

Project Update: November 2025

Because of the delay in receiving the grant, the originally planned fieldwork in December 2024 has been postponed to December 2025. To date, we have completed three field surveys in the Con Dao Archipelago, conducted in March, June, and September 2025. The results obtained so far include:

- Interviews with 16 local fishers revealed that all seahorses caught are dried after capture, and no live individuals were reported. The main fishing method used to catch seahorses is trawling, followed by crab nets and diving. Seahorses are sold directly from fishers to local seafood shops; notably, two of the interviewed fishers also own seafood shops in the Con Dao Archipelago. All interviewees reported that seahorse numbers have declined significantly over the past ten years.



Mr. Tuyen (project leader) was interviewing a local fisher at Ben Dam Seaport (left) and a seafood shop owned by the same fisher in the Con Dao Archipelago (right)

- Upto date, more than 1,700 seahorse individuals have been measured from the Con Dao Archipelago. Based on morphological identification, three species were confirmed: *Hippocampus trimaculatus*, *H. spinosissimus*, and *H. kelloggi*. All three species are listed as Vulnerable (VU) by the IUCN, included in CITES, and in the Vietnam Red List (2024). Preliminary analyses indicate that *H. trimaculatus* and *H. spinosissimus* are being harvested with a biased sex ratio, including many immature individuals and a high number of pregnant males. In contrast, all *H. kelloggi* specimens recorded were juveniles. Seahorses in the Con Dao Archipelago appear to be under higher fishing pressure compared to those in Phu Quoc Island (Vietnam) and other sites in the region.



Project members measured body weight and photographed seahorse specimens at a seafood shop owned by the same fisher in the Con Dao Archipelago (left). The photograph was later used to measure individual body lengths using ImageJ software in the laboratory (right)

We plan to conduct the final field survey in December 2025 to complete the dataset for assessing the overall seahorse fishery in the Con Dao Archipelago. Morphometric measurements are currently being carried out at the Zoology Laboratory, University of Science, Vietnam National University Ho Chi Minh City. Mitochondrial COI and Cytb sequences are being analyzed to verify species identification of seahorses from Con Dao, and the resulting sequences will be uploaded to GenBank.

In addition, a poster titled "*Review on Taxonomy of Seahorses in Vietnam*", featuring photographs of Con Dao seahorse specimens, was presented at the 2025 Joint Conference of the Asian Society of Ichthyologists Annual Meeting and the 12th Indo-Pacific Fish Conference in Taipei, Taiwan.

Review on Taxonomy of Seahorses in Vietnam

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1. Introduction

- Seahorses (*Hippocampus*) evolved 18.2 million years ago within the Coral Triangle biogeographic zone.
- Occurring in tropical and temperate waters with two main lineages: Indo-Pacific and Atlantic.
- Inhabit seagrass beds, coral reefs, and mangroves.
- Threatened by overfishing and habitat loss.

2. Taxonomic challenges

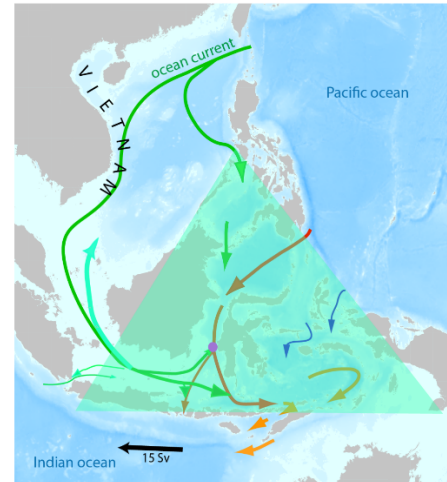
a. *Hippocampus coronatus*

- Collected by Truong 1998 from central coastal Vietnam.
- The morphological samples exhibits a unique characteristic - 10 trunk rings.
- This rare trait is only found in five species:

- H. coronatus* (Japan)
- H. sindonis* (Japan)
- H. lichtensteinii* (Red Sea)
- H. zosterae* (Central America)
- H. cassio* (China)



H. coronatus (Vietnam)
Truong 1998



Coral Triangle biogeographic zone
Susanto et al. 2015

Does *H. coronatus* occur in Vietnam?

b. *Hippocampus mohnikei*

- Small-sized morphology and a short snout
- Vietnamese samples genetically differ from the Japanese type specimens.



COI sequences differ by over 5%
Hou et al. 2018
Sanaye et al. 2020



H. mohnikei (Vietnam)
Aylesworth et al. 2016

H. mohnikei (Japan)
Wibowo et al. 2017

Is *H. mohnikei* from Vietnam conspecific with *H. mohnikei* from Japan?

3. Molecular approach

- DNA sequences (COI, Cytb) supports accurate taxonomy.
- We clarified the identities and described morphology of three frequently misidentified species in Vietnam.

4. Next step

We aim to advance the taxonomy of Vietnamese seahorses through molecular approaches, develop DNA barcode library, and assess the conservation status of species at both national and regional levels.

c. *Hippocampus kuda*

- In global:
 - Frequently misidentified
 - Complex species
 - At least 15 synonyms
 - Its taxonomy is still under revision
- Lourie et al. 2004



H. kuda

Which subspecies of *H. kuda* occurs in Vietnam?



H. kelloggi



H. spinosissimus



H. histrix

References



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