Report to Viet Nam's CITES Authorities on joint activities in support of implementing CITES for seahorses

Prepared by Project Seahorse, July 2015

CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, has provided Viet Nam with recommendations to help ensure that its exports of seahorses do not damage wild populations (see Annex A, Table 2). All seahorses are listed on CITES Appendix II, requiring the 181 signatory nations (Parties) to cooperate on seahorse conservation. The CITES Animals Committee has suggested action that might help Viet Nam fully implement the Convention for the black seahorse, *Hippocampus kuda*. Viet Nam has found it difficult to comply with the CITES recommendations, leading to the suspension of trade of *H. kuda* from Viet Nam – the first ever ban for any marine fish under CITES. The suspension arises from a lack of knowledge and management capacity as much as it does from genuine difficulties in regulating exports. It is clear that Viet Nam must simultaneously gather information and take action, in a tight feedback loop best characterized as adaptive management.

Project Seahorse has collaborated with Viet Nam's CITES Authorities on several activities in support of implementing CITES for seahorses. We here summarize the results of these activities in support of a request from UNEP-World Conservation Monitoring Centre, on behalf of the CITES Secretariat, to compile information on species subject to trade suspensions that have been in place for longer than two years.

Workshop

Project Seahorse co-organised a national consultative training workshops for CITES Authorities and scientific experts in Viet Nam in Nha Trang, from 29-31 May, 2013: Building Viet Nam's capacity to under-take Non-Detriment Findings for seahorses. The workshop was funded by a grant to Project Seahorse through the CITES Secretariat to partner with Viet Nam on joint activities in response to the CITES recommendations for seahorses. A summary of the workshop is available in Annex 4 of CITES AC27 Inf 9 (https://cites.org/sites/default/files/common/com/ac/27/E-AC27-Inf-09.pdf).

In support of the workshops, Project Seahorse reviewed all available data on seahorse biology, ecology, habitats, threats, fisheries, trades and conservation action. **We developed trade-appropriate identification materials for seahorses in SE Asia** – available in Vietnamese (among other languages) at www.projectseahorse.org/NDF. **We created and revised a framework for making Non-Detriment Findings for seahorses in trade** that underwent practical testing and will serve as a living document for implementation of the Convention for seahorses. We posted all documents on a dedicated web page (www.projectseahorse.org/NDF) to allow for on-going improvements.

Workshop participants agreed there is a need for more research and management action before NDFs can be made for *H. kuda* and the trade can be re-opened. The workshop report outlines a series of agreed action points with respect to research and management action in support of sustainable trade. Completing these action points will also support Viet Nam to meet most of the recommendations set down by the CITES Animal's Committee. An update on these action points is attached to this report as **Annex A**.

The workshop highlighted several sets of research activities that would increase our understanding of pressures facing Vietnamese seahorses and how best to manage them in support of sustainable trade. Perhaps the most critical of these is to conduct trade surveys

throughout Viet Nam. This vital national assessment of seahorse fisheries and trade would allow national authorities to (i) evaluate change since the late 1990s (when Project Seahorse last did trade surveys in Viet Nam), (ii) set a new baseline for ongoing monitoring, and (iii) develop a targeted management response to unsustainable exports. Trade surveys would also help understand to what extent seahorse trade is occurring but unreported. Obtaining the data will take the necessarily labour-intensive approach of visiting ports and animal traders all along the Vietnamese coast to extract front line narrative and quantitative information.

Additional research priorities identified included research on: (i) seahorse distribution and habitat preferences in Viet Nam, (ii) Vietnamese seahorse fisheries, and (iii) seahorse life history and ecology – both in-water (*in situ*) and from breeding operations (*ex situ*). Although CITES Viet Nam is responsible for coordinating the completion of the action points outlined in Annex A, they invited Project Seahorse to assist as time and resources allow.

To date, Project Seahorse has found the resources to carry out the following activities, in collaboration with fisheries and CITES Authorities in Viet Nam: Rapid Assessment Protocol (RAP) and promotion of our citizen science venture for seahorses, iSeahorse, to understand seahorse distribution and habitat preferences; and fisheries dependent research to understand fishing pressures and gain insight into seahorse life history. We here summarize the key results from these with respect to *H. kuda*.

Unfortunately full resources have not been made available to carry out the trade surveys, the research activity identified as most critical at the workshop. Project Seahorse has managed to secure partial funding for this work but is still seeking the rest of the resources necessary to carry out the research.

