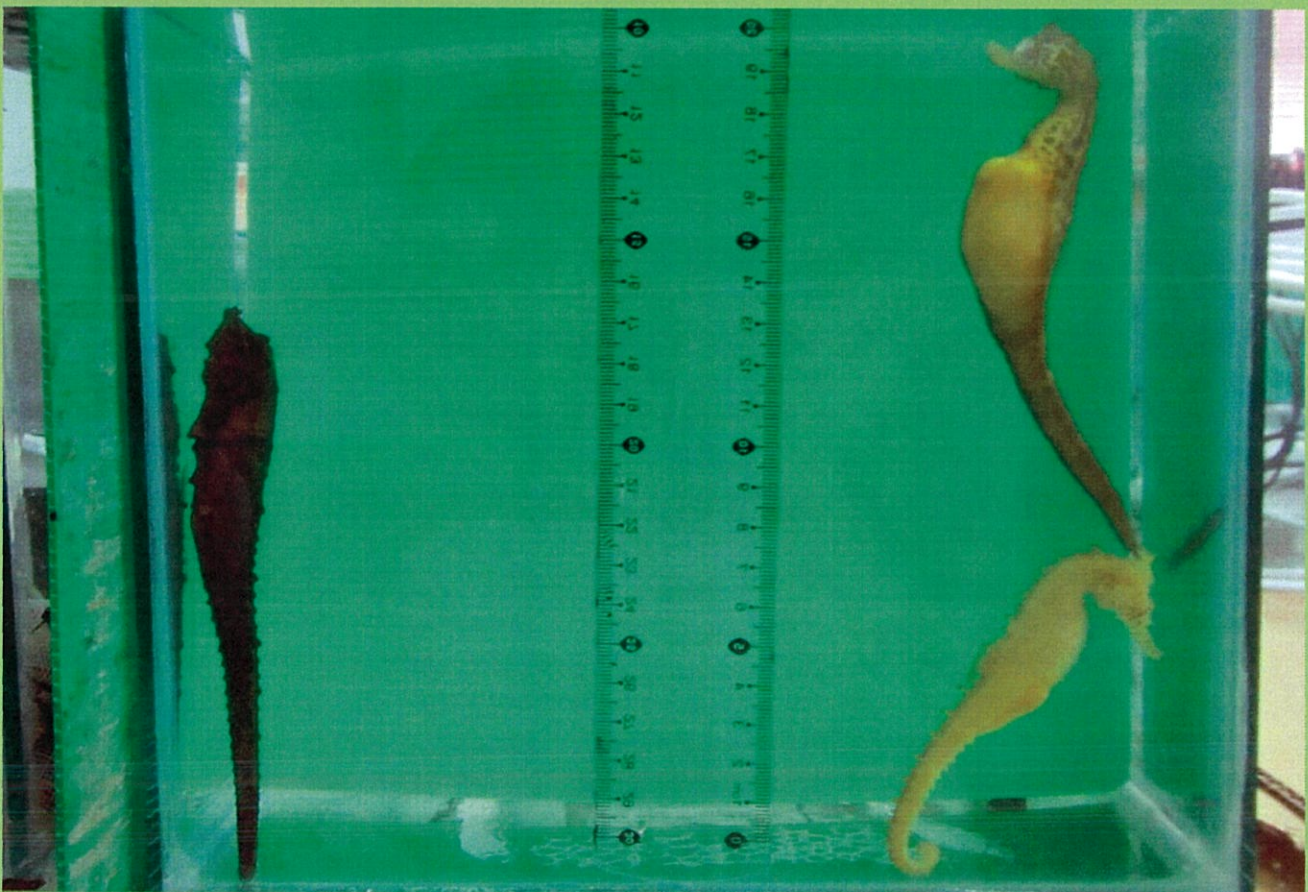
Seahorse is a unique animal, the male gets pregnant and gives birth to miniature seahorses (juveniles). A male Barbour's seahorse can give birth up to 220 juveniles in captivity, while the cultured big-belly seahorse is capable of producing almost 200 juveniles in one breeding cycle. However, the size of Barbour's seahorse's juveniles at birth is half of that big-belly seahorse.



Pregnant male Barbour's seahorse, *H. barbouri*

CURRENT STUDIES

So far, the lack of information on the biological parameters has hindered the establishment of culture technique for seahorses. Selection of suitable pairs, feed and nursery tanks are very crucial for the seahorse rearing and culture practice. Another hurdle is to find a different species for broodstock development. To date, studies are being conducted in FRI Batu Maung to optimize the culture technology for only three seahorse species.



H. kuda vs H. Abdominalis vs H. barbouri