Research: seahorse distribution and habitats

Our first collaboration with Viet Nam was on a **Rapid assessment protocol (RAP) of Vietnamese seahorse populations** (in-water), to document seahorse distribution and habitat preferences. The objective of the RAP is to generate and share new knowledge about seahorse biology and ecology (i.e. habitats) that might affect implementation of the CITES Appendix II listing for Vietnamese species**.** Existing population surveys of wild seahorses in Viet Nam are limited in spatial extent and are out of date. There is a dearth of current information on seahorse distribution and habitat preferences along the coast of Viet Nam. Understanding current locations of higher seahorse density will aid in prioritizing conservation action and spatial planning, such as the designation of marine protected areas and safer trawling zones.

To carry out the RAP, Project Seahorse researchers and their research assistants swam in as many locations along the coast in coral reef, seagrass and mangrove estuaries as time allowed. They focused swims in areas with anecdotal evidence of the presence of seahorses, provided by local experts, fishers, conservation groups, etc. Exact location of study areas was recorded with a handheld GPS unit floating at the surface and towed by divers. Researchers noted the abundance, distribution, habitat association, sex, reproductive status and measure body size of seahorses. Particular focus was paid to the seagrass beds on the east and northeast of Phu Quoc Island, a reportedly high-density area for seahorses.

The field components of these activities were carried out across Viet Nam from February to April 2014, and then again in Phu Quoc only from April to July 2014. First results from this fieldwork have been distributed to our research partners in Viet Nam, and are attached to this report as **Annexes B and**

C.

Additional information on the distribution and habitat preferences of *H. kuda* in Viet Nam can be deduced from Project Seahorse's citizen science venture, iSeahorse (www.iseahorse.org). iSeahorse enables people to share their seahorse observations anytime they spot one in the wild – either online or through an iPhone app. There is also a toolkit for underwater surveys of seahorses for those that want to gather more systematic information. From February to April 2014, Project Seahorse researcher Dr Tse-Lynn Loh engaged Viet Nam's diving, conservation and research community in contributing information on Viet Nam's seahorses through iSeahorse. She promoted iSeahorse through site visits, lectures and workshops. A complete summary of her efforts is contained in **Annex B** to this report.

We here summarize key findings from our activities with respect to *H. kuda*:

From surveys throughout Viet Nam (February-April 2014):

- All seahorses were found in soft-bottom habitats- silt, sand, seagrass.
- Seahorses were commonly caught in bottom trawls, and many fishers estimated that seahorse populations have declined over the past decade (17 of 18 fishers said seahorse populations have declined over past ten years, from 40-90%).
- Underwater surveys found a total of four *H. kuda* off Whale Island (near Nha Trang, n=1) and Phu Quoc Island (n=3) at water depths ranging from 5-12 meters.
- Seahorses sighted off Phu Quoc inhabited active fishing areas (trawling and compressor diving).
- *Hippocampus kuda* were also sighted off Koh She, Cambodia (within same region as Phu Quoc), during an April 2015 trip to Cambodia.

From Phu Quoc surveys (April-July 2014):

Three *H. kuda* individuals were found at three separate sites, off the central east coast of Phu Quoc Island. They were found attached to rocks and seagrass. Two of them were female, heights 99 mm and 120 mm. One was a pregnant male, 110 mm in height.

iSeahorse:

As of 14 July 2015, iSeahorse contained sightings of 106 seahorses in Viet Nam. Species included *H. spinosissimus, H. trimaculatus, H. kuda,* and *H. mohnikei*. Most observations are from Project Seahorse's research activities, or survey efforts by the non-governmental organization Marine Conservation Cambodia, and all were reported from one of three areas (Phu Quoc, Nha Trang, and Hai Phong).

Of the sightings, 36 were of *H. kuda* (see Figure 1, below) from Phu Quoc, Nha Trang, and Hai Phong. The average depth of the sightings was 3.3 meters, with a range of 4-11 meters, and *H. kuda* were spotted in seagrass, some in sand, mud, rock or artificial (anthropogenic) habitats.

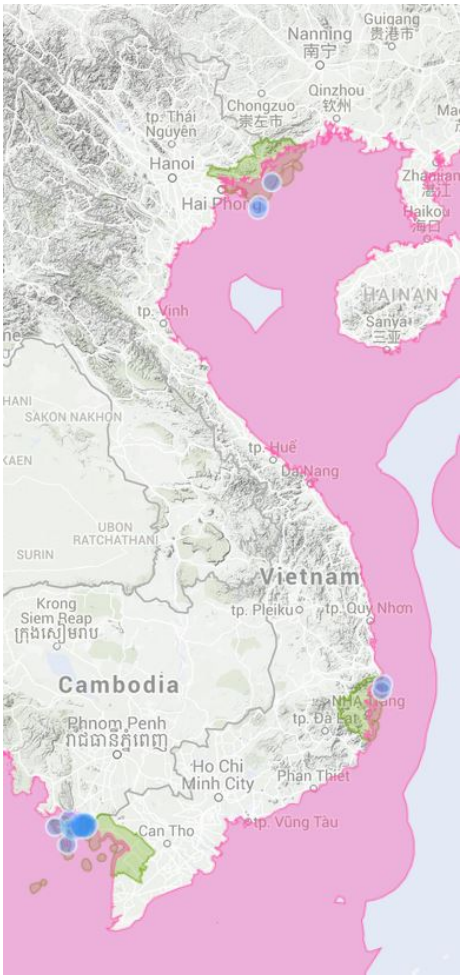

Figure 1. iSeahorse sightings off the coast of Viet Nam, as of 14 July 2015. The shaded area indicates the species purported geographic distribution. Data from www.iseahorse.org.

Research: seahorse fisheries

In order to address the CITES recommendations in support of sustainable seahorse efforts, we collaborated with the Research Institute of Marine Fisheries, Viet Nam National University, CITES Viet Nam, and the Phu Quoc MPA staff on a detailed assessment of seahorse biology and fisheries at Phu Quoc Island. This work aimed to contribute to several of the action items arising from the May 2013 workshop (see **Annex A**). By sampling fishing catches and interviewing fishers, we were able to improve current understanding of the fishing pressures on seahorses around Phu Quoc.

From April to July 2014, Project Seahorse masters student, Allison Stocks, and her research assistants gathered information from ten landing sites on the eastern coast of Phu Quoc and An Thoi Island's (collectively referred to as Phu Quoc). They documented fishers' seahorse catches, fishing effort, gear type, capture method (intentional/target or bycatch/incidental), capture location; and biological information such as species, size, sex and reproductive status of seahorses. Our analysis of fisheries data from Phu Quoc is well advanced and will be available in full draft form soon. However we have extracted the results as they pertain to *H. kuda*:

- Seahorses in Phu Quoc are caught by a multitude of gears, including compressor diving equipment, trawl nets, crab nets, hook and line, gill nets, and purse seines - but were primarily landed by compressor divers and trawl nets. Within these two main gear types, fishers either targeted seahorses (target) or caught them along with a multitude of other species (incidental).
- We identified three species of seahorse in the landings: *H. kuda, H. spinosissimus,* and *H. trimaculatus*.
- *Hippocampus kuda* were caught by all four fishery types surveyed for this research (target divers, incidental divers, target trawls and incidental trawls).
- Our sample of 289 *H. kuda* from landings across the island scales up to an estimated annual landings of ~63,250 *H. kuda* from Phu Quoc alone (cf the rest of Viet Nam; we calculated estimates of total catch for the entire trawler and compressor diver fleets of Phu Quoc using mean catch-per-unit-effort values multiplied by estimated fishing days per year by an estimate of fleet size).
- The vast majority of *H. kuda* were landed by the target trawl fishery (~91% of *H. kuda* are estimated to be landed by this fishery *cf* <1, ~2 and ~6% landed by the target divers, incidental divers and incidental trawl fisheries respectively).
- The vast majority of *H. kuda* were caught in the central region (71% of *H. kuda* landings), followed by the north region of the island (29% of *H. kuda* landings). No *H. kuda* were found among landings sampled in the south of the island. We define the north region as north of Bai Bung (north of 10 degrees 17'0"N), central region as south of Bai Bung and north of Bai Kem (between 10 degrees 12'0"N and 10 degrees 17'0"N), and south region as south of Bai Kem (south of between 10 degrees 12'0"N).
- The mean height of *H. kuda* caught by fishery types:
    - Incidental divers = 127 mm (sd = 14, n=15)
    - Target trawls = 115 mm (sd = 15, n=4)
    - Incidental trawls = 116 mm (sd = 10, n=11)
- There was no statistical difference between mean height of *H. kuda* caught across the four fisheries.
- These means are all larger than the size at 50% maturity for this species as calculated for specimens from Phu Quoc (see life history, below).
- The sex ratio of *H. kuda* in landings was not significantly different from unity for any of the four fishery types.

Research: seahorse life history

The underwater and fisheries research provided some insight into the life history of *H. kuda* around Phu Quoc.

Brood size: Mean brood size of *H. kuda* sampled from landings in Phu Quoc averaged 470 young (sd = 147, n = 7).

The size at 50% maturity of male *H. kuda* sampled from landings in Phu Quoc was 106 mm (95% C.I. = 101.0 – 111.2mm, *n* = 26). This was smaller than their mean height at capture (see section on fisheries research, above).

Participants at the CITES capacity building workshop for seahorses (see above, and Annex A) noted that **information on wild broodstock can be used to fill gaps in our understanding of the biology, ecology and pressures facing wild seahorse populations.** This in turn would allow us to understand what protection existing management measures provide for Viet Nam's wild seahorses, and what additional measures are needed in support of seahorse management and conservation. Project Seahorse

collaborated with a seahorse researcher at IO to compile a form for collecting basic information on wild seahorse broodstock (attached as **Annex D** to this report). This was finalized and sent to Vietnamese CITES Authorities on 21 February 2014 for translation and distribution. Project Seahorse is not aware if this list was ever distributed by the CITES MA to breeding operations in Viet Nam.

Moving toward NDFs for *H. kuda* and other seahorses in Viet Nam

In March 2014, Vietnam's CITES MA requested Project Seahorse's review of a report they prepared for the CITES Secretariat on their progress toward recommendations set by the Animals Committee with respect to sustainable trade in *H. kuda*. **Our review suggested the following three important pieces of information are needed in order to move toward making defensible NDFs for *H. kuda* exports** (as well as for other seahorse species found in Viet Nam). We here summarise the three points.

a**. Where are the seahorses in Vietnamese waters**. While progress has been made in our understanding of seahorse distributions in Viet Nam – see results of research into seahorse distribution and habitats, above – it is clear that limited information will be gained through underwater survey efforts. Indeed only seven *H. kuda* were sighted after intensive underwater survey efforts, this in spite many hundreds were observed in fishers landings in Phu Quoc alone (representing tens of thousands caught annually). We have learned that it is much more efficient to carry out fisheries surveys to deduce where, and in what habitats, seahorses are being caught along Viet Nam's coasts. These surveys are a critical component of the trade research, which can be carried out given sufficient funding.

b. **Where existing management overlaps with Viet Nam's wild seahorse populations**. It is unclear how existing marine management in Viet Nam might apply to seahorses. For example, Viet Nam has several MPAs, but we do not know if there are *H. kuda* populations found inside these MPAs, and to what level the MPAs are enforced. In other words, we do not know if the MPAs actually confer protection for *H. kuda* or other seahorse species in Viet Nam. Likewise, it is unknown how other forms of fisheries legislation confer protection on Viet Nam's seahorses. As outlined in the NDF guidelines for seahorses (at www.projectseahorse.org/NDF), Viet Nam must consider whether existing management is appropriate for the risks (Section 5.2.1 of guidelines), whether it is being implemented (Section 5.2.2 of guidelines), and whether it is indeed effective at reducing the identified pressures in support of sustainable seahorse populations and so sustainable trade (Section 5.2.3 of guidelines).

c. **What are the trends in CPUE for different seahorse species**: only then will we know if existing management measures are helping seahorses, or if further work is needed to secure seahorse populations in Viet Nam. We are not aware of current monitoring of *H. kuda*, or other seahorse species. Understanding trends in CPUE will require regular monitoring of seahorses, and Project Seahorse has provided Viet Nam with a toolkit for monitoring seahorse landings in support of understanding population (sent 21 March 2014). This report is also available at http://www.iseahorse.org/trends-landings.

In summary, Project Seahorse suggests monitoring seahorses three (3) times a year, at key landing sites for seahorses in Viet Nam. These ports should cover all gears that catch seahorses. Whatever approach Viet Nam takes, sampling should always take place at the same ports, at the same times of year, and using the same methods. Only then can the data be used to understand trends in CPUE.

In summary, carrying out trade research and implementing a monitoring program for seahorses in Viet Nam would be key next steps toward making NDFs for *H. kuda* and Viet Nam's other seahorse exports.